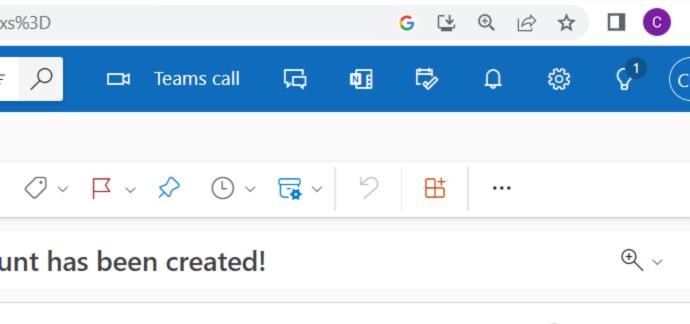
← → C 🏻 outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQABjCRenjvFVHhMbY7WgJcxs%3D

	All folders $ imes $	\leftarrow E From: European Journal of Edu $ imes$	Ŧ
Ŋ	Home View Help		
	\equiv \square New mail \checkmark	$\hat{\mathbb{I}}$ \checkmark \bigcirc \checkmark	✓ ➢ Read / Unread
00	> Favorites	⊘ Results	Your new accour
0	 Folders Inbox 9979 	E European Journal of Educational Research > Completed the preliminary review the 6/21/2022 Dear Dr. Concilianus Laos Mbato, Congratul Inbox	E European Jou To: Concilianus
W	Drafts 88Sent Items	E Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 Dear Dr. Mbato, Thank you for your kind re Inbox	Dear Dr. Conci Your account h
× •	 Snoozed Deleted It 27 	Editor - European Journal of Educational Research > Your manuscript ID#22060808445494 h 6/9/2022 Dear Dr. Mbato , The status of your paper is Inbox	Your user ID : Your password
2 2	Junk E 2464	EEditor - European Journal of Educational Research> Request re-submission6/7/2022Dear Dr. Concilianus Laos Mbato , Thank yoInbox	PS: Please see https://www. journal's tem jer_paper_ten
00	NotesClutter 3884	E European Journal of Educational Research > Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox	Best regards, Editorial Office European Jour
	Conversation Create new fol	 European Journal of Educational Research Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco Inbox 	editor@eu-jer www.eu-jer.co



ournal of Educational Research <editor@eu-jer.com> 🙂 🕤 … us Laos Mbato Tue 3/22/2022 1:53 PM

ncilianus Laos Mbato,

t has been created succesfully.

: cons@usd.ac.id

rd : 38769

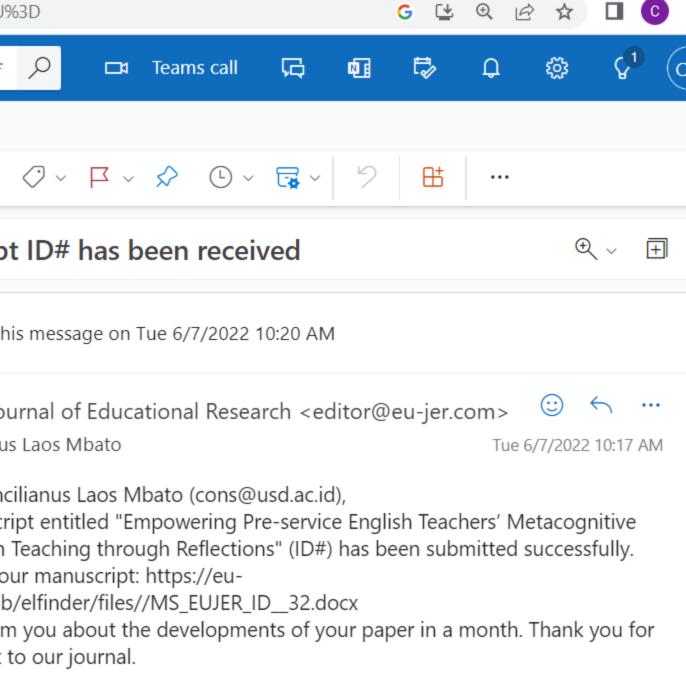
ee the instructions for authors before your submission (See w.eu-jer.com/instructions-for-authors). Author(s) must use the mplate for their paper (See https://www.eu-jer.com/euemplate.docx).

' ice urnal of Educational Research er.com com



→ C
a outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQAD16t1q6EdZNsCsjzEYcx4U%3D

	All folders $ \smallsetminus $	\leftarrow E From: European Journal of Edu $ imes$	Ŧ
Ŋ	Home View Help		
	\equiv \boxtimes New mail \checkmark	$\hat{\mathbb{I}}$ \sim $\overline{\mathbb{I}}$ $\hat{\mathbb{I}}$ \sim \checkmark $\hat{\mathbb{I}}$ \sim $\hat{\mathbb{I}}$ \sim $\hat{\mathbb{I}}$ $\hat{\mathbb{I}}$ \sim $\hat{\mathbb{I}}$	✓ ➢ Read / Unread
00	> Favorites	\odot Results \equiv Filter	Your manuscript
Ø	 Folders Inbox 9979 	E European Journal of Educational Research > Completed the preliminary review the 6/21/2022 Dear Dr. Concilianus Laos Mbato, Congratul Inbox	i You forwarded this
× 1	Drafts 88 Sent Items	E Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 Dear Dr. Mbato, Thank you for your kind re Inbox	E European Jou To: Concilianus
2	 Snoozed Deleted It 27 	E Editor - European Journal of Educational Research > Your manuscript ID#22060808445494 h 6/9/2022 Dear Dr. Mbato , The status of your paper is Inbox	Dear Dr. Concil Your manuscrip Awareness in T The link of you jer.com/aa/lib/
 ★ ♦ 	Junk E 2464	E Editor - European Journal of Educational Research > Request re-submission 6/7/2022 Dear Dr. Concilianus Laos Mbato , Thank yo Inbox	We will inform your interest to Best regards. Ahmet Savas, F
00	NotesClutter 3884	 European Journal of Educational Research Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox 	Editor, Europe www.eu-jer.cor editor@eu-jer.
	Conversation Create new fol	E European Journal of Educational Research > Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco Inbox	



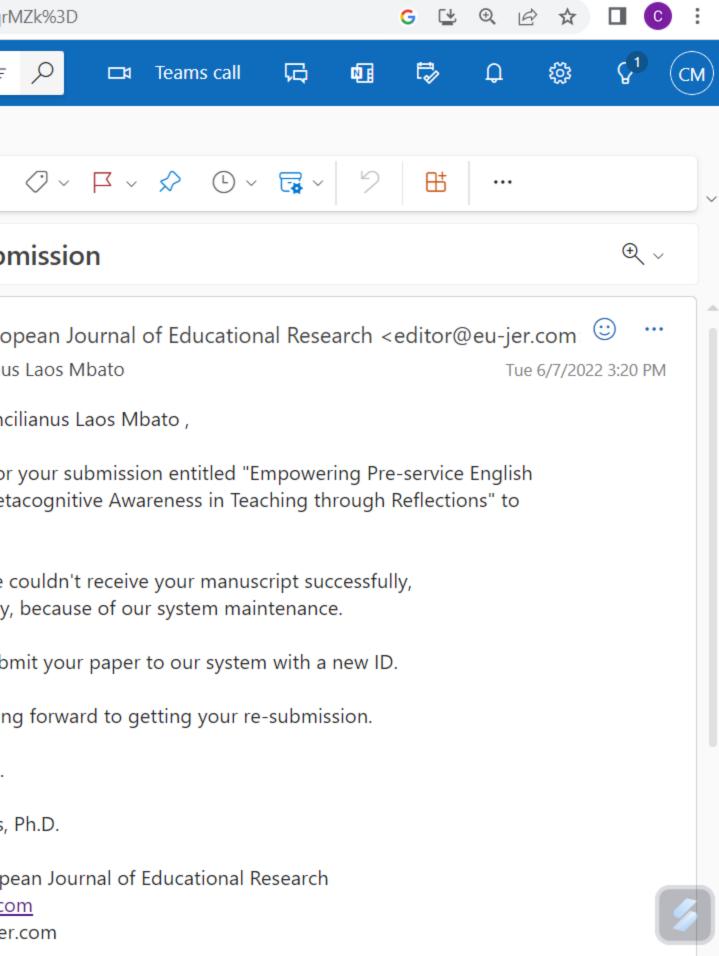
s. as, Ph.D. opean Journal of Educational Research .com

er.com



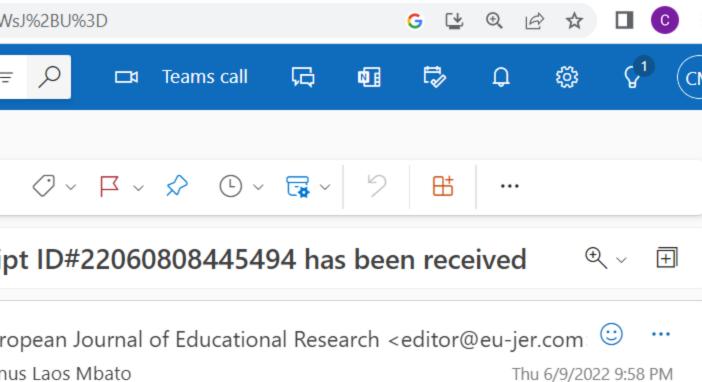
- - C 🌐 outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQAHi6%2BSgyHH5EhYuYr4qrMZk%3D

	All folders $ \smallsetminus $	\leftarrow E From: European Journal of Edu $ imes$	Ŧ
M	Home View Help		
	\equiv \square New mail \checkmark	$\hat{\mathbb{I}}$ \sim \bigcirc \langle \bigcirc \sim \langle \bigcirc \sim \bigcirc \checkmark \bigcirc	∽ 🗠 Read / Unread
009	> Favorites	\odot Results $=$ Filter	Request re-subn
0	 Folders Inbox 9979 	E European Journal of Educational Research > Completed the preliminary review the 6/21/2022 Dear Dr. Concilianus Laos Mbato, Congratul Inbox	E Editor - Europ To: Concilianus
W	Drafts 88Sent Items	E Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 Dear Dr. Mbato, Thank you for your kind re Inbox	Dear Dr. Conci Thank you for Teachers' Meta
2	 Snoozed Deleted It 27 	Editor - European Journal of Educational Research > Your manuscript ID#22060808445494 h 6/9/2022 Dear Dr. Mbato , The status of your paper is Inbox	our journal. However, we c unfortunately,
*	Junk E 2464	 Editor - European Journal of Educational Research > Request re-submission 6/7/2022 Dear Dr. Concilianus Laos Mbato , Thank yo 	Please re-subm We are looking
000	NotesClutter 3884	E European Journal of Educational Research > Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox	Best regards. Ahmet Savas, F
	Conversation Create new fol	E European Journal of Educational Research > Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco Inbox	Editor, Europe <u>www.eu-jer.co</u> editor@eu-jer.



← → C 🌢 outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQAN5Eovl4k%2BBPjMZIKU

	All folders $ \smallsetminus $	\leftarrow E From: European Journal of Edu $ imes$	Ŧ
	Home View Help		
	\blacksquare New mail \checkmark	$\hat{\mathbb{I}} \sim \Box \hat{\mathbb{I}} \sim \checkmark \widehat{\mathbb{I}} \sim \overleftarrow{\mathbb{I}} \rightarrow $	∽ 🖄 Read / Unread
00	> Favorites	\bigcirc Results $=$ Filter	Your manuscript
0	 Folders Inbox 9979 	European Journal of Educational Research > Completed the preliminary review the 6/21/2022 Dear Dr. Concilianus Laos Mbato, Congratul Inbox	E Editor - Europ To: Concilianus
W	Drafts 88Sent Items	E Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 Dear Dr. Mbato, Thank you for your kind re Inbox	Dear Dr. Mbat The status of y devotedly to r
2	 Snoozed Deleted It 27 	 Editor - European Journal of Educational Research Your manuscript ID#22060808445494 h 6/9/2022 Dear Dr. Mbato , The status of your paper is Inbox 	from our syste When we finis
 ★ ♦ 	Junk E 2464	EEditor - European Journal of Educational Research> Request re-submission6/7/2022Dear Dr. Concilianus Laos Mbato , Thank yoInbox	Thank you for Best regards, Ahmet Savas F
00	NotesClutter 3884	E European Journal of Educational Research > Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox	Editor, Europe <u>www.eu-jer.co</u> <u>editor@eu-jer</u> ···
	Conversation Create new fol	E European Journal of Educational Research > Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco Inbox	CM Concilianus La Dear Ahmet Ph.D.



ato ,

f your paper is "under preliminary review". Our editors are working review your submitted paper. You can track the status of your paper stem.

ish the evaluation of the paper, we will inform you immediately.

or your patience.

, s Ph.D. oean Journal of Educational Research <u>com</u> <u>er.com</u>

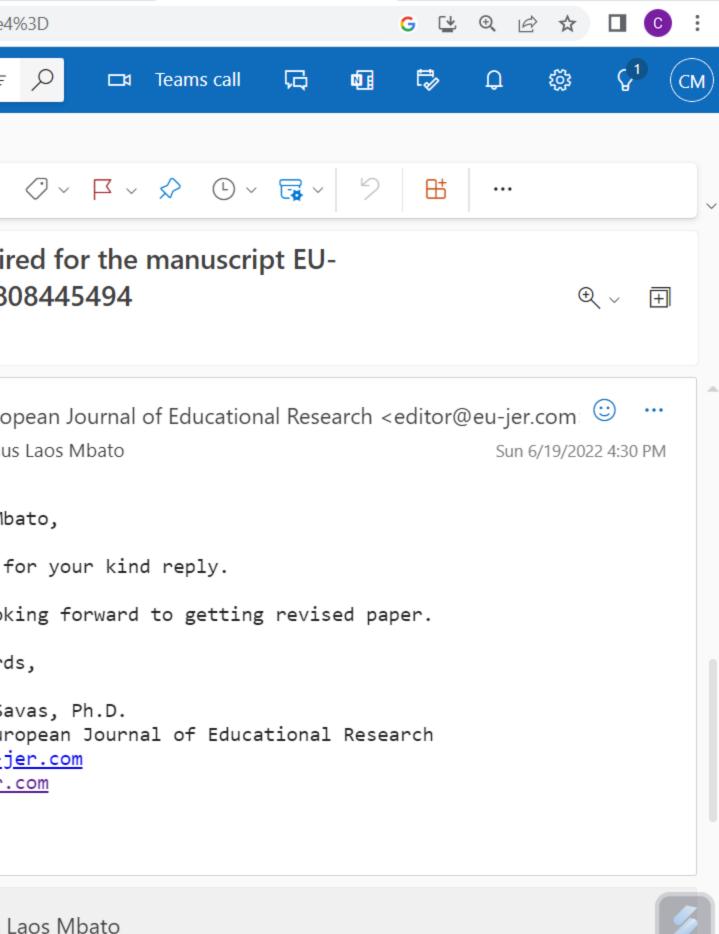
Laos Mbato

.D. Thank you so much for the information. We will be a...



← → C 🍈 outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQAEA28AAcxQpPrr3sNrP69e4%3D

	All folders $ \smallsetminus $	\leftarrow E From: European Journal of Edu $ imes$	Ŧ
	Home View Help		
	\equiv \square New mail \checkmark	$\hat{\mathbb{I}}$ \sim $\overline{\mathbb{I}}$ $\hat{\mathbb{I}}$ \sim \checkmark $\hat{\mathbb{I}}$ \sim $\hat{\mathbb{I}}$ \sim $\hat{\mathbb{I}}$ $\hat{\mathbb{I}}$ \sim $\hat{\mathbb{I}}$	✓ ➢ Read / Unread
09	> Favorites	\odot Results \equiv Filter	-Revision require
0	 Folders Inbox 9979 	E European Journal of Educational Research > Completed the preliminary review the 6/21/2022 Dear Dr. Concilianus Laos Mbato, Congratul Inbox	2 attachments \sim
w	Drafts 88Sent Items	 Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 Dear Dr. Mbato, Thank you for your kind re Inbox 	E Editor - Europ To: Concilianus
2	 Snoozed Deleted It 27 	E Editor - European Journal of Educational Research > Your manuscript ID#22060808445494 h 6/9/2022 Dear Dr. Mbato , The status of your paper is Inbox	Dear Dr. Mba Thank you fo We are looks
•	Dunk E 2464	E Editor - European Journal of Educational Research > Request re-submission 6/7/2022 Dear Dr. Concilianus Laos Mbato , Thank yo Inbox	Best regards Ahmet C. Sav Editor, Euro
00	NotesClutter 3884	E European Journal of Educational Research > Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox	<u>editor@eu-je</u> <u>www.eu-jer.c</u>
	Conversation Create new fol	E European Journal of Educational Research > Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco Inbox	CM Concilianus La Dear Ahmet C. Sav

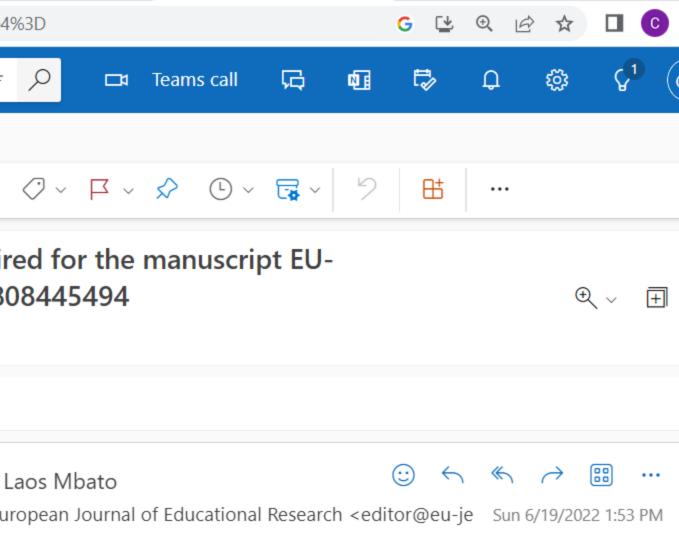


Savas, Ph.D. Thank you so much for the patience. I hav...

Sun 6/19/2022 1:53 PM

← → C
a outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQAEA28AAcxQpPrr3sNrP69e4%3D

	All folders $ \smallsetminus $	\leftarrow E From: European Journal of Edu $ imes$	Ŧ
Ŋ	Home View Help		
	■ New mail ∨	$\hat{\mathbb{I}}$ \sim \bigcirc \checkmark \checkmark \bigcirc \sim \bigcirc \checkmark \bigcirc	∼ 🗠 Read / Unread
09	> Favorites	\odot Results $=$ Filter	-Revision require
0	 Folders Inbox 9979 	European Journal of Educational Research > Completed the preliminary review the 6/21/2022 Dear Dr. Concilianus Laos Mbato, Congratul Inbox	⊘ 2 attachments ∨
w.	Drafts 88Sent Items	 Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 Dear Dr. Mbato, Thank you for your kind re Inbox 	CM Concilianus La To: Editor - Eur
2	 Snoozed Deleted It 27 	E Editor - European Journal of Educational Research > Your manuscript ID#22060808445494 h 6/9/2022 Dear Dr. Mbato , The status of your paper is Inbox	Dear Ahmet C. Thank you so m
	Junk E 2464	E Editor - European Journal of Educational Research > Request re-submission 6/7/2022 Dear Dr. Concilianus Laos Mbato , Thank yo Inbox	The paper is bei our university. I sending it to yo
000	NotesClutter 3884	E European Journal of Educational Research > Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox	Kind Regards, Concilianus
	Conversation Create new fol	E European Journal of Educational Research > Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco Inbox	See 3 more mes



C. Savas, Ph.D.

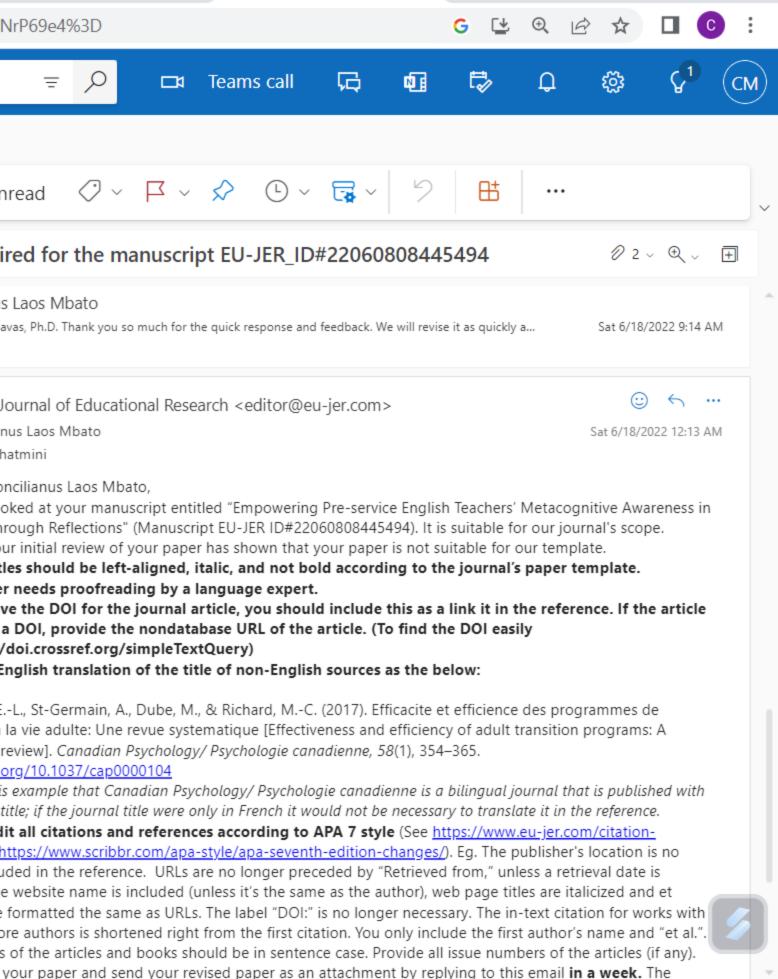
much for the patience. I have revised it according to the journal's template. being proofread by an English native speaker, who works a language editor in I am hoping to hear from him soon so that I could take the feedback before you, Sir.

nessages



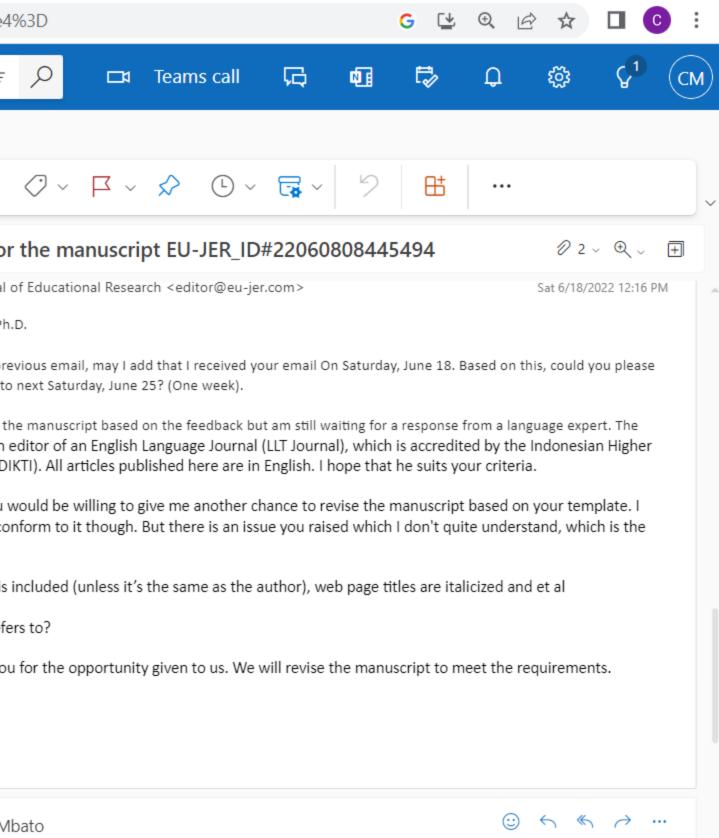
\leftarrow	→ C	● outloo	<mark>k.office.com</mark> /mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQAEA28AAcxQpPrr3sN
			All folders \checkmark \leftarrow \mathbf{E} From: European Journal of Edu \times

	Home View Help		
	≡ 🖂 New mail 🗸 Ū	$\mathbb{I} \sim \square$ $\mathbb{O} \sim \varnothing$ $\mathbb{G} \sim \longleftrightarrow$ \ll \rightarrow \checkmark \swarrow Quick steps	∽ 🗠 Read / Unread
09	> Favorites	⊘ Results	-Revision required for
Ø	\sim Folders	E European Journal of Educational Research > Completed the preliminary review the 6/21/2022	COncilianus Laos Mk Dear Ahmet Savas, Ph.D. Th
~	- Inbox 9979	Dear Dr. Concilianus Laos Mbato, Congratul Inbox	European Journal of
w	🔊 Drafts 88	 Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 	To: Concilianus Laos M Cc: V. Triprihatmini
	➢ Sent Items	Dear Dr. Mbato, Thank you for your kind re Inbox	Dear Dr. Concilianus l We have looked at yo
X	L Snoozed	E Editor - European Journal of Educational Research > Your manuscript ID#22060808445494 h 6/9/2022	Teaching through Ref However, our initial re * All subtitles should
•	Deleted It 27	Dear Dr. Mbato , The status of your paper is Inbox	* The paper needs p * If you have the DO is without a DOI, pro
1	🔀 Junk E 2464	E Editor - European Journal of Educational Research > Request re-submission 6/7/2022	see: http://doi.cross * Provide English tra Eg.
	Archive	Dear Dr. Concilianus Laos Mbato , Thank yo Inbox	Bussieres, EL., St-Ge transition a la vie adu
88		E European Journal of Educational Research > Your manuscript ID# has been received 6/7/2022	systematic review]. Co <u>https://doi.org/10.103</u> Note for this example
	Clutter 3884	 Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox 	a bilingual title; if the * Please edit all citat guide and <u>https://ww</u>
	Conversation	E European Journal of Educational Research > Your new account has been created! 3/22/2022	longer included in the needed. The website al. DOIs are formattee
	Create new fol	Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco Inbox	three or more author All the titles of the ar Please edit your pape



← → C 🏻 outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQAEA28AAcxQpPrr3sNrP69e4%3D

	All folders $ \smallsetminus $	\leftarrow E From: European Journal of Edu $ imes$	Ŧ
M	Home View Help		
	\equiv \square New mail \checkmark	$\hat{\mathbb{I}}$ \sim $\overline{\mathbb{I}}$ $\hat{\mathbb{I}}$ \sim \checkmark $\hat{\mathbb{I}}$ \sim $\hat{\mathbb{I}}$ \sim $\hat{\mathbb{I}}$ $\mathbb{$	✓ ➢ Read / Unread
00	> Favorites	⊘ Results	-Revision required for
Ð	\sim Folders	E European Journal of Educational Research > Completed the preliminary review the 6/21/2022	To: European Journal o Dear Ahmet Savas, Ph.E
~	Inbox 9979	Dear Dr. Concilianus Laos Mbato, Congratul Inbox	To follow up on my prev extend the deadline to r
W	Drafts 88 Sent Items	 Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 Dear Dr. Mbato, Thank you for your kind re Inbox 	I have tried to revise the language expert is an ec Education Bureau (DIK
×	C Snoozed	E Editor - European Journal of Educational Research > Your manuscript ID#22060808445494 h 6/9/2022	I also hope that you w will try my best to con following: The website name is ir
	U Deleted It 27	Editor - European Journal of Educational Research	What is and et al refer Once again thank you
	Archive	 > Request re-submission 6/7/2022 Dear Dr. Concilianus Laos Mbato , Thank yo Inbox 	Kind Regards, Concilianus
88	Notes	European Journal of Educational Research	•••
	Clutter 3884	 Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox 	Concilianus Laos Mb To: European Journal o
	Conversation	European Journal of Educational Research	Dear Ahmet Savas, Ph.D
	Create new fol	 Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco 	Thank you so much for t let you know if we need



I of Educational Research <editor@eu-jer.com>

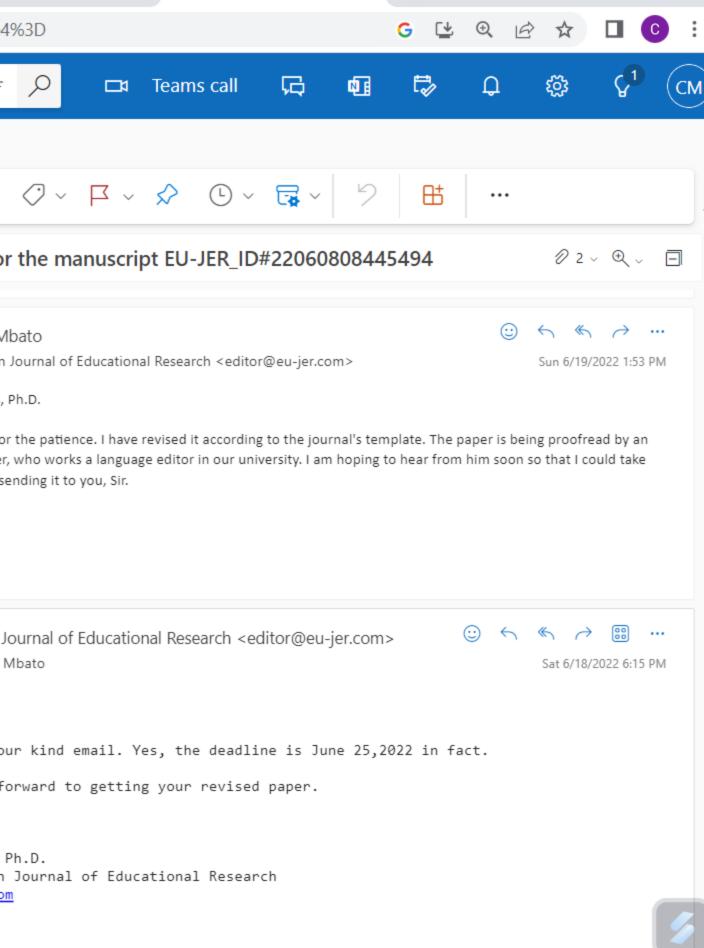
h.D.

or the quick response and feedback. We will revise it as quickly as possible to meet the deadline and will eed an extension.

Sat 6/18/2022 9:14 AM

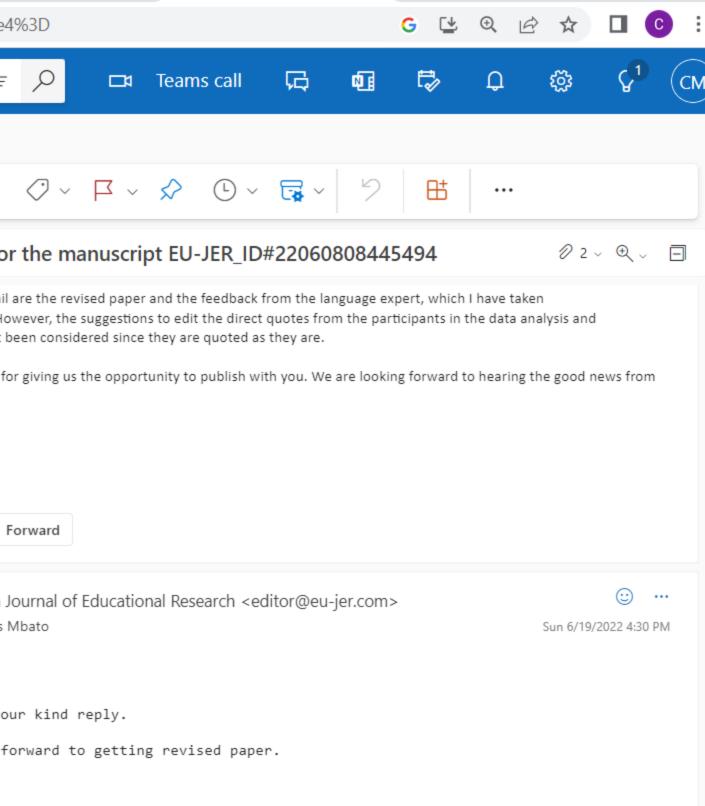
← → C 🏻 outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQAEA28AAcxQpPrr3sNrP69e4%3D

	All folders $ \smallsetminus $	\leftarrow E From: European Journal of Edu $ imes$	Ŧ
M	Home View Help		
	\equiv \square New mail \checkmark	$\hat{\mathbb{U}} \sim \Box \hat{\mathbb{V}} \sim \checkmark \Box \sim \qquad \Box \sim \qquad \Box \sim \qquad \Box \qquad \Box \sim \qquad \Box \qquad \Box \qquad \Box \qquad$	∼ 🗠 Read / Unread
00	> Favorites	\odot Results \equiv Filter	-Revision required for
0	 Folders Inbox 9979 	E European Journal of Educational Research > Completed the preliminary review the 6/21/2022 Dear Dr. Concilianus Laos Mbato, Congratul Inbox	CONCILIANUS LAOS Mb To: Editor - European Jo Dear Ahmet C. Savas, Ph
W	Drafts 88Sent Items	 Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 Dear Dr. Mbato, Thank you for your kind re Inbox 	Thank you so much for t English native speaker, v the feedback before sen Kind Regards,
×	 Snoozed Deleted It 27 	E Editor - European Journal of Educational Research > Your manuscript ID#22060808445494 h 6/9/2022 Dear Dr. Mbato , The status of your paper is Inbox	Concilianus
	Junk E 2464	E Editor - European Journal of Educational Research > Request re-submission 6/7/2022 Dear Dr. Concilianus Laos Mbato , Thank yo Inbox	Editor - European Joe To: Concilianus Laos Mi Dear Dr. Mbato,
00	NotesClutter 3884	E European Journal of Educational Research > Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox	Thank you for your We are looking for Best regards, Ahmet C. Savas, Ph
	Conversation Create new fol	E European Journal of Educational Research > Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco Inbox	Editor, European J <u>editor@eu-jer.com</u> <u>www.eu-jer.com</u>



← → C 🏻 outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQAEA28AAcxQpPrr3sNrP69e4%3D

	All folders $ \smallsetminus $	\leftarrow E From: European Journal of Edu $ imes$	Ŧ
	Home View Help		
	\equiv \square New mail \checkmark	$\hat{\mathbb{I}}$ \sim \bigcirc \langle \bigcirc \sim \bigcirc \sim \bigcirc \checkmark \bigcirc	✓ ➢ Read / Unread
00	> Favorites	⊘ Results	-Revision required for
0	 Folders Inbox 9979 	E European Journal of Educational Research > Completed the preliminary review the 6/21/2022 Dear Dr. Concilianus Laos Mbato, Congratul Inbox	Attached in this email a into consideration. How discussions have not be Thank you so much for you.
	Drafts 88Sent Items	 Editor - European Journal of Educational Research > -Revision required for the manuscript E 6/19/2022 Dear Dr. Mbato, Thank you for your kind re Inbox 	Kind Regards, Concilianus
×	 Snoozed Deleted It 27 	E Editor - European Journal of Educational Research > Your manuscript ID#22060808445494 h 6/9/2022 Dear Dr. Mbato , The status of your paper is Inbox	 ← Reply ← For E Editor - European Joo To: Concilianus Laos M
*	Junk E 2464	EEditor - European Journal of Educational Research> Request re-submission6/7/2022Dear Dr. Concilianus Laos Mbato , Thank yoInbox	Dear Dr. Mbato, Thank you for you
00	NotesClutter 3884	E European Journal of Educational Research > Your manuscript ID# has been received 6/7/2022 Dear Dr. Concilianus Laos Mbato (cons@usd Inbox	We are looking for Best regards, Ahmet C. Savas, Pl Editor, European <u>editor@eu-jer.com</u>
	Conversation Create new fol	E European Journal of Educational Research > Your new account has been created! 3/22/2022 Dear Dr. Concilianus Laos Mbato, Your acco Inbox	www.eu-jer.com



Ph.D. Journal of Educational Research

Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching <u>T</u>through Reflections

Mbato & Triprihatmini/ Pre-service English teachers' metacognitive awareness in teaching through reflections

Concilianus Laos Mbato 1*, Sanata Dharma University, Indonesia, https://orcid.org/

0000-0003-0284-3557, <u>cons@usd.ac.id</u>

Veronica Triprihatmini 2, Sanata Dharma University, Indonesia, https://orcid.org/

0000-0003-0118-043X, v.triprihatmini@usd.ac.id

* Corresponding Author

Corresponding author's institutional address: cons@usd.ac.id

Authorship Contribution Statement

Mbato: Conceptualization, design, data acquisition, data analysis/interpretation, drafting manuscript, critical revision of manuscript, statistical analysis, securing funding, admin, technical or material support, supervision, final approval.

Triprihatmini: Data acquisition, securing funding, admin, technical or material support, supervision, and final approval.

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, little researchfew studies haves investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study <u>aimed was undertaken</u> to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching. A mixed-methods approach research was conducted was implemented to collect quantitative and qualitative data from 45 pre-service English teachers (PSETs) in two Micro Teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD)–focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness Field Code Changed

Field Code Changed

in teaching increased post-semester. They also admitted the positive contributions of reflections in enhancing their metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Becoming an effective teacher requires <u>lintensive</u> preparation and rigorous teaching practice in college <u>are required since</u> teachers will notin order to be able to teach <u>effectively since 'teachers cannot give</u> what they do not have' (Okogbaa, 2017). <u>The professional development of pPre-service English teachers</u> (PSETs) professional development in college is crucial in preparing them for actual classroom teaching. This paper begins by examining the subject matter. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. One of the tools to empower teachers' metacognitive awareness in teaching is reflective practice. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness.

Teachers face complex challenges in actual classroom teaching. They, which may range from the teaching workload, big class size, time limitations (Al-Shaboul et al., 2020), and how to assess teachers' their own competence and performance (Utami et al., 2021). ThereforeAccordingly, they need strong guidance from their mentors to face the challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2014; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (cf. Bakar et al., 2019; Filiz & Durnali, 2019, Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have looked into pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of n 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-development. Another study (Holzberger et al. 2019) involvingon 3,483 high school students and their 155 Formatted: English (United States)

mathematics teachers revealed that high-quality teaching corresponds with students' achievement but does not predict their excitement. A <u>current-recent</u> study (Senel, 2021) of <u>n</u> four Turkish <u>English Language Teaching (ELT)</u> students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good quality teaching. The demand for teachers to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS) elassroom learning. (HOTS). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana, Muwagga, and Ssempala (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% related to HOTS. Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020), in their study about HOTS in Senior High School mathematics in the Philipines, revealed the students' low level of HOTS in mathematics subjects. A similar result was found in a study of the student science student teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities with a general tendency to use LOTS in problem-solving. This study urges lecturers to promote independent learning to students. However, training students to become independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually, as since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah and Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes as onewhile engaginges in cognitive activities such as teaching (cf.

Flavell, 1979). The impacts of metacognition on students' learning and success have been acknowledged<u>in several recent studies</u> (Bećirovic, Brdarević-Čeljo, & Sinanović, 2017; Cao & Lin, 2020; Oxford, 2017).

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interests in teachers' metacognitive awareness in teaching (Abdellah, 2015; Aktag, Semsek, & Tuzcuoglu, 2017; Alkam & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkam and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on pre-service teachers' strategies to increase their metacognitive awareness in teaching performance. Other researchers (Aktag et al., 2017) argued that teachers' metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness training for pre-service and in-service teachers. Similarly, research on primary school teachers in Puchong, Selangor (Palantis et al, 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practisedpracticed regularly and intentionally for the teachers' teaching to impact students' learning positively.

Despite <u>Considering</u> its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011)

Formatted: English (United States)

Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of <u>'the</u> why and when<u>'</u> to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011, p. 1_032) argueds that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes<u>of pre-service teachers</u>. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching.

Reflection

Reflections are the <u>self-conscious</u> activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used as means to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (cf. Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019, p. 13). Similarly, Davis and

Formatted: English (United States), Highlight
Formatted: English (United States)
Formatted: English (United States), Highlight
Formatted: English (United States)

Formatted: English (United States)

Formatted: English (United States), Highlight Formatted: English (United States) MacDonald (2019) found that reflectionsteachers' reflections focusing on self-evaluation could positively impact teachers' their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & MacDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge (declarative knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in EFL vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching English as a Foreign Language (EFL) vocabulary. This research, however, did not explore how reflections could be used to increase the teachers' cognition in EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive awareness in teaching: lesson planning. They demonstrated the positive impact of reflective practice on the student teachers' lesson planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practisepractice reflections during teaching. However they should be coached on strategies to effectively and successfully engage in them thes reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in

Formatted: English (United States)

Formatted: English (United States)

Formatted: English (United States)

teaching (cf. Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centrered teaching. However, many teachers found-experience difficulty in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st century <u>skills</u> learning in many classes in the primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers could not teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (cf. Beziat et al., 2018; Mattew et al., 2017) and student learning (Author, 2019; Soodla et al., 2017).

Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research <u>attempted aimed</u> to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

How can reflections empower Indonesian pre-service English teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Methodology

Research Design

This research adopted a mixed-methods approach where quantitative and qualitative data were collected (cf. Cresswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (cf. Zohrabi, 2013).

Sample and Data Collection

Using purposive sampling, thirty-six PSETs enrolled in two Micro Teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. Since this was a practicum class, PSETs learned about teaching and practisedpracticed, teaching in small groups and with the whole class. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. As mentors for the class for more than ten years, we decided to introduce the Ma metacognitive Anwareness Inventory in Tteaching (MAIT) from Balcikanli (2011). This inventory was comprehensive in that it covered covering all of the teachers' metacognition elements. The class met twice a week, with each meeting lasting 100 minutes. Formatted: English (United States)

Formatted: English (United States)

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to fill_complete_them_out. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition and the second on the regulation of cognition. Statements on the knowledge of cognition constituted four items on declarative Knowledge (Decl1-Decl4), four items on procedural Knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted from Balcikanli (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching.

Qualitative data were gathered from students' answers to the questions about the dissemination of MAIT, summative reflections, and Focus Group Discussions (FGDs) on the elements of metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they <u>practisedpracticed</u> teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination <u>was-were</u> gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. <u>The FGDs</u> involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e.: (1) the benefits of metacognitive awareness in teaching; (2) the difficulties in implementing metacognitive awareness in teaching; and (3) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyzee the participants' responses about their **Formatted**: English (United States) metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Author's (2019) mean category was used to interpret the mean <u>with_for</u> the expression motivation replaced with perception.

Table 1. Mean Range for Perception					
Mean Range	Interpretation				
3.68 - 5.00	A high degree of perception				Formatted: English (United States)
2.34 - 3.67	A moderate degree of perception				Formatted: English (United States)
1.00 -2 .33	A low degree of perception				Formatted: English (United States)
•					
A paired-sample	s t-test was performed using SPSS 17 (SPSSSInc., Chicago, IL, 2006) to			Formatted: English (United States)

Results

determine whether there was a significant difference in students' perceptions about their

Qualitative data analyses from reflections and focus group discussions FGDs focused on finding

key issues in students' answers (cf. Gibson & Brown, 2009) about their metacognitive

awareness in teaching, mainly on whether or not there were indications of improvements.

metacognitive awareness in teaching in the post-semester.

Quantitative Data

Formatted: English (United States)

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses were displayed in the following table.

Table 2. Students' perceptions about of the role of reflections in their metacognitive awareness

awareness			
No.	Statement	Mean	Std. Dev
ReDecl1	Reflections increased my awareness of the strengths and weaknesses in teaching.	4.31	0.62
ReDecl2	Reflections helped me to know the most important skills	4.31	0.55
ReDecl3	Reflections helped me to have control over teaching	4.04	0.53
ReDecl4	Reflections helped me to know the teaching expectations	4.31	0.47
ReProc5	Reflections helped me to use proven teaching techniques	4.19	0.69
ReProc6	Reflections helped me to have a specific reason for using a teaching technique	4.04	0.77
ReProc7	Reflections helped me to have an awareness of the teaching techniques	4.15	0.78
ReProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63
ReCon9	Reflections helped me to compensate strengths for weaknesses	4.19	0.63
ReCon10	Reflections helped me to motivate myself when having to teach	4.23	0.59
ReCon11	Reflections helped me to use different teaching techniques as required by the situation.	4.00	0.75
ReCon12	Reflections helped me to know when each teaching technique was most effective.	3.96	0.82
RePlan13	Reflections helped me to pace myself in teaching	4.31	0.62
RePlan14	Reflections helped me to set specific teaching goals before teaching	4.42	0.50
RePlan15	Reflections helped me to ask questions about the teaching materials	4.27	0.60
RePlan16	Reflections helped me to organize a time to accomplish teaching goals.	4.19	0.69
ReMon17	Reflections helped me to ask periodically if teaching goals were being met	4.12	0.52
ReMon18	Reflections helped me to assess how useful the teaching techniques were	4.12	0.59
ReMon19	Reflections helped my regular checking of students' comprehension	3.85	0.61
ReMon20	Reflections helped my self-questioning while teaching	4.19	0.49

No.	Statement	Mean	Std. Dev
ReEval21	Reflections helped me to ask myself about teaching goal accomplishment	4.19	0.57
ReEval22	Reflections helped me to ask myself if different techniques could have been used.	3.85	0.73
ReEval23	Reflections helped me to ask myself for more effective subsequent teaching	4.35	0.63
ReEval24	Reflections helped me to ask myself if all possible techniques had been considered	4.15	0.54
	Average	4.14	0.62

As indicated in Table 2, students generally admitted the positive contributions of reflections in helping them to develop their metacognitive awareness in teaching. The first four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with the mean range between 3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (cf. Nurhapsari & Author, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

Table 3. Mean comparison of students' responses to metacognitive awareness statements

Mean Increase

0.77

Formatted: Body Text, Line spacing: single Formatted: English (United States)

No	Statements	Pre-semester		Post-semester		
		Mean	Std. Dev	Mean	Std. Dev	
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	
Proc7	Awareness of the teaching	3.1	0.91	3.67	0.73	

technique is most effective. Plan13 Pacing oneself in teaching to

have enough time.

in teaching.

Proc8

Con9

Con10

Con11

Con12

Knowing the most important	3.1	1.14	3.85	0.85	0.75
skills					
Having control over teaching	3.03	0.90	4.36	0.48	1.33
Knowing the expectations in	3.26	0.96	3.74	0.67	0.48
teaching.					
Trying to use proven teaching	3.31	0.86	3.85	0.63	0.54
techniques					
Having a specific reason for	3.31	1.12	3.9	0.64	0.59
using a teaching technique					
Awareness of the teaching	3.1	0.91	3.67	0.73	0.57
techniques while teaching.					
Using teaching techniques	2.79	0.92	4.1	0.55	1.31
automatically.					
Compensating strengths for	3.26	0.91	3.77	0.77	0.51
weaknesses					
Being able to motivate	3.15	0.96	3.82	0.68	0.67
oneself when having to teach					
Using different teaching	3.33	0.95	3.67	0.66	0.34
techniques as required by the					
situation.					
Knowing when each teaching	2.77	1.01	3.77	0.62	1.00

3.31

0.92

3.67

0.57

0.36

No	Statements	Pre-se	mester	Post-semester		Mean Increase
		Mean	Std. Dev	Mean	Std. Dev	-
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52
Eval24	Asking oneself if all possible techniques- have been considered	3.15	0.70	3.74	0.54	0.59
	Average	3.19	0.89	3.90	0.62	0.71

The questionnaire was adopted from Balcikanli (2011), and its complete version can be seen in Appendix 1.

The <u>T</u>table<u>3</u> above shows PSETs' responses to their metacognitive awareness in teaching in the pre-semester and post-semester. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase (1.33). The second highest response was <u>their-the PSETs'</u> awareness of their strengths and weaknesses in teaching (Decl1/ 0.77 mean increase) and their knowledge of the

most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by PSETs' response to statement Pro6, which asked whether they had a particular reason for adopting a teaching technique in the classroom (Pro6/0.59 mean increase),- and statement Pro7, which asked about their awareness of what teaching methods they used while teaching (Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase). Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

As was the caseParallel with their increased knowledge of cognition, students agreed that they had improved their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, that is including, time organization to accomplish their teaching goals (Plan16/with the highest mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest

mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

In the same veinSimilarly, students demonstrated their agreement with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that they found themselves assessing how useful their teaching techniques were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

SimilarlyAdditionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted having slight improvement in their evaluation ability, as indicated in statements Eval23 and statement-Eval21. Statement Eval28 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean increase for this statement was 0.52. Statement Eval21, which

focused on whether they asked themselves if they had accomplished their teaching goals after teaching, demonstrated a mean increase of 0.43.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.

I

	1	Table 4. Pai	red Sample	es Statistic	es.			
Mean	Ν	Dev	Std. iation Dev		Erro	Std. r Mean		
3.194444444444444	24	.22133789	1094002		.045180	407827	002	
3.908119658119657	24	.23992927	2690547		.048975	357704	4077	
	Table 5. Pai	red Sample.	s Correlati	ons				
	N	Correla			Sig.			
air 1 Pre-semester & Post- semester	24		.031		.887			_
d. Dev, standard deviation.							- <u>*</u>	Formatted: Font: Not Italic
	Tabl	e 6 <u>.</u> Paired	Samples Te	est				Formatted: Left
	Pai	red Differe	ences					
		5% Confide d. Error	Difference					
Mean	Std. DeviationDe	Mean	Lower	Upper	t	df S ta	ig. a- ailed)	
Pair Pre-semester71368 Post-semester	.32138	.06560	84 938	57797	-10.879	23	000	
d. Dev, standard deviation.								
paired sample t-test was perf	ormed to det	ermine stud	lents' perce	eption of r	netacogn	itive	<	Formatted: English (United States)
remembers in teaching on the	lan an dant	wichle mean		and most s	omostor	The		Formatted: Font: Not Italic, English (United States
vareness in teaching as the o	iependent va	madie mea	sured pre-a	and post-s	semester.	The	Ì	Formatted: English (United States)
sult <u>s</u> indicated a significant	perceived in	crease betw	veen the pr	e-semeste	er level, i	3.19,		
andard deviation (SD) = .22,	and post-se	mester leve	el, 3.91, SI	D = .24, t	(23) =-1).88,		Connetted Fort Italia Franket (United Otates)
<.0.5. Therefore <u>As a result</u> ,	the null by	nothesis w	as rejected	while th	he altern	ative	1	Formatted: Font: Italic, English (United States)

hypothesis was accepted. It can be inferred that PSETs' perceived metacognitive awareness in teaching improved after participating in the research.

Qualitative Data

Qualitative data were collected through students' summative reflections and FGDs of the elements of metacognitive awareness in teaching. This—These_activitiey_was were conducted after students had experienced teaching in the micro-teaching class for one month. Students practised practiced teaching their peers in small groups and the whole class in class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

1. Reflections on the dissemination of MAIT

The researchers disseminated the ideas of <u>the</u> metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a <u>successful professional</u> teacher,

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in the light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise students' awareness of metacognition in teaching. For example, SO8 wrote:

I learn something new from metacognition which is very beneficial for me as a prospective teacher in the future. Teachers should be able to aware that every student is unique with their own intelligent. Even identical twins are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plans that-includes students various cognition.

Formatted: English (United States)

Formatted: English (United States), Highlight

Formatted: English (United States)

Formatted: English (United States), Highlight

Formatted: English (United States)
Formatted: English (United States), Highlight
Formatted: English (United States)

Formatted: English (United States)

The second benefit was that it assisted them in understanding their strengths and weaknesses in

teaching. S01 reported:

After understanding metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher; how to open class that makes the students are full of spirit, how to deliver the materials that makes the students can apply it ion their lives, how to manage the class that makes the condition of the class is full of excitement, and how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me in order to understand whether the teaching goals is reached or not and understand what has to be improved.

Students also described four other benefits of MAIT, i.e., 1) Being more aware_of_the_ importance of teaching techniques; 2) Being more aware of possessing teaching skills; 3) Being more aware of knowing what to teach (Planning); and 4) being more aware of planning, monitoring and evaluating their teaching.

2. Summative Reflections

Reflections were a significant force in our <u>attempt_efforts_</u>to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching. The researchers summed up key ideas and, when relevant, cited a small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT: <i>I am really excited because finally I did well in this course. I am proud of myself because</i> <i>at the beginning of this semester, I felt uncomfortable and not sure I can do teaching.</i> <i>But, now I become more confident in teaching and feel more challenged. The fact is</i> <i>being a teacher is not as easy as I think before. There are lots of requirements that</i> <i>should be complemented as a teacher. MAIT really helps me prepare all of the things</i> <i>that should be prepared. It helps me to be more aware with anything about teaching</i> <i>before, while and after teaching,</i>	Formatted: English (United States), Highlight
Another student (S20) emphasized that MAIT helped her to compensate for her weak	
grammar with her cheerful personality in teaching. Understanding their strengths and	
weaknesses in teaching seemed to be one of the most important contributions of MAIT to	
many students. Similarly, S11 admitted,", "In the final test teaching practice, my friends	
and I have improved so much because we have applied MAIT, Higher Order Thinking, and	
Bloom's Taxonomy." S28, in her long reflection constituting all aspects of MAIT, wrote:	
I understand the materials that I am going to teach. I also remind myself that when I am tecahingteaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even the small things such as appearance and eye contact. I want to inspire my students to learn English and motivate them as well.	Formatted: English (United States)
S17 described that the class had helped him understand teaching better. He reflected:	
This class has given me a whole new world of college life. I got many experiences in this class especially how to teach something. Teaching is not easy but it is kind of challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparationpreparations that the teacher should prepare before they teach.	Formatted: English (United States)
Most PSETs admitted that they had improved their declarative, procedural, and conditional	
knowledge in teaching. They also acknowledged regulating their teaching better through	
planning, monitoring, and evaluating. Their improvements are strengthened by the data	
gained in the FGD ⁸ .	
3. Focus Group Discussion <u>s</u>	
FGDs wereas conducted in small groups in class at the end of the semester. Individual	

students were given more than a week to write their reflections about the implementation of MAIT before the implementation of <u>the FGDs</u>. <u>These FGDs</u> discussed three <u>main</u> questions, i.e.: (1) benefits of metacognitive awareness in teaching; (2) challenges in implementing metacognitive awareness in teaching; and (3) suggestions for the implementation of metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before, while, and after teaching. Before teaching, Group 1 asserted, *"We can understand what points that we have to prepare before teaching in the class."* Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4 acknowledged:

When we are teaching we learn how to manage the time allocation in order to have enough time. We try to implement and organize the material well. The teacher knows and <u>explaining explains</u> the learning objectives and <u>try-tries</u> to implement the teaching technique that chosen in class. Then, we know how to monitor our students by asking them questions to make sure they understand the materials. In teaching learning <u>activityactivity</u>, we try to evaluate ourselves by asking ourselves about how well we are doing while we are teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that

MAIT helped them to know the best teaching strategies for their students, the lack of their

teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during,

and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses in the beginning of our teaching. To be reflective on what we have to improve and what we have improved. To be used to with classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the student's needs, understanding students' character, and handling the nervous feeling (Group 1). Group 4 mentioned the challenge in terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching challenged them to: (1) *"revise our lesson plan and the whole teaching; (2) find different techniques that will work better for the next teaching; and (3) ask ourselves how well we have accomplished our teaching goals once we are finished"*. Group 4 realized that metacognitive awareness used after teaching helped them *"always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance"*.

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: (1) "Focus on each point of MAIT; and (2) Try to implement each point of MAIT in the learning activities". Group 3 came up with three suggestions, i.e.:

(1)The teachers should have <u>a</u> list of teaching goals to be achieved; (2) The teachers should be aware of what <u>are</u> their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions

toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching improved, consisting of declarative, procedural, and conditional knowledge, improved, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept about teaching (cf. Balcikanli, 2011; Author, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Author, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledged that they had improved conditional knowledge in teaching, namely, knowing when, why, and with whom to use specific knowledge and skills (cf. Balcikanli, 2011; Author, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: 1) knowing their strengths to compensate for their weaknesses in teaching; 2) being able to motivate themselves to teach when they needed to teach; 3) being able to employ various teaching techniques as required by the situation; and 4) knowing Formatted: English (United States)

when a teaching technique they used would be most productive.

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after participating in the research. An instance of this <u>case-improvement</u> was shown in PSETs' response to statement 22. PSETs mentioned they asked themselves if they might have utilisedutilized other techniques after teaching- (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the pre-semester level, 3.19, SD = .22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, $p \le .0.5$).

The results from these quantitative data <u>find-had</u> much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGD<u>s</u> highlighted <u>the</u> considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in teaching:

I am really excited because finally I did well in this course. I am proud of myself because at the beginning of this semester, I felt uncomfortable and not sure I can do teaching. But, now I become more confident in teaching and feel more challenged. The fact is being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware with anything about teaching before, while and after teaching. Formatted: English (United States)

Formatted: Font: Italic, English (United States)
Formatted: English (United States)

Formatted: English (United States), Highlight

Group 1 asserted, "We can understand what points that we have to prepare before teaching in the class." PSETs also found-appreciated the benefits of becoming aware of their metacognition while teaching-beneficial. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage the time well while teaching.

Findings in this study corroborated previous studies (see, e.g., Aktag et al., 2017; Gopinath, 2014; Palantis et al., 2017), which asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere and that. Additionally, the results indicate the importance of teachers need to be taughtlearning strategies to effectively and successfully engage in reflective practices reflection (Ong et al., 2020). While acknowledging that metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and explicit training of metacognitive awareness for teachers need to be implemented (Aktag et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire post-semester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and <u>supported by the qualitative data</u>. The findings in this study enriched the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & MacDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been <u>carried outdone</u> to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the rResearch conducted by Tosriadi et al. (2018); for example, has focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (cf. Balcikanli, 2011). Another recent study <u>by</u> (Davis & MacDonald ($_{\tau}$ -2019) discovered that reflections focused on self-evaluation could <u>positively</u> impact the teachers' professional development. This study also tended to focus on one element of regulation of cognition, i.e., evaluation (cf. Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-service teachers to possess metacognition in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in the teaching performance. This study indicated that increased metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (cf. Alkam & Erdem, 2014).

The current research partly fill<u>s</u>ed the gap and enrich<u>es_ed</u>-other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017) in that. In the discovery process, it used a more comprehensive metacognitive awareness inventory (see Balcikanli, 2011). It-<u>The MALT</u> also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (cf. Amalia et al., 2020; Arslan, 2019; Davis & MacDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (cf. Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusions

This study provides significant evidence of the PSETs'- positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them to prepare strategies and materials to cope with <u>'</u>the unexpected'_ in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. <u>F-acilitated through explicit reflections</u>. It was evident in this research that reflections could be utilized to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students. Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and in-service teachers.

Limitations

This research was conducted for a short period of only (four months). This study did not

collect data about the impacts of teachers' and peers' feedback on students' reflections and

metacognitive awareness in teaching.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the

Centrer for Research and Community Service (LPPM), Sanata Dharma University, Indonesia

References

- Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of pre-service female teachers in Ajman University in UAE. *Procedia - Social and Behavioral Sciences*, 174, 560 – 567. https://doi.org/10.1016/j.sbspro.2015.01.707
- Aktag, I., Semsek, O., & Tuzcuoglu, S. (2017). Determination metacognitive awareness of physical education teachers. *Journal of Education and Training Studies*, 5(9), 63-69. http://dx.doi.org/10.11114/jets.v5i9.2511
- Alkam, F; & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. *Procedia - Social and Behavioral Sciences*, 143, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475
- Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. *European Journal of Educational Research*. 10(1), 127-143. https://doi.org/10.12973/eu-jer.10.1.127
- Amalia, L.L., Widiati, U., Basthomi, Y., & Cahyono, B.Y. (2020). Reflective practice on lesson planning among EFL teacher educators. *Indonesian Journal of Applied Linguistics*, 10(1), 53-160. https://doi.org/10.17509/ijal.v10i1.25025
- Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*, 35(6), 117-132. https://doi.org/10.14221/ajte.2010v35n6.3
- Arslan, F.Y. (2019): Reflection in pre-service teacher education: Exploring the nature of four EFL pre-service teachers' reflections. *Reflective Practice*, 20(1), 111-124. https://doi.org/10.1080/14623943.2018.1564652
- Bakar A.Y.A; Amat, S., & Mahmud, M.I. (2019). Issues and challenges of 21 century teaching and learning: The <u>Mmalaysian experience</u>. *International Journal of Management and Applied Science*,5(12), 6-11. http://iraj.doionline.org/dx/IJMAS-IRAJ-DOIONLINE-16761
- Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). *Electronic Journal of Research in Educational Psychology*, 9(3), 1309-1332. http://dx.doi.org/10.25115/ejrep.v9i25.1620
- Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading strategies among students at International Burch University: A case study. *European Journal of Contemporary Education*, 6(4), 645-655. https://doi.org/10.13187/ejced.2017.4.645
- Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in current and future principals. School Leadership Review, 12(2),4, 23-31.

https://scholarworks.sfasu.edu/slr/vol12/iss2/4

- Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed method-theory and practice. Sequential, explanatory approach. *International Journal of Quantitative and Qualitative Research Methods*, 5, 10–27. https://www.eajournals.org/wp-content/uploads/Mixed-Methods-Theory-and-Practice.-Sequential-Explanatory-Approach.pdf
- Chang, B. (2019). Reflection in learning. *Online Learning*, 23(1), 95-110. http://dx.doi.org/10.24059/olj.v23i1.1447
- Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension by vocational college students. *English Language Teaching*, 13(4), 127-139. https://doi.org/10.5539/elt.v13n4p127
- Cresswell, J.W., & Clark, V.L.P. (2017). Designing and conducting mixed methods research (3rd ed.). Sage.
- Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of ESL freshmen: A sequential explanatory mixed design. *TESOL International Journal*, 15(1), 20-30. https://eric.ed.gov/?id=EJ1257215
- Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Selfassessment through a standards-based appraisal process. *Reflective Practice*, 20(10), 125-141. https://doi.org/10.1080/14623943.2019.1569508
- de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive learning and the development of higher-order thinking skills. *Journal of University Teaching & Learning Practice, 16*(3), 1-17. https://doi.org/10.53761/1.16.3.3
- Fakhomah, D.N., & Utami, M.S. (2019). Pre-service English teacher perception about higher order thinking skills (HOTS) in the 21st century learning. *International Journal of Indonesian Education and Teaching*, 3(1), 41-49. https://doi.org/10.24071/ijiet.2019.030104
- Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school on pedagogical formation program in Turkey. *European Journal of Educational Research*, 8(2), 395-407. https://doi.org/10.12973/eu-jer.8.2.395
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitivedevelopmental inquiry. *American Psychologist*, 34(10), 906-911. https://psycnet.apa.org/doi/10.1037/0003-066X.34.10.906
- Fox, R.K.; Dodman, S. & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: developing critical reflective capacity in teachers and teacher educators, *Reflective Practice*, 20(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124
- Gabrijelčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional competences: A study among student teachers and students in education science in Slovenia. *European Journal of Educational Research*, 10(4), 2033-2044. https://doi.org/10.12973/eu-jer.10.4.2033
- Gibson, W., & Brown, A. (2009). Working with qualitative data. Sage.
- Gopinath, L.S. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. *IOSR Journal of Research & Method in Education*, 4(Ver.V), 33-35. https://www.iosrjournals.org/iosr-jrme/papers/Vol-4%20Issue-4/Version-5/D04453335.pdf

Hamiddin, & Saukah, A. (2020) Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. *Indonesian Journal of Applied Linguistics*, 9(3), 608-615. https://doi.org/10.17509/ijal.v9i3.23211

- Hermagustiana, I., Hamra, A., Rahman, A.Q., & Salija, K. (2017). Reflection of teacher cognition in EFL vocabulary instructional practices. *International Journal of English Linguistics*, 7(5), 34-45. http://dx.doi.org/10.5539/ijel.v7n5p34
- Holzberger, D., Praetorius, A.K., Seidel, T., and Kunter, M. (2019). Identifying effective

Formatted: English (United States)

Formatted: English (United States)

Formatted: Font: Times New Roman

teachers: The relation between teaching profiles and students' development in achievement and enjoyment. *European Journal of Psychology of Education*, 34, 801–823. https://doi.org/10.1007/s10212-018-00410-8

- Kelle, U., Kühberger, C. and Bernhard, R. (2019). How to use mixed-methods and triangulation designs: An introduction to history education research. *History Education Research Journal*, 16(1), 5–23. https://doi.org/10.18546/HERJ.16.1.02.
- Külekçi, G. (2018). Identifying the perceptions of prospective English language teachers of characteristics of effective teachers: Who is the ideal teacher? *Novitas-ROYAL (Research on Youth and Language), 12*(1), 1-15. https://eric.ed.gov/?id=EJ1177690
- Lupascu, A.R., Pânisoară, G, & Pânisoară, I.O. (2014). Characteristics of effective teacher. Procedia - Social and Behavioral Sciences, 127, 534 – 538. https://eric.ed.gov/?id=EJ1177690
- Mattew, P., Mathew, P., & Peechattu, P.J. (2017). Reflective practices: A means to teacher development. Asia Pacific Journal of Contemporary Education and Communication Technology (APJCECT), 3(1), 126-131. https://doi.org/10.17509/ijal.v10i3.31752
- Author. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. *Humaniora*, 31(1), 92-101. http://dx.doi.org/10.22146/jh.v31i1.37295
- Mitana, J.M.V., Muwagga, A.M, & Ssempala, C. (2018). Assessment of higher order thinking skills: A case of Uganda primary leaving examinations. *African Educational Research Journal*, 6(4), pp. 240-249. http://dx.doi.org/10.30918/AERJ.64.18.083
- Nurhapsari A, & Author. (2019). Motivation to learn English: Why Indonesian adult learners join a community of interest. Anima Indonesian Psychological Journal, 34(2), 65-75. https://doi.org/10.24123/aipj.v34i2.2202-
- Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. *Journal* of Education and Practice, 8(5), 81-86. https://eric.ed.gov/?id=EJ1132965
- Ong, W.A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL pre-service teachers. *Indonesian Journal of Applied Linguistics*, 9(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222
- Oxford, R. L. (2017). Teaching and researching language learning strategies: Self-regulation in context. Routledge.
- Palantis, N.J., Mohamed, A., Ibrahim, A.S.M, Ismail, S.H., Anuar, N.K., Marof, A.M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. https://doi.org/10.23917/varidika.v29i2.5629
- Poedjiastutie, D, Akhyar, F., Hidayati, D, & Gasmi, F.N. (2018). Does curriculum help students to develop their English competence?: A case in Indonesia. Arab World English Journal (AWEJ), 9(2),175-185. https://dx.doi.org/10.24093/awej/vol9no2.12
- Schraw, G., & Dennison, R.S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475.
 - https://psycnet.apa.org/doi/10.1006/ceps.1994.1033
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. *European Journal of Educational Research*, 10(2), 629-640. https://doi.org/10.12973/eu-jer.10.2.629
- Soodla, P., Jogi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education*, 32(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x.
- SPSS Inc. Released 2008. SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc.
- Subia, G., & Marcos, M., Pascual, L., Tomas, A., & Liangco, M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of science,

Formatted: Font: Not Italic

Formatted: English (United States)

technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*. 62(3), 261-268.

https://www.researchgate.net/publication/342762567

1

Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, 13(3), 1-14. http://dx.doi.org/10.29333/iji.2020.13325a

Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers' reflection as a pathway to develop teacher professionalism. *International Online Journal of Education and Teaching (IOJET)*, 5(4), 921-932. https://files.eric.ed.gov/fulltext/EJ1250545.pdf

Utami, D.R.T., Pranoto, Y.K.S., Latiana, L. & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, 10(2), 537-551. https://doi.org/10.12973/eu-jer.10.2.537

Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, 3(2), 254-262. https://doi.org/10.4304/tpls.3.2.254-262

Appendix

Metacognitive Awareness Inventory in Teaching

No	
	Statements
	know what skills are most important
	have control over how well I teach.
	know what I am expected to teach.
	try to use teaching techniques that worked in the past.
	have a specific reason for choosing each teaching technique in class.
	am aware of what teaching techniques I use while I am teaching.
Proc8 I	use helpful teaching techniques automatically.
Con9 I	use my strengths to compensate for my weaknesses in my teaching.
	can motivate myself to teach when I really need to teach.
	use different teaching techniques depending on the situation.
Con12 I	know when each teaching technique I use will be most effective.
Plan13 I	pace myself while I am teaching in order to have enough time.
Plan14 I	set my specific teaching goals before I start teaching.
Plan15 I	ask myself questions about the teaching materials I am going to use.
Plan16 I	organize my time to best accomplish my teaching goals.
Mon17 I	ask myself periodically if I meet my teaching goals while I am teaching.
Mon18 I	find myself assessing how useful my teaching techniques are while I am
te	eaching.
Mon19 I	check regularly to what extent my students comprehend the topic while I am
	eaching.
Mon20 I	ask myself questions about how well I am doing while I am teaching.
Eval21 I	ask myself how well I have accomplished my teaching goals once I am finished.
Eval22 I	ask myself if I could have used different techniques after each teaching
	experience.
	After teaching a point, I ask myself if I ²²² d teach it more effectively next time.
	ask myself if I have considered all possible techniques after teaching a point.

Source: Balcikanli, E. (2011).

Γ

Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections

Mbato & Triprihatmini/ Pre-service English teachers' metacognitive awareness in teaching through reflections

Concilianus Laos Mbato 1*, Sanata Dharma University, Indonesia, https://orcid.org/

0000-0003-0284-3557, cons@usd.ac.id

Veronica Triprihatmini 2, Sanata Dharma University, Indonesia, https://orcid.org/

0000-0003-0118-043X, v.triprihatmini@usd.ac.id

* Corresponding Author

Corresponding author's institutional address: cons@usd.ac.id

Authorship Contribution Statement

Mbato: Conceptualization, design, data acquisition, data analysis/interpretation, drafting manuscript, critical revision of manuscript, statistical analysis, securing funding, admin, technical or material support, supervision, final approval.

Triprihatmini: Data acquisition, securing funding, admin, technical or material support, supervision, and final approval.

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, few studies have investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study aimed to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching. Mixed-methods research was conducted to collect quantitative and qualitative data from 45 pre-service English teachers (PSETs) in two Micro Teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD) focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness in teaching increased post-semester. They also admitted the positive contributions of reflections in enhancing their metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Intensive preparation and rigorous teaching practice in college are required in order to be able to teach effectively since teachers cannot give what they do not have (Okogbaa, 2017). The professional development of preservice English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper begins by examining the subject matter. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. One of the tools to empower teachers' metacognitive awareness in teaching is reflective practice. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness.

Teachers face complex challenges in actual classroom teaching, ranging from the teaching workload, big class size, and time limitations (Al-Shaboul et al., 2020). Other challenges include who assesses teachers' competence and performance (Utami et al., 2021). Accordingly, they need strong guidance from their mentors to face the challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2014; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (cf. Bakar et al., 2019; Filiz & Durnali, 2019, Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have examined pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-development. Another study (Holzberger et al., 2019) involving 3,483 high school students and their 155 mathematics teachers revealed that high-quality teaching corresponds with students' achievement but does not predict their excitement. A recent study (Senel, 2021) of four Turkish English Language Teaching (ELT) students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good quality teaching. The demand for teachers to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana, Muwagga, and Ssempala (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% related to HOTS. Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020) revealed the low level of HOTS in mathematics subjects. A similar result was found in a study of student science teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities. This study urges lecturers to promote independent learning to students. However, training students to become independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah and Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (cf. Flavell, 1979). Several recent studies have acknowledged the impacts of metacognition on students' learning and success (Bećirovic et al., 2017; Cao & Lin, 2020; Oxford, 2017).

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interests in teachers' metacognitive awareness in teaching (Abdellah, 2015; Aktag, Semsek, & Tuzcuoglu, 2017; Alkam & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkam and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on their strategies to increase their metacognitive awareness in teaching performance. Other researchers (Aktag et al., 2017) argued that teachers' metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness training for pre-service and in-service teachers. Similarly, research on primary school teachers in Puchong, Selangor (Palantis et al., 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practised regularly and intentionally for the teachers' teaching to impact students' learning positively.

Considering its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011) Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of

cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of 'the why and when' to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011, p. 1,032) argued that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching.

Reflection

Reflections are the self-conscious activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (cf. Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019, p. 13). Similarly, Davis and MacDonald (2019) found that teachers' reflections focusing on self-evaluation could positively impact their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & MacDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers. Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge (declarative knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in English as a Foreign Language (EFL) vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching EFL vocabulary. This research, however, did not explore how reflections could be used to increase the teachers' cognition in EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive awareness in teaching: lesson planning. They demonstrated the positive impact of reflective practice on the student teachers' lesson planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practise reflections during teaching. However, they should be coached on strategies to effectively and successfully engage in these reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in teaching (cf. Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centred teaching. However, many teachers experience difficulty

in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st century skills learning in many classes in the primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers could not teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (cf. Beziat et al., 2018; Mattew et al., 2017) and student learning (Author, 2019; Soodla et al., 2017).

Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

How can reflections empower Indonesian pre-service English teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Methodology

Research Design

This research adopted a mixed-methods approach where quantitative and qualitative data were collected (cf. Creswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (cf. Zohrabi, 2013).

Sample and Data Collection

Using purposive sampling, thirty-six PSETs enrolled in two Micro Teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. Since this was a practicum class, PSETs learned about teaching and practised teaching in small groups and with the whole class. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. As mentors for the class for more than ten years, we decided to introduce the Metacognitive Awareness Inventory in Teaching (MAIT) from Balcikanli (2011). This inventory was comprehensive, covering all of the teachers'_metacognition elements. The class met twice a week, with each meeting lasting 100 minutes.

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to complete them. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in

teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition and the second on the regulation of cognition. Statements on the knowledge of cognition constituted four items on declarative Knowledge (Decl1-Decl4), four items on procedural Knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted from Balcikanli (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching.

Qualitative data were gathered from students' answers to the questions about the dissemination of MAIT, summative reflections, and focus group discussions (FGDs) on the elements of metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they practiced teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination were gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. The FGDs involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e.: (1) the benefits of metacognitive awareness in teaching; (2) the difficulties in implementing

metacognitive awareness in teaching; and (3) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyze the participants' responses about their metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Author's (2019) mean category was used to interpret the mean for the expression motivation replaced with perception.

Table 1. Mean Range for Perception

Mean Range	Interpretation
3.68 - 5.00	A high degree of perception
2.34 - 3.67	A moderate degree of perception
1.00 -2 .33	A low degree of perception

A paired-samples t-test was performed using SPSS 17 (SPSS Inc., Chicago, IL) to determine whether there was a significant difference in students' perceptions about their metacognitive awareness in teaching in the post-semester.

Qualitative data analyses from reflections and FGD focused on finding key issues in students' answers (cf. Gibson & Brown, 2009) about their metacognitive awareness in teaching, mainly on whether or not there were indications of improvements.

Results

Quantitative Data

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses.

ReDecl1Reflections increased my awareness of the strengths and weaknesses in teaching.4.310.62ReDecl2Reflections helped me to know the most important skills4.310.55ReDecl4Reflections helped me to have control over teaching Reflections helped me to have a specific reason for using a teaching technique4.190.69ReProc5Reflections helped me to have a specific reason for using a teaching technique4.040.77ReProc7Reflections helped me to have an awareness of the teaching techniques4.150.78ReProc8Reflections helped me to nave an awareness of the teaching techniques3.680.63ReC010Reflections helped me to use different teaching techniques as required by the situation.4.230.59ReC011Reflections helped me to use different teaching technique was most effective.3.960.82RePlan13Reflections helped me to ask questions about the teaching materials4.270.60RePlan16Reflections helped me to ask questions about the teaching materials4.190.63ReMon17Reflections helped me to ask periodically if teaching goals were being met4.210.52ReMon18Reflections helped me to ask myself about teaching technique swere4.190.63Reflections helped me to ask myself for more effective comprehension4.190.63Reflections helped me to ask myself for more effective subsequent teaching4.230.59Reflections helped me to ask myself for more effective subsequent teaching4.210.50<	Table 2. Students' perceptions of the role of reflections in their metacognitive awareness									
weaknesses in teaching.4.310.02ReDecl2Reflections helped me to know the most important skills4.310.55ReDecl3Reflections helped me to have control over teaching4.040.53ReDock4Reflections helped me to use proven teaching expectations4.310.47ReProc5Reflections helped me to have a specific reason for using a teaching technique4.040.77ReProc7Reflections helped me to have an awareness of the teaching techniques4.040.77ReProc8Reflections helped me to awareness of the teaching techniques4.150.78ReC010Reflections helped me to motivate myself when having to teach4.190.63ReC011Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReC012Reflections helped me to pace myself in teaching technique was most effective.4.310.62RePlan13Reflections helped me to ask questions about the teaching teaching coals.4.120.59RePlan16Reflections helped me to ask periodically if teaching goals4.120.50Reflortins helped me to ask specific teaching goals4.120.59Reflortins helped me to ask myself about teaching teaching coals.4.120.59Reflections helped me to ask specific teaching goals4.120.50Reflections helped me to ask specific teaching goals4.120.59Reflections helped me to ask specific teaching goals4.120.59Reflections helped me to ask specific teaching goa	No.	Statement	Mean	Std. Dev						
ReDecl2Reflections helped me to know the most important skills4.310.55ReDecl3Reflections helped me to have control over teaching4.040.53ReDecl4Reflections helped me to use proven teaching techniques4.190.69ReProc6Reflections helped me to have a specific reason for using a teaching technique4.040.77ReProc7Reflections helped me to have an awareness of the teaching techniques4.040.77ReProc8Reflections helped me to nave an awareness of the teaching techniques3.680.63ReC010Reflections helped me to compensate strengths for weaknesses4.190.63ReC011Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReC012Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to set specific teaching goals before teaching.4.220.50RePlan14Reflections helped me to ask questions about the teaching materials4.190.69RePlan15Reflections helped me to ask periodically if teaching goals4.120.50Reflections helped me to ask periodically if teaching goals.4.120.50Reflections helped me to ask periodically if teaching goals4.120.52Reflections helped me to ask periodically if teaching goals4.120.59Reflections helped me to ask myself about teaching goals4.120.59Reflections helped me to ask myself about teaching goals4.120.59Re	ReDecl1		4.31	0.62						
ReDecl3Reflections helped me to have control over teaching ReDecl44.040.53ReDecl4Reflections helped me to know the teaching expectations Reflections helped me to use proven teaching techniques4.190.69ReProc7Reflections helped me to have a specific reason for using a teaching technique4.040.77ReProc7Reflections helped me to have an awareness of the teaching techniques4.150.78ReProc8Reflections helped me to aware awareness of the teaching techniques3.680.63ReC079Reflections helped me to compensate strengths for weaknesses4.190.63ReC010Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReC011Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to set specific teaching goals before teaching4.190.60RePlan14Reflections helped me to ask questions about the teaching materials4.270.60RePlan15Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon17Reflections helped me to ask specific teaching for teaching were4.120.52ReMon18Reflections helped me to ask myself if different teaching accomplehension3.850.61ReMon20Reflections helped me to ask myself about teaching goals accomplehension3.850.73ReEval21Reflections helped me to ask myself if different techniques accomplehension3	ReDecl2	•	4.31	0.55						
ReDecl4Reflections helped me to know the teaching expectations4.310.47ReProc5Reflections helped me to use proven teaching techniques4.190.69ReProc7Reflections helped me to have a specific reason for using a teaching technique4.040.77ReProc7Reflections helped me to have an awareness of the teaching techniques4.150.78ReProc8Reflections helped me to compensate strengths for weaknesses4.190.63ReC0n10Reflections helped me to motivate myself when having to teach4.230.59ReC0n11Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReC0n12Reflections helped me to set specific teaching technique was most effective.3.960.82RePlan13Reflections helped me to aset specific teaching materials4.190.60RePlan15Reflections helped me to aset specific teaching goals before teaching4.120.50ReMon17Reflections helped me to ask questions about the teaching materials4.120.52ReMon18Reflections helped me to assess how useful the teaching techniques were3.850.61ReMon20Reflections helped me to ask myself if different techniques acomplehension3.850.73ReEval21Reflections helped me to ask myself if different techniques acomplehension3.850.73ReEval22Reflections helped me to ask myself for more effective subsequent teaching3.850.61Reflexal22Reflections helped me to as		1 1								
ReProc5Reflections helped me to use proven teaching techniques4.190.69ReProc6Reflections helped me to have a specific reason for using a teaching technique4.040.77ReProc7Reflections helped me to have an awareness of the teaching techniques4.150.78ReProc8Reflections helped mey automatic use of teaching techniques3.680.63ReC019Reflections helped me to compensate strengths for weaknesses4.190.63ReC011Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReC012Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to ask questions about the teaching materials4.310.62RePlan16Reflections helped me to ask questions about the teaching materials4.190.69ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.59ReMon18Reflections helped me to ask periodically if teaching goals meteniques were4.120.52ReMon19Reflections helped me to ask myself about teaching accomprehension4.190.49ReEval22Reflections helped me to ask myself about teaching goal accomprehension4.190.57ReEval23Reflections helped me to ask myself about teaching goal accomprehension4.190.59ReEval23Reflections helped me to ask myself for more effective subsequent teaching3.850.61ReEval22Reflect										
ReProc6Reflections helped me to have a specific reason for using a teaching technique4.040.77ReProc7Reflections helped me to have an awareness of the teaching techniques4.150.78ReProc8Reflections helped me to have an awareness of the teaching techniques3.680.63ReC0n9Reflections helped me to compensate strengths for weaknesses4.190.63ReCon10Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReCon12Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to ask questions about the teaching materials4.310.62RePlan16Reflections helped me to ask questions about the teaching materials4.190.69ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped me to ask specific teaching goals teaching goals.4.120.52ReMon19Reflections helped me to ask specific teaching goals teaching goals.4.120.52ReMon18Reflections helped me to ask periodically if teaching goals were being met4.190.49ReEval21Reflections helped my self-questioning while teaching accomprishment4.190.57ReEval22Reflections helped me to ask myself about teaching goal accomprishment3.850.61ReEval23Reflections helped me to ask myself for more effective subsequent teaching3.850.73 <t< td=""><td></td><td></td><td></td><td></td></t<>										
ReProc7Reflections helped me to have an awareness of the teaching techniques4.150.78ReProc8Reflections helped my automatic use of teaching techniques weaknesses3.680.63ReC010Reflections helped me to compensate strengths for weaknesses4.190.63ReCon11Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReCon12Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to pace myself in teaching materials4.310.62RePlan14Reflections helped me to ask questions about the teaching materials4.190.60RePlan15Reflections helped me to ask questions about the teaching materials4.120.50ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped me to assess how useful the teaching comprehension3.850.61ReMon20Reflections helped my regular checking of students' comprehension3.850.73ReEval21Reflections helped me to ask myself about teaching goal accomplishment3.850.73ReEval22Reflections helped me to ask myself for more effective subsequent teaching3.850.63ReMon18Reflections helped me to ask myself for more effective subsequent teaching3.850.61Reflections helped me to ask myself for more effective subsequent teaching3.850.63ReEval22Reflectio	ReProc6	Reflections helped me to have a specific reason for using a		0.77						
ReCon9Reflections helped me to compensate strengths for weaknesses4.190.63ReCon10Reflections helped me to motivate myself when having to teach4.230.59ReCon11Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReCon12Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to pace myself in teaching materials4.120.50RePlan14Reflections helped me to ask questions about the teaching materials4.270.60RePlan15Reflections helped me to organize a time to accomplish teaching goals.4.120.52ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.59ReMon18Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon19Reflections helped my regular checking of students' comprehension3.850.61ReEval21Reflections helped me to ask myself about teaching goal accomplishment3.850.73ReEval22Reflections helped me to ask myself for more effective subsequent teaching3.850.63ReEval24Reflections helped me to ask myself for more effective subsequent teaching4.150.54	ReProc7	Reflections helped me to have an awareness of the teaching	4.15	0.78						
weaknesses4.190.63ReCon10Reflections helped me to motivate myself when having to teach4.230.59ReCon11Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReCon12Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to pace myself in teaching technique was most effective.4.110.62RePlan13Reflections helped me to set specific teaching goals before teaching4.270.60RePlan15Reflections helped me to ask questions about the teaching materials4.190.69ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon19Reflections helped my regular checking of students' comprehension3.850.61ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself for more effective subsequent teaching3.850.73ReEval24Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63						
teach4.230.39ReCon11Reflections helped me to use different teaching techniques as required by the situation.4.000.75ReCon12Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to pace myself in teaching teaching4.310.62RePlan14Reflections helped me to set specific teaching goals before teaching4.420.50RePlan15Reflections helped me to ask questions about the teaching materials4.270.60RePlan16Reflections helped me to organize a time to accomplish teaching goals.4.190.69ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped my regular checking of students' comprehension3.850.61ReMon20Reflections helped me to ask myself about teaching accomplishment4.190.57ReEval21Reflections helped me to ask myself for more effective subsequent teaching3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReCon9	· · · ·	4.19	0.63						
as required by the situation.4.000.75ReCon12Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to pace myself in teaching teaching4.310.62RePlan14Reflections helped me to set specific teaching goals before teaching4.420.50RePlan15Reflections helped me to ask questions about the teaching materials4.270.60RePlan16Reflections helped me to organize a time to accomplish teaching goals.4.190.69ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon20Reflections helped my regular checking of students' comprehension3.850.61ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques subsequent teaching3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReCon10	· · ·	4.23	0.59						
ReCon12Reflections helped me to know when each teaching technique was most effective.3.960.82RePlan13Reflections helped me to pace myself in teaching RePlan144.310.62RePlan14Reflections helped me to set specific teaching goals before teaching4.310.62RePlan15Reflections helped me to set specific teaching goals before materials4.420.50RePlan16Reflections helped me to ask questions about the teaching materials4.270.60ReMon17Reflections helped me to ask periodically if teaching goals were being met4.190.69ReMon18Reflections helped me to ask periodically if teaching goals were being met4.120.50ReMon19Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon20Reflections helped my regular checking of students' comprehension3.850.61ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques could have been used.3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReCon11		4.00	0.75						
RePlan13Reflections helped me to pace myself in teaching4.310.62RePlan14Reflections helped me to set specific teaching goals before teaching4.420.50RePlan15Reflections helped me to ask questions about the teaching materials4.270.60RePlan16Reflections helped me to organize a time to accomplish teaching goals.4.190.69ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon19Reflections helped my regular checking of students' comprehension3.850.61ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques could have been used.3.850.73ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReCon12		3.96	0.82						
RePlan14Reflections helped me to set specific teaching goals before teaching4.420.50RePlan15Reflections helped me to ask questions about the teaching materials4.270.60RePlan16Reflections helped me to organize a time to accomplish teaching goals.4.190.69ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon19Reflections helped my regular checking of students' comprehension3.850.61ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques subsequent teaching3.850.73ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	RePlan13	1	4.31	0.62						
materials4.270.60RePlan16Reflections helped me to organize a time to accomplish teaching goals.4.190.69ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon19Reflections helped my regular checking of students' comprehension3.850.61ReMon20Reflections helped me to ask myself about teaching accomplishment4.190.49ReEval21Reflections helped me to ask myself if different techniques could have been used.3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching3.850.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	RePlan14	Reflections helped me to set specific teaching goals before	4.42	0.50						
teaching goals.4.190.69ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon19Reflections helped my regular checking of students' comprehension3.850.61ReMon20Reflections helped my self-questioning while teaching accomplishment4.190.49ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques subsequent teaching3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	RePlan15	1 I E	4.27	0.60						
ReMon17Reflections helped me to ask periodically if teaching goals were being met4.120.52ReMon18Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon19Reflections helped my regular checking of students' comprehension3.850.61ReMon20Reflections helped my self-questioning while teaching accomplishment4.190.49ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques could have been used.3.850.63ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	RePlan16		4.19	0.69						
ReMon18Reflections helped me to assess how useful the teaching techniques were4.120.59ReMon19Reflections helped my regular checking of students' comprehension3.850.61ReMon20Reflections helped my self-questioning while teaching accomplishment4.190.49ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques could have been used.3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReMon17	Reflections helped me to ask periodically if teaching goals	4.12	0.52						
ReMon19Reflections helped my regular checking of students' comprehension3.850.61ReMon20Reflections helped my self-questioning while teaching accomplishment4.190.49ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques could have been used.3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReMon18	Reflections helped me to assess how useful the teaching	4.12	0.59						
ReMon20Reflections helped my self-questioning while teaching4.190.49ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques could have been used.3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReMon19	Reflections helped my regular checking of students'	3.85	0.61						
ReEval21Reflections helped me to ask myself about teaching goal accomplishment4.190.57ReEval22Reflections helped me to ask myself if different techniques could have been used.3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReMon20	1	4.19	0.49						
ReEval22Reflections helped me to ask myself if different techniques could have been used.3.850.73ReEval23Reflections helped me to ask myself for more effective subsequent teaching4.350.63ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.150.54	ReEval21	Reflections helped me to ask myself about teaching goal	4.19	0.57						
ReEval24Reflections helped me to ask myself if all possible techniques had been considered4.330.034.150.54	ReEval22	Reflections helped me to ask myself if different techniques	3.85	0.73						
ReEval24 Reflections helped me to ask myself if all possible 4.15 0.54 techniques had been considered	ReEval23	Reflections helped me to ask myself for more effective	4.35	0.63						
	ReEval24	Reflections helped me to ask myself if all possible	4.15	0.54						
		Average	4.14	0.62						

Table 2. Students' perceptions of the role of reflections in their metacognitive awareness

Adapted from Balcikanli (2011).

As indicated in Table 2, students generally admitted the positive contributions of reflections in helping them to develop their metacognitive awareness in teaching. The first

four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with the mean range between 3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (cf. Nurhapsari & Author, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

Table 3. Mean comparison of students' responses to metacognitive awareness statements

in teaching.

No	Statements	Pre-sei	Pre-semester		Post-semester		
		Mean	Std. Dev	Mean	Std. Dev	Increase	
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	0.77	
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	0.75	
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	1.33	
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	0.48	
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	0.54	
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	0.59	
Proc7	Awareness of the teaching techniques while teaching.	3.1	0.91	3.67	0.73	0.57	
Proc8	Using teaching techniques automatically.	2.79	0.92	4.1	0.55	1.31	
Con9	Compensating strengths for weaknesses	3.26	0.91	3.77	0.77	0.51	
Con10	Being able to motivate oneself when having to teach	3.15	0.96	3.82	0.68	0.67	
Con11	Using different teaching techniques as required by the situation.	3.33	0.95	3.67	0.66	0.34	
Con12	Knowing when each teaching technique is most effective.	2.77	1.01	3.77	0.62	1.00	
Plan13	Pacing oneself in teaching to have enough time.	3.31	0.92	3.67	0.57	0.36	
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67	
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59	
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26	
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56	
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31	
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95	
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23	
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43	

No	Statements	Pre-se	mester	Post-se	emester	Mean Increase	
		Mean	Std. Dev	Mean	Std. Dev		
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82	
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52	
Eval24	Asking oneself if all possible techniques have been considered	3.15	0.70	3.74	0.54	0.59	
	Average	3.19	0.89	3.90	0.62	0.71	

Std. Dev, standard deviation.

The questionnaire was adopted from Balcikanli (2011), and its complete version can be seen in Appendix 1.

The Table 3 above shows PSETs' responses to their metacognitive awareness in teaching in the pre-semester and post-semester. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase (1.33). The second highest response was the PSETs' awareness of their strengths and weaknesses in teaching (Decl1/ 0.77 mean increase) and their knowledge of the most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by PSETs' response to statement Pro6, which asked whether they had a particular reason for adopting a teaching technique in the classroom (Pro6/0.59 mean increase), and statement Pro7, which asked about their awareness of what teaching methods they used while teaching

(Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase). Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

Parallel with their increased knowledge of cognition, students agreed that they had improved their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, including time organization to accomplish their teaching goals (Plan16/with the highest mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

Similarly, students demonstrated their agreement with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that they found themselves assessing how useful their teaching techniques were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their

comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

Additionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted having slight improvement in their evaluation ability, as indicated in statements Eval23 and Eval21. Statement Eval23 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean increase for this statement was 0.52. Statement Eval21, which focused on whether they asked themselves if they had accomplished their teaching goals after teaching, demonstrated a mean increase of 0.43.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.

							Std.	
Mean		Ν	S	td. Dev.		Erro	r Me	an
3.1944444444	24	.22133789	1094002		.045180	40782	27002	
3.9081196581	3.908119658119657		.23992927	2690547		.048975357704077		
		T 11 5 D	10 1					
		Table 5. Pai	1		ons			
		N	Correla	tion		Sig.		
Pair 1 Pre-semester	· & Post-	- 24		.031		.887		
semester								
Std. Dev, standard dev	viation.							
		Tabl	e 6. Paired	Samples Te	est			
		Pai	red Differe	nces				
		95	5% Confide	ence Interv	val of the			
				Differenc	e			
		St	d. Error					
	Mean	Std. Dev.	Mean	Lower	Upper	t	df	Sig. a- tailed)
Pair Pre-semester I Post-semester	71368	.32138	.06560	84 938	57797	-10.879	23	000
Std. Dev, standard dev	viation.							

Table 4. Paired Samples Statistics

A paired sample t-test was performed to determine students' perception of metacognitive awareness in teaching as the dependent variable measured pre-and post-semester. The results indicated a significant perceived increase between the pre-semester level, 3.19, standard deviation (SD) = .22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, p < .0.5. As a result, the null hypothesis was rejected, while the alternative hypothesis was accepted. It can be inferred that PSETs' perceived metacognitive awareness in teaching improved after participating in the research.

Qualitative Data

Qualitative data were collected through students' summative reflections and FGDs of the elements of metacognitive awareness in teaching. These activities were conducted after students had experienced teaching in the micro-teaching class for one month. Students practiced teaching their peers in small groups and the whole class in class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

1. Reflections on the dissemination of MAIT

The researchers disseminated the ideas of the metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise students' awareness of metacognition in teaching. For example, SO8 wrote:

I learn something new from metacognition which is very beneficial for me as prospective teacher in the future. Teacher should be able to aware that every student is unique with their own intelligent. Even identical twin are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plan that includes students various cognition. The second benefit was that it assisted them in understanding their strengths and weaknesses in

teaching. S01 reported:

After understanding metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher; how to open class that makes the students are full of spirit, how to deliver the materials that makes the students can apply it in their lives, how to manage the class that makes the condition of the class is full of excitement, and how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me in order to understand whether the teaching goals is reached or not and understand what has to be improved. Students also described four other benefits of MAIT, i.e., 1) Being more aware of the importance of teaching techniques; 2) Being more aware of possessing teaching skills; 3) Being more aware of knowing what to teach (Planning); and 4) being more aware of planning, monitoring and evaluating their teaching.

2. Summative Reflections

Reflections were a significant force in our efforts to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching. The researchers summed up key ideas and, when relevant, cited a small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT:

I am really excited because finally I did well in this course. I am proud of myself because at the beginning of this semester, I felt uncomfortable and not sure I can do teaching. But, now I become more confident in teaching and feel more challenged. The fact is being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware with anything about teaching before, while and after teaching.

Another student (S20) emphasized that MAIT helped her to compensate for her weak grammar with her cheerful personality in teaching. Understanding their strengths and weaknesses in teaching seemed to be one of the most important contributions of MAIT to many students. Similarly, S11 admitted, "In the final test teaching practice, my friends and

I have improved so much because we have applied MAIT, Higher Order Thinking, and

Bloom's Taxonomy." S28, in her long reflection constituting all aspects of MAIT, wrote:

I understand the materials that I am going to teach. I also remind myself that when I am teaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even the small things such as appearance and eye contact. I want to inspire my students to learn English and motivate them as well.

S17 described that the class had helped him understand teaching better. He reflected:

This class has given me a whole new world of college life. I got many experiences in this class especially how to teach something. Teaching is not easy but it is kind of challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparations that the teacher should prepare before they teach.

Most PSETs admitted that they had improved their declarative, procedural, and conditional knowledge in teaching. They also acknowledged regulating their teaching better through planning, monitoring, and evaluating. Their improvements are strengthened by the data gained in the FGDs.

3. Focus Group Discussions

FGD was conducted in small groups in class at the end of the semester. Individual students were given more than a week to write their reflections about the implementation of MAIT before the implementation of the FGDs. These FGDs discussed three main questions i.e.: (1) benefits of metacognitive awareness in teaching; (2) challenges in implementing metacognitive awareness in teaching; and (3) suggestions for the implementation of metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before, while, and after teaching. Before teaching, Group 1 asserted, "We can understand what

points that we have to prepare before teaching in the class." Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4 acknowledged:

When we are teaching we learn how to manage the time allocation in order to have enough time. We try to implement and organize the material well. The teacher knows and explaining the learning objectives and try to implement the teaching technique that chosen in class. Then, we know how to monitor our students by asking them questions to make sure they understand the materials. In teaching learning activity we try to evaluate ourselves by asking ourselves about how well we are doing while we are teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that

MAIT helped them to know the best teaching strategies for their students, the lack of their teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during,

and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses in the beginning of our teaching. To be reflective on what we have to improve and what we have improved. To be used to with classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the student's needs, understanding students' character, and handling the nervous feeling (Group 1). Group 4 mentioned the challenge in terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching challenged them to: (1) *"revise our lesson plan and the whole teaching; (2) find different*

techniques that will work better for the next teaching; and (3) ask ourselves how well we have accomplished our teaching goals once we are finished". Group 4 realized that metacognitive awareness used after teaching helped them "always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance".

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: (1) "Focus on each point of MAIT; and (2) Try to implement each point of MAIT in the learning activities". Group 3 came up with three suggestions, i.e.:

(1)The teachers should have list of teaching goals to be achieved; (2) The teachers should be aware of what their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching improved, consisting of declarative, procedural, and conditional knowledge, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept about teaching (cf. Balcikanli, 2011; Author, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Author, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledged that they had improved conditional knowledge in teaching, namely, knowing when, why, and with whom to use specific knowledge and skills (cf. Balcikanli, 2011; Author, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: 1) knowing their strengths to compensate for their weaknesses in teaching; 2) being able to motivate themselves to teach when they needed to teach; 3) being able to employ various teaching techniques as required by the situation; and 4) knowing when a teaching technique they used would be most productive.

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after participating in the research. An instance of this improvement was shown in PSETs'

response to statement 22. PSETs mentioned they asked themselves if they might have utilised other techniques after teaching (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the pre-semester level, 3.19, SD = .22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, p < .0.5).

The results from these quantitative data had much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGDs highlighted the considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in teaching:

I really excited because finally I did well in this course. I proud of myself because at the beginning of this semester, I felt uncomfortable and not sure I can do teaching. But, now I become more confident in teaching and feel more challenged. The fact is being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware with anything about teaching before, while and after teaching.

Group 1 asserted, "We can understand what points that we have to prepare before teaching in the class." PSETs also appreciated the benefits of becoming aware of their metacognition while teaching. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage the time well while teaching.

Findings in this study corroborated previous studies (see, e.g., Aktag et al., 2017; Gopinath, 2014; Palantis et al., 2017), which asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere. Additionally, the results indicate the importance of teachers learning strategies to effectively and successfully engage in reflective practices (Ong et al., 2020). While acknowledging that

metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and explicit training of metacognitive awareness for teachers need to be implemented (Aktag et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire post-semester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and supported by the qualitative data. The findings in this study enrich the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & MacDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (cf. Balcikanli, 2011). Another recent study by Davis & MacDonald (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study also tended to focus on one element of regulation of cognition, i.e., evaluation (cf. Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-

service teachers to possess metacognition in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in the teaching performance. This study indicated that increased metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (cf. Alkam & Erdem, 2014).

The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017). In the discovery process, it used a more comprehensive metacognitive awareness inventory (see Balcikanli, 2011). The MAIT also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (cf. Amalia et al., 2020; Arslan, 2019; Davis & MacDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (cf. Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusion

This study provides significant evidence of the PSETs' positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them to prepare strategies and materials to cope with 'the unexpected' in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in

evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. Facilitated through explicit reflections, possessing and displaying heightened metacognitive awareness in teaching could empower teachers, their teaching, and student learning. It was evident in this research that reflections could be utilized to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students.

Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and in-service teachers.

Limitations

This research was conducted for a short period of only four months. This study did not collect data about the impacts of teachers' and peers' feedback on students' reflections and metacognitive awareness in teaching.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the Centre for Research and Community Service (*LPPM*), Sanata Dharma University, Indonesia.

References

- Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of pre-service female teachers in Ajman University in UAE. *Procedia - Social and Behavioral Sciences*, 174, 560 – 567. https://doi.org/10.1016/j.sbspro.2015.01.707
- Aktag, I., Semsek, O., & Tuzcuoglu, S. (2017). Determination metacognitive awareness of physical education teachers. *Journal of Education and Training Studies*, 5(9), 63-69. http://dx.doi.org/10.11114/jets.v5i9.2511

- Alkam, F; & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. *Procedia - Social and Behavioral Sciences*, 143, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475
- Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. *European Journal of Educational Research*. 10(1), 127-143. https://doi.org/10.12973/eu-jer.10.1.127
- Amalia, L.L., Widiati, U., Basthomi, Y., & Cahyono, B.Y. (2020). Reflective practice on lesson planning among EFL teacher educators. *Indonesian Journal of Applied Linguistics*, 10(1), 53-160. https://doi.org/10.17509/ijal.v10i1.25025
- Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*, 35(6), 117-132. https://doi.org/10.14221/ajte.2010v35n6.3
- Arslan, F.Y. (2019): Reflection in pre-service teacher education: Exploring the nature of four EFL pre-service teachers' reflections. *Reflective Practice*, 20(1), 111-124. https://doi.org/10.1080/14623943.2018.1564652
- Bakar A.Y.A; Amat, S., & Mahmud, M.I. (2019). Issues and challenges of 21 century teaching and learning: The Malaysian experience. *International Journal of Management and Applied Science*,5(12), 6-11. http://iraj.doionline.org/dx/IJMAS-IRAJ-DOIONLINE-16761
- Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). *Electronic Journal of Research in Educational Psychology*, 9(3), 1309-1332. http://dx.doi.org/10.25115/ejrep.v9i25.1620
- Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading strategies among students at International Burch University: A case study. *European Journal of Contemporary Education*, 6(4), 645-655. https://doi.org/10.13187/ejced.2017.4.645
- Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in current and future principals. *School Leadership Review*, 12(2),4, 23-31. https://scholarworks.sfasu.edu/slr/vol12/iss2/4
- Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed method-theory and practice. Sequential, explanatory approach. *International Journal of Quantitative and Qualitative Research Methods*, 5, 10–27. https://www.eajournals.org/wp-content/uploads/Mixed-Methods-Theory-and-Practice.-Sequential-Explanatory-Approach.pdf
- Chang, B. (2019). Reflection in learning. *Online Learning*, 23(1), 95-110. http://dx.doi.org/10.24059/olj.v23i1.1447
- Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension by vocational college students. *English Language Teaching*, 13(4), 127-139. https://doi.org/10.5539/elt.v13n4p127
- Creswell, J.W., & Clark, V.L.P. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage.
- Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of ESL freshmen: A sequential explanatory mixed design. *TESOL International Journal*, 15(1), 20-30. https://eric.ed.gov/?id=EJ1257215
- Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Selfassessment through a standards-based appraisal process. *Reflective Practice*, 20(10), 125-141. https://doi.org/10.1080/14623943.2019.1569508
- de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive learning and the development of higher-order thinking skills. *Journal of University Teaching & Learning Practice, 16*(3), 1-17. https://doi.org/10.53761/1.16.3.3
- Fakhomah, D.N., & Utami, M.S. (2019). Pre-service English teacher perception about higher

order thinking skills (HOTS) in the 21st century learning. *International Journal of Indonesian Education and Teaching*, *3*(1), 41-49. *https://doi.org/10.24071/ijiet.2019.030104*

- Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school on pedagogical formation program in Turkey. *European Journal of Educational Research*, 8(2), 395-407. https://doi.org/10.12973/eu-jer.8.2.395
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitivedevelopmental inquiry. *American Psychologist*, 34(10), 906-911. https://psycnet.apa.org/doi/10.1037/0003-066X.34.10.906
- Fox, R.K.; Dodman, S. & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: developing critical reflective capacity in teachers and teacher educators, *Reflective Practice*, 20(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124
- Gabrijelčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional competences: A study among student teachers and students in education science in Slovenia. *European Journal of Educational Research*, 10(4), 2033-2044. https://doi.org/10.12973/eu-jer.10.4.2033
- Gibson, W., & Brown, A. (2009). Working with qualitative data. Sage.
- Gopinath, L.S. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. *IOSR Journal of Research & Method in Education*, 4(Ver.V), 33-35. https://www.iosrjournals.org/iosr-jrme/papers/Vol-4%20Issue-4/Version-5/D04453335.pdf
- Hamiddin, & Saukah, A. (2020) Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. *Indonesian Journal of Applied Linguistics*, 9(3), 608-615. https://doi.org/10.17509/ijal.v9i3.23211
- Hermagustiana, I., Hamra, A., Rahman, A.Q., & Salija, K. (2017). Reflection of teacher cognition in EFL vocabulary instructional practices. *International Journal of English Linguistics*, 7(5), 34-45. http://dx.doi.org/10.5539/ijel.v7n5p34
- Holzberger, D., Praetorius, A.K., Seidel, T., and Kunter, M. (2019). Identifying effective teachers: The relation between teaching profiles and students' development in achievement and enjoyment. *European Journal of Psychology of Education*, 34, 801– 823. https://doi.org/10.1007/s10212-018-00410-8
- Kelle, U., Kühberger, C. and Bernhard, R. (2019). How to use mixed-methods and triangulation designs: An introduction to history education research. *History Education Research Journal*, 16(1), 5–23. https://doi.org/10.18546/HERJ.16.1.02.
- Külekçi, G. (2018). Identifying the perceptions of prospective English language teachers on characteristics of effective teachers: Who is the ideal teacher? *Novitas-ROYAL (Research on Youth and Language), 12*(1), 1-15. https://eric.ed.gov/?id=EJ1177690
- Lupascu, A.R., Pânisoară, G, & Pânisoară, I.O. (2014). Characteristics of effective teacher. *Procedia - Social and Behavioral Sciences*, 127, 534 – 538. https://eric.ed.gov/?id=EJ1177690
- Mattew, P., Mathew, P., & Peechattu, P.J. (2017). Reflective practices: A means to teacher development. Asia Pacific Journal of Contemporary Education and Communication Technology (APJCECT), 3(1), 126-131. https://doi.org/10.17509/ijal.v10i3.31752
- Author. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. *Humaniora*, 31(1), 92-101. http://dx.doi.org/10.22146/jh.v31i1.37295
- Mitana, J.M.V., Muwagga, A.M, & Ssempala, C. (2018). Assessment of higher order thinking skills: A case of Uganda primary leaving examinations. *African Educational Research Journal*, 6(4), pp. 240-249. http://dx.doi.org/10.30918/AERJ.64.18.083
- Nurhapsari A, & Author. (2019). Motivation to learn English: Why Indonesian adult learners

join a community of interest. Anima Indonesian Psychological Journal, 34(2), 65-75. https://doi.org/10.24123/aipj.v34i2.2202

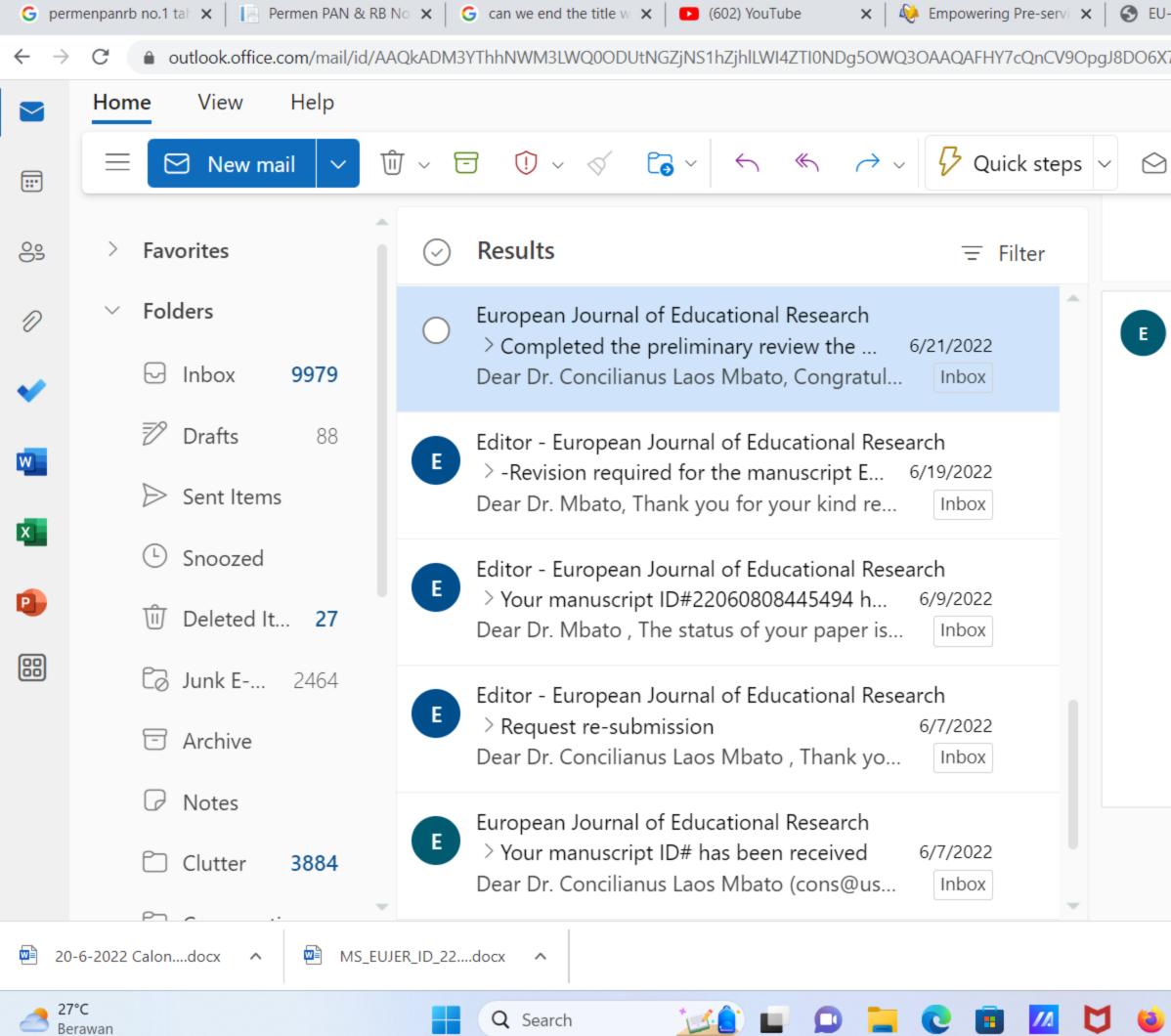
- Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. *Journal* of Education and Practice, 8(5), 81-86. https://eric.ed.gov/?id=EJ1132965
- Ong, W.A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL pre-service teachers. *Indonesian Journal of Applied Linguistics*, 9(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222
- Oxford, R. L. (2017). *Teaching and researching language learning strategies: Self-regulation in context*. Routledge.
- Palantis, N.J., Mohamed, A., Ibrahim, A.S.M, Ismail, S.H., Anuar, N.K., Marof, A.M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. https://doi.org/10.23917/varidika.v29i2.5629
- Poedjiastutie, D, Akhyar, F., Hidayati, D, & Gasmi, F.N. (2018). Does curriculum help students to develop their English competence? A case in Indonesia. *Arab World English Journal* (AWEJ), 9(2),175-185. https://dx.doi.org/10.24093/awej/vol9no2.12
- Schraw, G., & Dennison, R.S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475. https://psycnet.apa.org/doi/10.1006/ceps.1994.1033
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. *European Journal of Educational Research*, 10(2), 629-640. https://doi.org/10.12973/eu-jer.10.2.629
- Soodla, P., Jõgi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education*, 32(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x.
- SPSS Inc. Released 2008. SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc.
- Subia, G., & Marcos, M., Pascual, L., Tomas, A., & Liangco, M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of science, technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*. 62(3), 261-268.
 - https://www.researchgate.net/publication/342762567
- Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, 13(3), 1-14. http://dx.doi.org/10.29333/iji.2020.13325a
- Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers' reflection as a pathway to develop teacher professionalism. *International Online Journal of Education and Teaching (IOJET)*, 5(4), 921-932. https://files.eric.ed.gov/fulltext/EJ1250545.pdf
- Utami, D.R.T., Pranoto, Y.K.S., Latiana, L. & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, 10(2), 537-551. https://doi.org/10.12973/eu-jer.10.2.537
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, *3*(2), 254-262. https://doi.org/10.4304/tpls.3.2.254-262

Appendix

No	Statements				
Decl1	I am aware of the strengths and weaknesses in my teaching.				
Decl2	I know what skills are most important				
Decl3	I have control over how well I teach.				
Decl4	I know what I am expected to teach.				
Proc5	I try to use teaching techniques that worked in the past.				
Proc6	I have a specific reason for choosing each teaching technique in class.				
Proc7	I am aware of what teaching techniques I use while I am teaching.				
Proc8	I use helpful teaching techniques automatically.				
Con9	I use my strengths to compensate for my weaknesses in my teaching.				
Con10	I can motivate myself to teach when I really need to teach.				
Con11	I use different teaching techniques depending on the situation.				
Con12	I know when each teaching technique I use will be most effective.				
Plan13	I pace myself while I am teaching in order to have enough time.				
Plan14	I set my specific teaching goals before I start teaching.				
Plan15	I ask myself questions about the teaching materials I am going to use.				
Plan16	I organize my time to best accomplish my teaching goals.				
Mon17	I ask myself periodically if I meet my teaching goals while I am teaching.				
Mon18	I find myself assessing how useful my teaching techniques are while I am				
	teaching.				
Mon19	I check regularly to what extent my students comprehend the topic while I am				
	teaching.				
Mon20	I ask myself questions about how well I am doing while I am teaching.				
Eval21	I ask myself how well I have accomplished my teaching goals once I am finished.				
Eval22	I ask myself if I could have used different techniques after each teaching				
	experience.				
Eval23	After teaching a point, I ask myself if I'd teach it more effectively next time.				
Eval24	I ask myself if I have considered all possible techniques after teaching a point.				

Metacognitive Awareness Inventory in Teaching

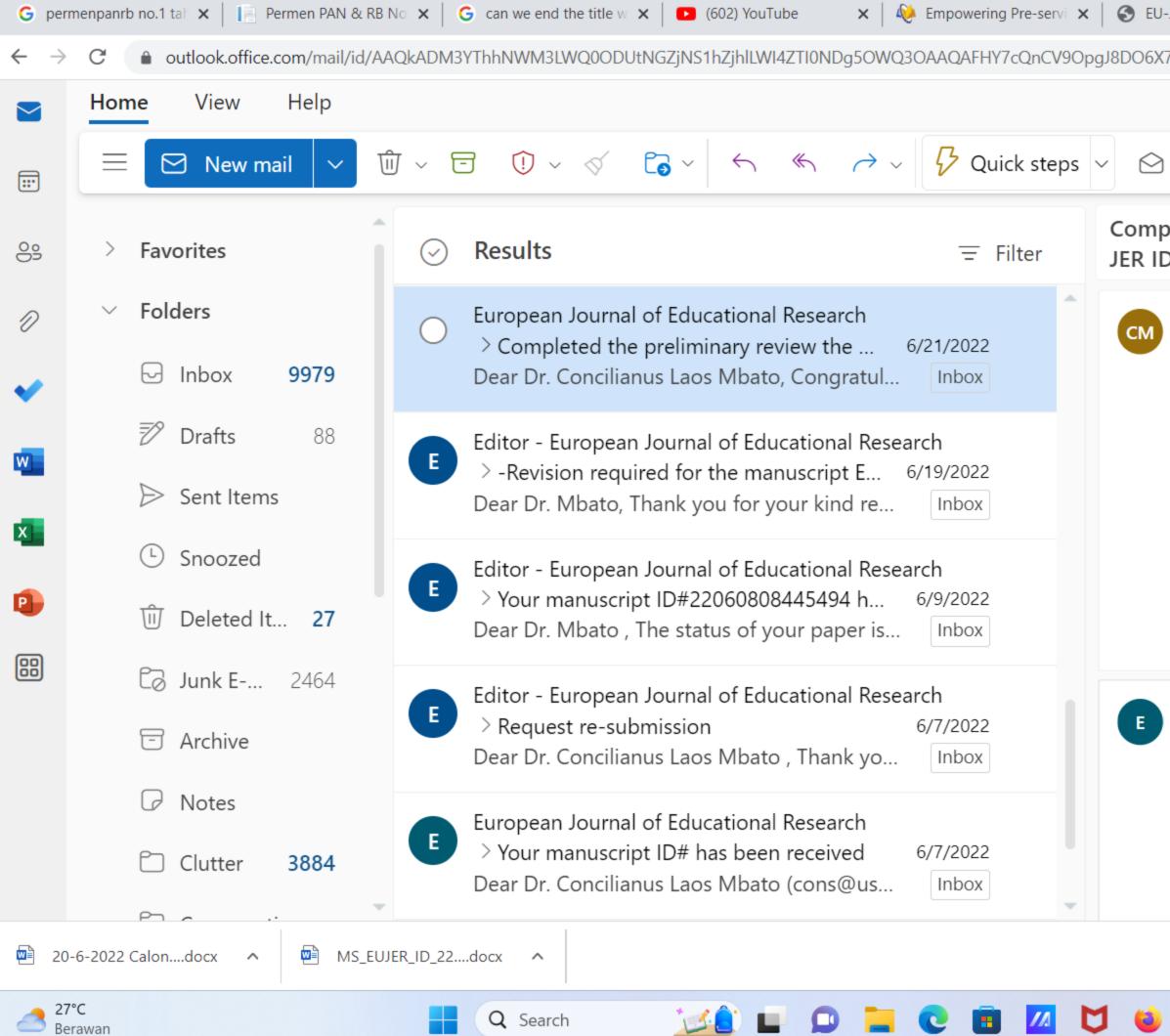
Source: Balcikanli, E. (2011).



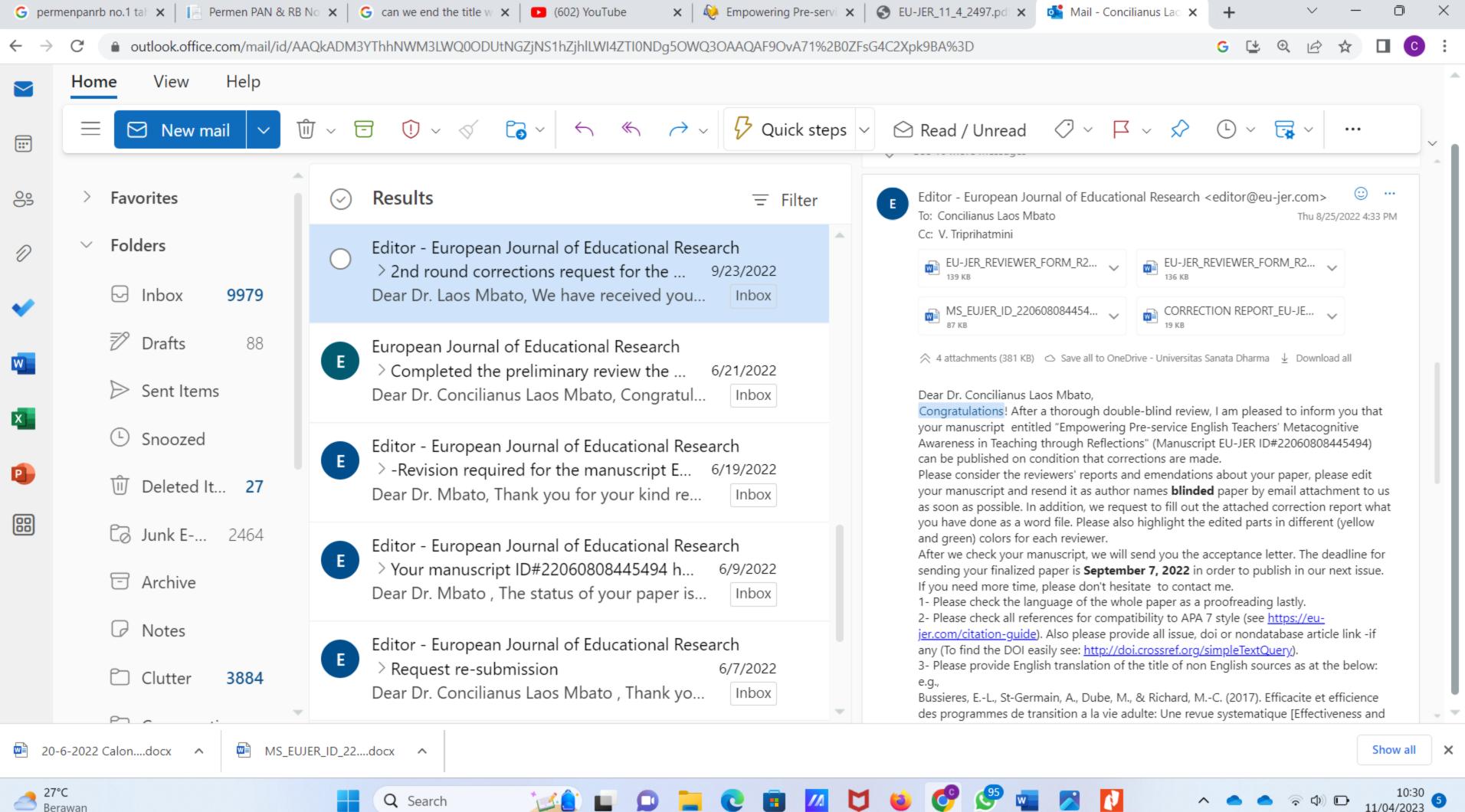
-J	ER_11_4_2497.pd ×	🕵 Mail	- Concilianus La	×	+			\sim	—		O	×	<
7	B4%3D				G	Ľ	Ð	Ê	☆		С	:	
	Read / Unread	C ~										~	Î
	European Journal To: Concilianus Laos Cc: V. Triprihatmini Dear Dr. Concilianu Congratulations! Yo completed the prel Pre-service English Reflections" (Manus journal's scope. We We will inform you PS: As you can see not allowed to with because the withdr referees spent a gre and works invested Best regards, Ahmet Savas, Ph.D Editor, European Jo editor@eu-jer.com www.eu-jer.com	Mbato Is Laos Mb our paper iminary re Teachers' script EU-J e have sent about the on our we adraw subr awal is a w eat deal of l by the pu	ato, has passed th view for your Metacognitive IER ID#220608 your paper to result when v bsite, we kind mitted manus vaste of valual time process iblisher.	e test manu e Awa 80844 o the ve ge lly ren cripts ble re	t of pl scrip renes 5494 refer t the nind after sourc ubmit	lagiar t enti ss in 1). It is ees to repor you t you t preli	Tue Tism. Tied Teach s suita o eval rts fro hat th mina at ed	6/21/2 We ha 'Empo ing th able f luate. om th ne au rily re litors	ave owerin nrough or our e refer thors w eview and	ng rees. were	1		
										Sho	w all	1	×

10:25 5

() **D**



-JER_11_4_2497.pd 🗙	📑 Mail -	Concilianus Lao 🗙	+		\sim	_	Ō	\times
7B4%3D			G	<u>↓</u> ⊙	Ê	☆		÷
								•
Read / Unread	⊘ ~							~
oleted the prel D#2206080844	2	eview the ma	anuscr	ipt E	U-	Ð	~ E	Î
Concilianus Laos To: European Journ Dear Ahmet Savas, Thank you so much publishing in your j referees. Hopefully Kind Regards, Concilianus 	nal of Educati Ph.D. for the great ournal, We ar	: news. We will not re now anxiously wa	itor@eu-	, v as we	ue 6/21/ are cor	nmitteo		
European Journa To: Concilianus Lac Cc: V. Triprihatmin Dear Dr. Concilian Congratulations! completed the pre Pre-service Englis Reflections" (Man iournal's scope. W	os Mbato i nus Laos Mba Your paper h eliminary rev h Teachers' N uscript EU-Jl	ato, has passed the tes view for your man Metacognitive Aw ER ID#220608084	t of plag uscript e areness i 45494). I	jiarism. ntitled in Teac t is suit	e 6/21/2 We ha "Empo hing th table fo	ave owering nrough or our	g	×
🥑 🧶 🛛		2		•	ଚ ଏ)	D,	10:2	6 3 5



CORRECTION REPORT								
No	Reviewer Code	Reviews	Corrections made by the author					
1								
2								
3								
4								
5								
6								
7								

		1
8		
9		
10		
11		
12		
13		
14		

15		
16		
17		
18		
19		
20		
21		

22		
23		
24		
25		
26		
27		
28		

29		
30		
31		
32		
33		
34		
35		

36		
37		
38		
39		
40		
41		
42		

43		
44		
45		
46		
47		
48		
49		

50		
51		
52		
53		
54		
55		



European Journal of Educational Research

ISSN: 2165-8714

http://www.eu-jer.com/

Review Form												
Manuscript ID:	Date: 24 th August 2022											
Manuscript Title: Empowering Preservice English Teachers' Metacognitive Awareness in Teaching Through Reflections												
ABOUT MANUSCRIPT (Mark with "X" one of the options)AcceptWeakRefuseN Ava												
Language is cle	ar and correct	X										
Literature is we	Literature is well written											
References are	cited as directed by APA	X										
The research to	pic is significant to the field	X										
The article is co	mplete, well organized, and written	X										
The research de	sign and method are appropriate	X										
Analyses are ap	propriate to the research question	X										
Results are pres	ented	X										
A reasonable di		X										
Conclusions are		X										
Recommendation	ons are clearly stated	X										
N	VERAL REMARKS AND RECOMMEN	DATIONS TO	THE AU	NERAL REMARKS AND RECOMMENDATIONS TO THE AUTHOR								

This paper is well written. However, it has some deficiencies that prevent its acceptance for publication in the journal.

First, the authors did not point out the research problem in the introduction. They need to explain the rationale behind this study.

Second, the authors included some studies conducted with primary school students. However, since this study is about preservice teachers, the authors must not include studies focusing on primary students. Both groups have different characteristics; therefore, this type of writing is unacceptable.

Third, in the literature review, authors must explicitly point out the research gaps in the literature. They need to explain the strengths and weaknesses of previous studies on preservice English teachers and metacognitive awareness.

Fourth, the purpose of this paper is stated on page 6. After reading these six pages, it is strange to read the purpose. In my opinion, the purpose should be stated in the introduction.

Fifth, no details were given about the second questionnaire.

Sixth, some important questions arise from the data analysis. These are: 1- How did the authors assess validity and reliability? And 2- How did the authors analyze the data? 3- How did the researchers determine the codes and themes?



European Journal of Educational Research

ISSN: 2165-8714 http://www.eu-jer.com/

Seventh, the most important thing about this work is that no details about the activities were given. What was the role of the researchers during these activities? What were the contents of the activities? I will not propose this work for publication if these questions are not clarified.

Eighth, the authors provided more information about the literature review and many results in the discussion. They discuss the differences and similarities between previous studies and this study. They must focus on the differences and similarities between previous publications and the current study. Also, this section needs to be shortened.

Ninth, in conclusion, it is unclear what contribution this study makes to the literature. The authors did not explain what the new findings are to the literature? How could this study fill a research gap in the literature?

Language

The text contains some grammatical, punctuation, and spelling errors. Proofreading would be better before publication.

THE DECISION (Mark with "X" one of the options)	
Accepted: Correction not required	
Accepted: Minor correction required	X
Conditionally Accepted: Major Correction Required (Need the second review after corrections)	
Refused	
Reviewer Code: R2612 (The name of the referee is hidden because of blind	review)



European Journal of Educational Research

ISSN: 2165-8714

http://www.eu-jer.com/

	Revie	<i>w</i> Form							
Manuscript ID:	EU-JER_ID# 22060808445494 Date: 20/08/2022								
Manuscript Title:	cript Title: Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections								
(Ma	ABOUT MANUSCRIPT rk with "X" one of the options)	Accept	Weak	Refuse	Not Available				
Language is clear a	nd correct	X							
Literature is well w	ritten	X							
References are cite	d as directed by APA		X						
The research topic	is significant to the field	X							
The article is comp	ete, well organized and clearly writt	n X							
Research design an	d method is appropriate	X							
Analyses are appro	priate to the research question	X							
Results are clearly	presented	X							
A reasonable discus	ssion of the results is presented		X						
Conclusions are cle	arly stated	X							
Recommendations	are clearly stated	X							
	GENERAL REMARKS AND RECO	MMENDATIONS TO T	HE AUTHOR						

There are too many "cf." in the text. "cf." stands for "conferre", which means "to compare". If you are using it as reference or a "see for example" than it is incorrect. "cf" should be used for "compare with", i.e. compare your ideas with someone else or idea of X with idea of Y. Example: Abbott (2010) found supportive results in her memory experiment, unlike those of previous work (cf. Zeller & Williams, 2007). Here, ideas of Abbott were compared with Zeller and Williams. An example in your manuscript: "The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (cf. Flavell, 1979)." Here, if you cite idea of Flavell then usage of "cf." is incorrect. So, please revise all usages of "cf."

Use a zero before the decimal point in numbers that are less than 1 when the statistic can be greater than 1. However, do not use a zero before the decimal point in numbers that are less than 1 when the statistic cannot be greater than 1.

Use lettered list instead of numbered list when items are phrases or incomplete sentences in a paragraph. (a) ..., (b) ...,

Please, fix style errors indicated in the text and in the reference list. Use APA 7th Ed. Manual and Journal's template file available on the website.

THE DECISION (Mark with "X" one of the options)	
Accepted: Correction not required	
Accepted: Minor correction required	Х
Conditionally Accepted: Major Correction Required (Need second review after corrections)	
Refused	
Reviewer Code: R2613 (The name of referee is hidden because of blind review)	

Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, few studies have investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study aimed to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching. Mixed-methods research was conducted to collect quantitative and qualitative data from 45 pre-service English teachers (PSETs) in two Micro Teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD) focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness in teaching increased post-semester. They also admitted the positive contributions of reflections in enhancing their metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Intensive preparation and rigorous teaching practice in college are required in order to be able to teach effectively since teachers cannot give what they do not have (Okogbaa, 2017). The professional development of preservice English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper begins by examining the subject matter. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. One of the tools to empower teachers' metacognitive awareness in teaching is reflective practice. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness.

Teachers face complex challenges in actual classroom teaching, ranging from the teaching workload, big class size, and time limitations (Al-Shaboul et al., 2020). Other challenges include who assesses teachers' competence and performance (Utami et al., 2021). Accordingly, they need strong guidance from their mentors to face the challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2014; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (cf. Bakar et al., 2019; Filiz & Durnali, 2019, Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have examined pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-development. Another study (Holzberger et al., 2019) involving 3,483 high school students and their 155 mathematics teachers revealed that high-quality teaching corresponds with students' Commented [A1]: Year mismatch

Commented [A2]: Use semi-colon to separate citations

achievement but does not predict their excitement. A recent study (Senel, 2021) of four Turkish English Language Teaching (ELT) students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good quality teaching. The demand for teachers to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana, Muwagga, and Ssempala (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% related to HOTS. Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020) revealed the low level of HOTS in mathematics subjects. A similar result was found in a study of student science teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities. This study urges lecturers to promote independent learning to students. However, training students to become independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah and Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (cf. Flavell, 1979). Several recent studies have acknowledged the impacts of metacognition on students' learning and success (Bećirovic et al., 2017; Cao & Lin, 2020; Oxford, 2017).

Commented [A3]: Use "et al."

Commented [A4]: Use "&"

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interests in teachers' metacognitive awareness in teaching (Abdellah, 2015; Aktag, Semsek, & Tuzcuoglu, 2017; Alkam & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkam and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on their strategies to increase their metacognitive awareness in teaching performance. Other researchers (Aktag et al., 2017) argued that teachers' metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness training for pre-service and in-service teachers. Similarly, research on primary school teachers in Puchong, Selangor (Palantis et al., 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practised regularly and intentionally for the teachers' teaching to impact students' learning positively.

Considering its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011) Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of

Commented [A5]: Use "et al."

cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of 'the why and when' to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011, p. 1,032) argued that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching.

Reflection

Reflections are the self-conscious activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (cf. Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019, p. 13). Similarly, Davis and MacDonald (2019) found that teachers' reflections focusing on self-evaluation could positively impact their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Commented [A6]: Specify page number only for direct quotation. Otherwise remove all. https://blog.apastyle.org/apastyle/2015/03/when-and-how-to-include-page-numbers-in-apa-style-citations.html

Commented [A7]: Author mismatch

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & MacDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers. Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge (declarative knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in English as a Foreign Language (EFL) vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching EFL vocabulary. This research, however, did not explore how reflections could be used to increase the teachers' cognition in EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive awareness in teaching: lesson planning. They demonstrated the positive impact of reflective practice on the student teachers' lesson planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practise reflections during teaching. However, they should be coached on strategies to effectively and successfully engage in these reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in teaching (cf. Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centred teaching. However, many teachers experience difficulty

Commented [A8]: Author mismatch

Commented [A9]: Don't capitalize non special names. Edit all in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st century skills learning in many classes in the primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers could not teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (cf. Beziat et al., 2018; Mattew et al., 2017) and student learning (Author, 2019; Soodla et al., 2017).

Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

How can reflections empower Indonesian pre-service English teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Commented [A10]: We assume that this is an international study. So, results are not limited to Indonesia. Please, delete "Indonesian" to make the research question more global and general.

Methodology

Research Design

This research adopted a mixed-methods approach where quantitative and qualitative data were collected (cf. Creswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (cf. Zohrabi, 2013).

Sample and Data Collection

Using purposive sampling, thirty-six PSETs enrolled in two Micro Teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. Since this was a practicum class, PSETs learned about teaching and practised teaching in small groups and with the whole class. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. As mentors for the class for more than ten years, we decided to introduce the Metacognitive Awareness Inventory in Teaching (MAIT) from Balcikanli (2011). This inventory was comprehensive, covering all of the teachers' metacognition elements. The class met twice a week, with each meeting lasting 100 minutes.

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to complete them. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in

Commented [A11]: Not proper for APA

teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition and the second on the regulation of cognition. Statements on the knowledge of cognition constituted four items on declarative Knowledge (Decl1-Decl4), four items on procedural Knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted from Balcikanli (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching.

Qualitative data were gathered from students' answers to the questions about the dissemination of MAIT, summative reflections, and focus group discussions (FGDs) on the elements of metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they practiced teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination were gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. The FGDs involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e.,: (1) the benefits of metacognitive awareness in teaching; (2) the difficulties in implementing

Commented [A12]: Use lettered list instead of numbered list when items are phrases or incomplete sentences in a paragraph. (a) ..., (b) ...,

metacognitive awareness in teaching; and (3) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyze the participants' responses about their metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Author's (2019) mean category was used to interpret the mean for the expression motivation replaced with perception.

Table 1. Mean F	Range for Perception		{	Commented [A13]: Table title should be centered
Mean Range	Interpretation			
3.68 - 5.00	A high degree of perception			
2.34 - 3.67	A moderate degree of perception			
1.00 -2 .33	A low degree of perception			
A paired-sample	es t-test was performed using SPSS 17 (SPSS Inc., Chicago, IL) to determin	e	{	Commented [A14]: IBM SPSS Statistics (Version 17)
whether there w	vas a significant difference in students' perceptions about their metacognitiv	9		
awareness in tea	uching in the post-semester.			
Qualitative data	analyses from reflections and FGD focused on finding key issues in student	s'		
answers (cf. Gib	oson & Brown, 2009) about their metacognitive awareness in teaching, mainl	y		
on whether or no	ot there were indications of improvements.	'	{	Commented [A15]: Remove all empty lines

Results

Quantitative Data

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses.

	udents' perceptions of the role of reflections in their metaco	Commented [A16]: In tit		
No.	Statement	Mea n	Std. Dev	Commented [A17]: SD
eDecl1	Reflections increased my awareness of the strengths and weaknesses in teaching.	4.31	0.62	Edit all
eDecl2	Reflections helped me to know the most important skills	4.31	0.55	
eDecl3	Reflections helped me to have control over teaching	4.04	0.53	
eDecl4	Reflections helped me to know the teaching expectations	4.31	0.47	
eProc5	Reflections helped me to use proven teaching techniques	4.19	0.69	
eProc6	Reflections helped me to have a specific reason for using a teaching technique	4.04	0.77	
eProc7	Reflections helped me to have an awareness of the teaching techniques	4.15	0.78	
eProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63	
eCon9	Reflections helped me to compensate strengths for weaknesses	4.19	0.63	
eCon10	Reflections helped me to motivate myself when having to teach	4.23	0.59	
eCon11	Reflections helped me to use different teaching techniques as required by the situation.	4.00	0.75	
eCon12	Reflections helped me to know when each teaching technique was most effective.	3.96	0.82	
ePlan13	1	4.31	0.62	
	Reflections helped me to set specific teaching goals before teaching	4.42	0.50	
ePlan15	8	4.27	0.60	
ePlan16		4.19	0.69	
eMon1	Reflections helped me to ask periodically if teaching goals were being met	4.12	0.52	
eMon1	Reflections helped me to assess how useful the teaching techniques were	4.12	0.59	
eMon1	Reflections helped my regular checking of students' comprehension	3.85	0.61	
eMon2	Reflections helped my self-questioning while teaching	4.19	0.49	
eEval21	Reflections helped me to ask myself about teaching goal accomplishment	4.19	0.57	
eEval22		3.85	0.73	
eEval23	•	4.35	0.63	
eEval24	1 0	4.15	0.54	

Adapted from Balcikanli (2011).

As indicated in Table 2, students generally admitted the positive contributions of

reflections in helping them to develop their metacognitive awareness in teaching. The first four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with the mean range between 3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (cf. Nurhapsari & Author, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

Commented [A18]: Missing author name

Table 3. Mean comparison of students' responses to metacognitive awareness statements

No	Statements	Pre-se	mester	Post-se	Mean Increase	
		Mean	Std. Dev	Mean	Std. Dev	Increase
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	0.77
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	0.75
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	1.33
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	0.48
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	0.54
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	0.59
Proc7	Awareness of the teaching techniques while teaching.	3.1	0.91	3.67	0.73	0.57
Proc8	Using teaching techniques automatically.	2.79	0.92	4.1	0.55	1.31
Con9	Compensating strengths for weaknesses	3.26	0.91	3.77	0.77	0.51
Con10	Being able to motivate oneself when having to teach	3.15	0.96	3.82	0.68	0.67
Con11	Using different teaching techniques as required by the situation.	3.33	0.95	3.67	0.66	0.34
Con12	Knowing when each teaching technique is most effective.	2.77	1.01	3.77	0.62	1.00
Plan13	Pacing oneself in teaching to have enough time.	3.31	0.92	3.67	0.57	0.36
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23

Commented [A19]: In title case and centered

No	Statements	Pre-se	mester	Post-se	Mean Increase	
		Mean	Std. Dev	Mean	Std. Dev	-
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52
Eval24	Asking oneself if all possible techniques have been considered	3.15	0.70	3.74	0.54	0.59
	Average	3.19	0.89	3.90	0.62	0.71

Std. Dev, standard deviation.

The questionnaire was adopted from Balcikanli (2011), and its complete version can be seen in Appendix 1.

The Table 3 above shows PSETs' responses to their metacognitive awareness in teaching in the pre-semester and post-semester. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase (1.33). The second highest response was the PSETs' awareness of their strengths and weaknesses in teaching (Decl1/ 0.77 mean increase) and their knowledge of the most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by PSETs' response to statement Pro6, which asked whether they had a particular reason for

adopting a teaching technique in the classroom (Pro6/0.59 mean increase), and statement Pro7, which asked about their awareness of what teaching methods they used while teaching (Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase). Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

Parallel with their increased knowledge of cognition, students agreed that they had improved their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, including time organization to accomplish their teaching goals (Plan16/with the highest mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

Similarly, students demonstrated their agreement with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that they found themselves assessing how useful their teaching techniques

were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

Additionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted having slight improvement in their evaluation ability, as indicated in statements Eval23 and Eval21. Statement Eval23 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean increase for this statement was 0.52. Statement Eval21, which focused on whether they asked themselves if they had accomplished their teaching goals after teaching, demonstrated a mean increase of 0.43.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.

	1	Table 4. Paired S	amples Stati	stics			
Mean	Ν	Std. D	ev.	Eri	Std. ror Mea	n	
3.194444444444444	24	.221337891094	002	.04518	8040782	7002	
3.908119658119657	24	.239929272690	547	.0489	7535770	4077	
	Table 5. Pai	red Samples Cor	relations				
	Ν	Correlation		Sig.			-
Pair 1 Pre-semester & Post- semester	24	.031		.887			
Std. Dev, standard deviation.	Pai	e 6. Paired Samp red Differences 5% Confidence 1		the			-
			erence	ine			
Mean S	Std. Dev.	Mean Lower	· Upper df	t	Sig.	a-tailed)	
PairPre-semester71368IPost-semester-	.32138	.0656084 9		7 -10.879	23	000	Commented [A20]: Use a zero before the decimal point in numbers that are less than 1 when the statistic can be
Std. Dev, standard deviation.						× **	greater than 1 Commented [A21]: .000
A paired sample t-test was perfer awareness in teaching as the d results indicated a significant p standard deviation $(SD) = .22$,	lependent va perceived in and post-se	ariable measured crease between t mester level, 3.5	pre-and po the pre-semi- D1, SD = .2	ester level 4, $t(23) = -$	er. The , 3.19, -10.88,		Commented [A22]: Use a zero before the decimal point in numbers that are less than 1 when the statistic can be greater than 1
p < .0.5. As a result, the null hyp	othesis was	rejected, while the	ne alternativ	e hypothes	sis was		Commented [A23]: <i>p</i> <.05
accepted. It can be inferred tha	it PSETs' pe	rceived metacog	nitive aware	eness in te	aching		
improved after participating in t	he research.						
Qualitative Data							
Qualitative data were collected	through stud	lents' summative	reflections	and FGDs	of the		
elements of metacognitive away	reness in tea	aching. These ac	tivities were	e conducte	d after		
students had experienced teach	ing in the n	nicro-teaching cl	ass for one	month. St	udents		
practiced teaching their peers ir	n small grou	ps and the whole	e class in cl	ass. The p	ractice		
aimed to give them sufficient of	experience i	n teaching and v	what they h	ad to do t	o be a		

successful professional teacher.

1. Reflections on the dissemination of MAIT

The researchers disseminated the ideas of the metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise students' awareness of metacognition in teaching. For example, SO8 wrote:

I learn something new from metacognition which is very beneficial for me as prospective teacher in the future. Teacher should be able to aware that every student is unique with their own intelligent. Even identical twin are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plan that includes students various cognition.

The second benefit was that it assisted them in understanding their strengths and weaknesses in

teaching. S01 reported:

After understanding metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher; how to open class that makes the students are full of spirit, how to deliver the materials that makes the students can apply it in their lives, how to manage the class that makes the condition of the class is full of excitement, and how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me in order to understand whether the teaching goals is reached or not and understand what has to be improved.

Commented [A24]: the others (2., 3, etc.) are in title case. So, this should be in title case (keep consistency)

Students also described four other benefits of MAIT, i.e., 1) Being more aware of the importance of teaching techniques; 2) Being more aware of possessing teaching skills; 3) Being more aware of knowing what to teach (Planning); and 4) being more aware of planning, monitoring and evaluating their teaching.

2. Summative Reflections

Reflections were a significant force in our efforts to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching. The researchers summed up key ideas and, when relevant, cited a small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT:

I am really excited because finally I did well in this course. I am proud of myself because at the beginning of this semester, I felt uncomfortable and not sure I can do teaching. But, now I become more confident in teaching and feel more challenged. The fact is being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware with anything about teaching before, while and after teaching.

Another student (S20) emphasized that MAIT helped her to compensate for her weak grammar with her cheerful personality in teaching. Understanding their strengths and weaknesses in teaching seemed to be one of the most important contributions of MAIT to **Commented [A25]:** Use lettered list instead of numbered list when items are phrases or incomplete sentences in a paragraph. (a) ..., (b) ...,

many students. Similarly, S11 admitted, "In the final test teaching practice, my friends and

I have improved so much because we have applied MAIT, Higher Order Thinking, and

Bloom's Taxonomy." S28, in her long reflection constituting all aspects of MAIT, wrote:

I understand the materials that I am going to teach. I also remind myself that when I am teaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even the small things such as appearance and eye contact. I want to inspire my students to learn English and motivate them as well.

S17 described that the class had helped him understand teaching better. He reflected:

This class has given me a whole new world of college life. I got many experiences in this class especially how to teach something. Teaching is not easy but it is kind of challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparations that the teacher should prepare before they teach.

Most PSETs admitted that they had improved their declarative, procedural, and conditional knowledge in teaching. They also acknowledged regulating their teaching better through planning, monitoring, and evaluating. Their improvements are strengthened by the data gained in the FGDs.

3. Focus Group Discussions

FGD was conducted in small groups in class at the end of the semester. Individual students were given more than a week to write their reflections about the implementation of MAIT before the implementation of the FGDs. These FGDs discussed three main questions i.e.:

(1) benefits of metacognitive awareness in teaching; (2) challenges in implementing metacognitive awareness in teaching; and (3) suggestions for the implementation of metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before, while, and after teaching. Before teaching, Group 1 asserted, "We can understand what

Commented [A26]: Use lettered list instead of numbered list when items are phrases or incomplete sentences in a paragraph. (a) ..., (b) ...,

points that we have to prepare before teaching in the class. "Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4

acknowledged:

When we are teaching we learn how to manage the time allocation in order to have enough time. We try to implement and organize the material well. The teacher knows and explaining the learning objectives and try to implement the teaching technique that chosen in class. Then, we know how to monitor our students by asking them questions to make sure they understand the materials. In teaching learning activity we try to evaluate ourselves by asking ourselves about how well we are doing while we are teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that

MAIT helped them to know the best teaching strategies for their students, the lack of their

teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during,

and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses in the beginning of our teaching. To be reflective on what we have to improve and what we have improved. To be used to with classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the student's needs, understanding students' character, and handling the nervous feeling (Group 1). Group 4 mentioned the challenge in terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching challenged them to: (1) *"revise our lesson plan and the whole teaching; (2) find different*

Commented [A27]: Use lettered list instead of numbered list when items are phrases or incomplete sentences in a paragraph. (a) ..., (b) ...,

techniques that will work better for the next teaching; and (3) ask ourselves how well we have accomplished our teaching goals once we are finished". Group 4 realized that metacognitive awareness used after teaching helped them "always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance".

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: (1) "Focus on each point of MAIT; and (2) Try to implement each point of MAIT in the learning activities". Group 3 came up with three suggestions, i.e.:

(1)The teachers should have list of teaching goals to be achieved; (2) The teachers should be aware of what their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching **Commented [A28]:** Use lettered list instead of numbered list when items are phrases or incomplete sentences in a paragraph. (a) ..., (b) ...,

improved, consisting of declarative, procedural, and conditional knowledge, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept about teaching (cf. Balcikanli, 2011; Author, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Author, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledged that they had improved conditional knowledge in teaching, namely, knowing when, why, and with whom to use specific knowledge and skills (cf. Balcikanli, 2011; Author, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: 1) knowing their strengths to compensate for their weaknesses in teaching; 2) being able to motivate themselves to teach when they needed to teach; 3) being able to employ various teaching techniques as required by the situation; and 4) knowing when a teaching technique they used would be most productive.

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after participating in the research. An instance of this improvement was shown in PSETs'

Commented [A29]: Missing author

Commented [A30]: Use lettered list instead of numbered list when items are phrases or incomplete sentences in a paragraph. (a) ..., (b) ...,

response to statement 22. PSETs mentioned they asked themselves if they might have utilised other techniques after teaching (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the pre-semester level, 3.19, SD = .22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, p < 0.5).

The results from these quantitative data had much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGDs highlighted the considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in teaching:

I really excited because finally I did well in this course. I proud of myself because at the beginning of this semester, I felt uncomfortable and not sure I can do teaching. But, now I become more confident in teaching and feel more challenged. The fact is being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware with anything about teaching before, while and after teaching.

Group 1 asserted, "We can understand what points that we have to prepare before teaching in the class." PSETs also appreciated the benefits of becoming aware of their metacognition while teaching. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage the time well while teaching.

Findings in this study corroborated previous studies (see, e.g., Aktag et al., 2017; Gopinath, 2014; Palantis et al., 2017), which asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere. Additionally, the results indicate the importance of teachers learning strategies to effectively and successfully engage in reflective practices (Ong et al., 2020). While acknowledging that

Commented [A31]: p<.05

metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and explicit training of metacognitive awareness for teachers need to be implemented (Aktag et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire post-semester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and supported by the qualitative data. The findings in this study enrich the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & MacDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (cf. Balcikanli, 2011). Another recent study by Davis & MacDonald (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study also tended to focus on one element of regulation of cognition, i.e., evaluation (cf. Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-

Commented [A32]: Author mismatch

Commented [A33]: Author mismatch

service teachers to possess metacognition in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in the teaching performance. This study indicated that increased metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (cf. Alkam & Erdem, 2014).

The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017). In the discovery process, it used a more comprehensive metacognitive awareness inventory (see Balcikanli, 2011). The MAIT also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (cf. Amalia et al., 2020; Arslan, 2019; Davis & MacDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (cf. Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusion

This study provides significant evidence of the PSETs' positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them to prepare strategies and materials to cope with 'the unexpected' in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in

Commented [A34]: Author mismatch

evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. Facilitated through explicit reflections, possessing and displaying heightened metacognitive awareness in teaching could empower teachers, their teaching, and student learning. It was evident in this research that reflections could be utilized to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students. Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and in-service teachers.

Limitations

This research was conducted for a short period of only four months. This study did not collect data about the impacts of teachers' and peers' feedback on students' reflections and metacognitive awareness in teaching.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the

Centre for Research and Community Service (LPPM), Sanata Dharma University, Indonesia.

References

Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of pre-service female teachers in Ajman University in UAE. *Procedia - Social and Behavioral Sciences*, 174, 560 – 567, https://doi.org/10.1016/j.sbspro.2015.01.707

Aktag, I., Semsek, O., & Tuzcuoglu, S. (2017). Determination metacognitive awareness of physical education teachers. *Journal of Education and Training Studies*, 5(9), 63-69. http://dx.doi.org/10.11114/jets.v5i9.2511 **Commented [A35]:** Please check entire reference list and fix incorrect and missing punctuations (Use APA 7 style punctuation).

Put space between name initials.

If you have the DOI for the journal article, you should include this as a link it in the reference. If the article without a DOI, provide the nondatabase URL of the article. (To find the DOI easily see: http://doi.crossref.org/simpleTextQuery)

Commented [A36]: Doi or nondatabase article link?

Commented [A37]: <u>https://doi.org/</u>... Edit all

Alkam, F; & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. <i>Procedia - Social and Behavioral</i> <i>Sciences</i> , 143, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475	Commented [A38]: Put dot after initial Use comma to separate authors. Do not use semi-colon.
 Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. <i>European Journal of Educational Research₂</i>: 10(1), 127-143. https://doi.org/10.12973/eu-jer.10.1.127 	
Amalia, L.L., Widiati, U., Basthomi, Y., & Cahyono, B.Y. (2020). Reflective practice on lesson planning among EFL teacher educators. <i>Indonesian Journal of Applied Linguistics</i> , 10(1), 53-160. https://doi.org/10.17509/ijal.v10i1.25025	Commented [A39]: Put space between initials. Fix other references, too.
Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. <i>Australian Journal of</i> <i>Teacher Education</i> , 35(6), 117-132. https://doi.org/10.14221/ajte.2010v35n6.3	
Arslan, F.Y. (2019): Reflection in pre-service teacher education: Exploring the nature of four EFL pre-service teachers' reflections. <i>Reflective Practice</i> , 20(1), 111-124. https://doi.org/10.1080/14623943.2018.1564652	
Bakar A.Y.A; Amat, S., & Mahmud, M.I. (2019). Issues and challenges of 21 century teaching	Commented [A40]: Comma after surname
and learning: The Malaysian experience. International Journal of Management and	Commented [A41]: comma
<i>Applied Science</i> , 5(12), 6-11. http://iraj.doionline.org/dx/IJMAS-IRAJ-DOIONLINE- 16761	
Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). <i>Electronic</i>	
Journal of Research in Educational Psychology, 9(3), 1309-1332.	
http://dx.doi.org/10.25115/ejrep.v9i25.1620	Formatted: Highlight
Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading	
strategies among students at International Burch University: A case study. <i>European Journal of Contemporary Education</i> , 6(4), 645-655.	
https://doi.org/10.13187/ejced.2017.4.645	
Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in	
current and future principals. School Leadership Review, 12(2),4, 23-31.	Formatted: Highlight
https://scholarworks.sfasu.edu/slr/vol12/iss2/4	
Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed method-theory and practice. Sequential,	
explanatory approach. International Journal of Quantitative and Qualitative Research Methods, 5, 10–27. https://www.eajournals.org/wp-content/uploads/Mixed-Methods-	
Theory-and-PracticeSequential-Explanatory-Approach.pdf	
Chang, B. (2019). Reflection in learning. Online Learning, 23(1), 95-110.	
http://dx.doi.org/10.24059/olj.v23i1.1447	Formatted: Highlight
Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension	
by vocational college students. English Language Teaching, 13(4), 127-139.	
https://doi.org/10.5539/elt.v13n4p127 Creswell, J.W., & Clark, V.L.P. (2017). <i>Designing and conducting mixed methods research</i> (3rd	
ed.). Sage.	Commented [A42]: 3rd
Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of	
ESL freshmen: A sequential explanatory mixed design. TESOL International Journal,	
15(1), 20-30. https://eric.ed.gov/?id=EJ1257215	
Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Self- assessment through a standards-based appraisal process. <i>Reflective Practice</i> , 20(10), 125- 141. https://doi.org/10.1080/14623943.2019.1569508	
de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive learning and the development of higher-order thinking skills. <i>Journal of University Teaching & Learning Practice</i> , 16(3), 1-17. https://doi.org/10.53761/1.16.3.3	
Fakhomah, D.N., & Utami, M.S. (2019). Pre-service English teacher perception about higher	

|

l

l

l

https://doi.org/10.240/1/ijiet.2019.030104		Formatted: Font: Not Italic
Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school		
		Commented [A43]: Need doi link
Gopinath, L.S. (2014). Metacognitive awareness in teaching and teaching competency: A		
survey on student teachers at secondary level. IOSR Journal of Research & Method in		
Education, 4(Ver.V), 33-35. https://www.iosrjournals.org/iosr-jrme/papers/Vol-		Formatted: Highlight
4%20Issue-4/Version-5/D04453335.pdf		
		(-
		Formatted: Highlight
		Commented [A44]: use "&"
		Commented [A45]: use "&"
characteristics of effective teachers: Who is the ideal teacher? Novitas-ROYAL (Research		Formatted: Highlight
on Youth and Language), 12(1), 1-15. https://erie.ed.gov/?id=EJ1177690		
Lupascu, A.R., Pânisoară, G, & Pânisoară, I.O. (2014). Characteristics of effective teacher.		
		Commented [A46]: missing author surname and initials
		Formatted: Highlight
on pedagogical formation program in Turkey. <i>European Journal of Educational Research</i> , 8(2), 395-407. https://doi.org/10.12973/eu-jer.8.2.395 cell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive- developmental inquiry. <i>American Psychologist</i> , 34(10), 906-911. https://psycnet.apa.org/doi/10.1037/0003-66X.34.10.906 . RK : Dodman, S. & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: developing critical reflective capacity in teachers and teacher educators, <i>Reflective Practice</i> , 20(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124 origielčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional competences: A study among student teachers and students in education science in Slovenia. <i>European Journal of Educational Research</i> , <i>10</i> (4), 2033-2044. https://doi.org/10.12973/eu-jer.10.4.2033 son, W., & Brown, A. (2009). <i>Working with qualitative data</i> . Sage. jonath, LS. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. <i>IOSR Journal of Research & Method in Education</i> , <i>4</i> (Ver.V), 33-35. https://www.iosrjournals.org/iosr-jrme/papers/Vol- 4%201ssue-4/Version-5/D04453335.pdf niddin, & Saukah, A. (2020) Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. <i>Indonesian Journal of</i> <i>Applied Linguistics</i> , <i>9</i> (3), 608-615. https://doi.org/10.17509/ijal.v9i3.23211 magustiana, I., Hamra, A., Rahman, A.Q., & Salija, K. (2017). Reflection of teacher cognition in EFL vocabulary instructional practices. <i>International Journal of English Linguistics</i> , <i>7</i> (5), 34-45. http://dx.doi.org/10.15539/ijel.v7n5p34 zberger, D., Praetorius, A.K., Seidel, T., and Kunter, M. (2019). Identifying effective teachers: The relation between teaching profiles and students' development in achieveement and enjoyment. <i>European Journal of Psychology of Education</i> , <i>34</i> , 801– 823. https://doi.org/10.1007/s10212-018-00410-8 le, U., Kühberger, C. and B		
 Indonesian Education and Taeching, 3(1), 41-49. https://doi.org/10.24071/ijica2019.030104 B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school on pedagogical formation program in Turkey. <i>European Journal of Educational Research</i>, 8(2), 395-407. https://doi.org/10.12973/eu-jer.8.2.395 Vell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. <i>American Psychologist</i>, <i>34</i>(10), 906-911. https://psycnet.apa.org/doi/10.1037/0003-066X.34.10.906 K.K. Dodman, S. & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: developing critical reflective capacity in teachers and teacher educators, <i>Reflective Practice</i>, <i>20</i>(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124 Silovenia. <i>European Journal of Educational Research</i>, <i>10</i>(4), 2033-2044. https://doi.org/10.12973/cu-jer.10.4.2033 soon, W., & Brown, A. (2009). <i>Working with qualitative data</i>. Sage. pinath, LS. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. <i>IOSR Journal of Research & Method in Education</i>, <i>4(Ver.V)</i>, 33-35. https://www.iosrjournals.org/iosr-jrme/papers/Vol-4%20Issue-4/Version-5/D04453335.pdf middin, & Saukah, A. (2020) Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. <i>Indonesian Journal of Applied Linguistics</i>, <i>9</i>(3), 608-615. https://doi.org/10.1509/ji.le.V7n5934 Lizberger, D., Praetorius, A.K., Seidel, T., and Kunter, M. (2019). Identifying effective teachers: The relation between teaching profiles and students' development in achievement and enjoyment. <i>European Journal of Psychology of Education</i>, <i>34</i>, 801-823. https://doi.org/10.1596/ji.el.V7n5934 Lizberger, D., Praetorius, A.K., Seidel, T., and Kunter, M. (2019). Identifying effective teachers: Who is the ideal teacher? <i>Novit</i>		
		Formatted: Highlight
		Commented [A47]: missing author surname and initials

join a community of interest. Anima Indonesian Psychological Journal, 34(2), 65-75. https://doi.org/10.24123/aipj.v34i2.2202

- Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. *Journal* of Education and Practice, 8(5), 81-86. https://erie.ed.gov/?id=EJ1132965
- Ong, W.A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL pre-service teachers. *Indonesian Journal of Applied Linguistics*, 9(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222
- Oxford, R. L. (2017). Teaching and researching language learning strategies: Self-regulation in context. Routledge.
- Palantis, N.J., Mohamed, A., Ibrahim, A.S.M, Ismail, S.H., Anuar, N.K., Marof, A.M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. https://doi.org/10.23917/varidika.v29i2.5629
- Poedjiastutie, D, Akhyar, F., Hidayati, D, & Gasmi, F.N. (2018). Does curriculum help students to develop their English competence? A case in Indonesia. *Arab World English Journal* (AWEJ), 9(2),175-185. https://dx.doi.org/10.24093/awej/vol9no2.12
- Schraw, G., & Dennison, R.S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475. https://psycnet.apa.org/doi/10.1006/ceps.1994.1033
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. *European Journal of Educational Research*, 10(2), 629-640. https://doi.org/10.12973/eu-jer.10.2.629
- Soodla, P., Jõgi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education*, 32(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x.

SPSS Inc. Released 2008. SPSS Statistics for Windows, Version 17.0. Chicago: SPSS Inc.

- Subia, G., & Marcos, M., Pascual, L., Tomas, A., & Liangco, M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of science, technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*, 62(3), 261-268. <u>https://www.researchgate.net/publication/342762567</u>
- Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, 13(3), 1-14. http://dx.doi.org/10.29333/iji.2020.13325a
- Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers' reflection as a pathway to develop teacher professionalism. *International Online Journal of Education and Teaching*-(*HOJET*), 5(4), 921-932. https://files.eric.ed.gov/fulltext/EJ1250545.pdf
- Utami, D.R.T., Pranoto, Y.K.S., Latiana, L. & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, 10(2), 537-551. https://doi.org/10.12973/eu-jer.10.2.537
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, 3(2), 254-262. https://doi.org/10.4304/tpls.3.2.254-262

Commented [A48]: not in italics

Formatted: Highlight

Commented [A49]: For popular software such as SPSS, reference entry is not needed. So, you can delete this entry.

Commented [A50]: Comma after dot

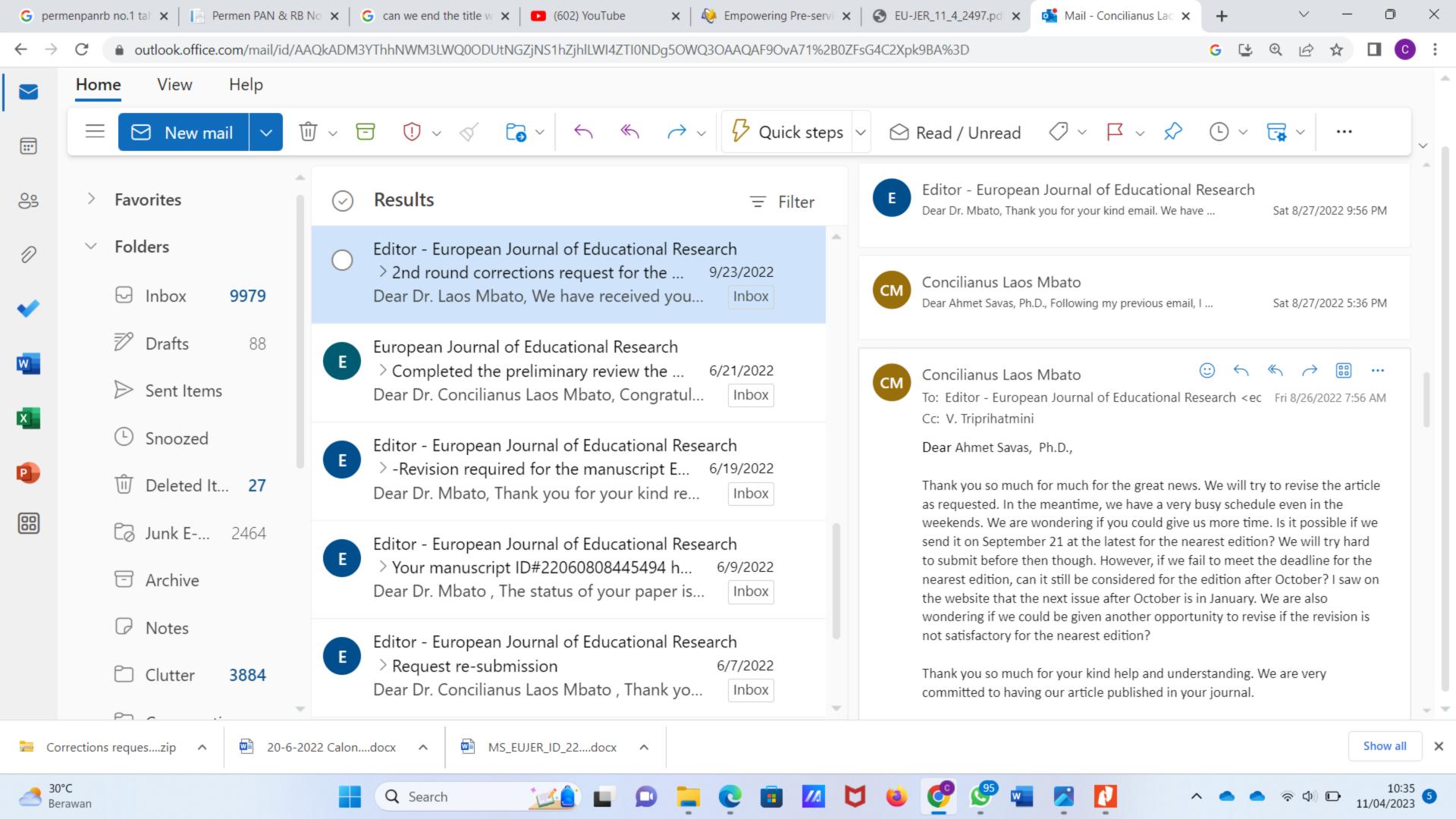
Appendix

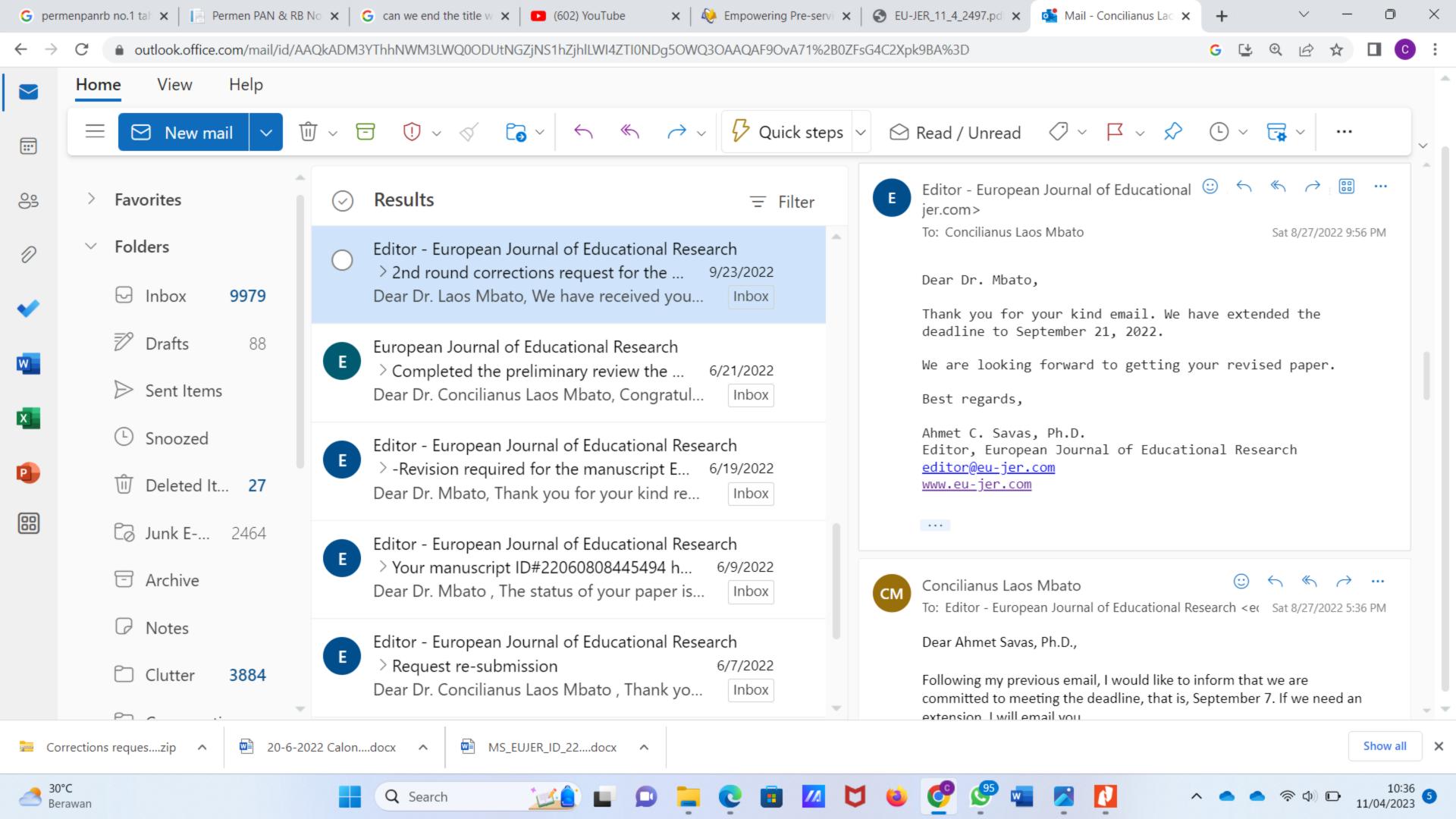
Metacognitive Awareness Inventory in Teaching

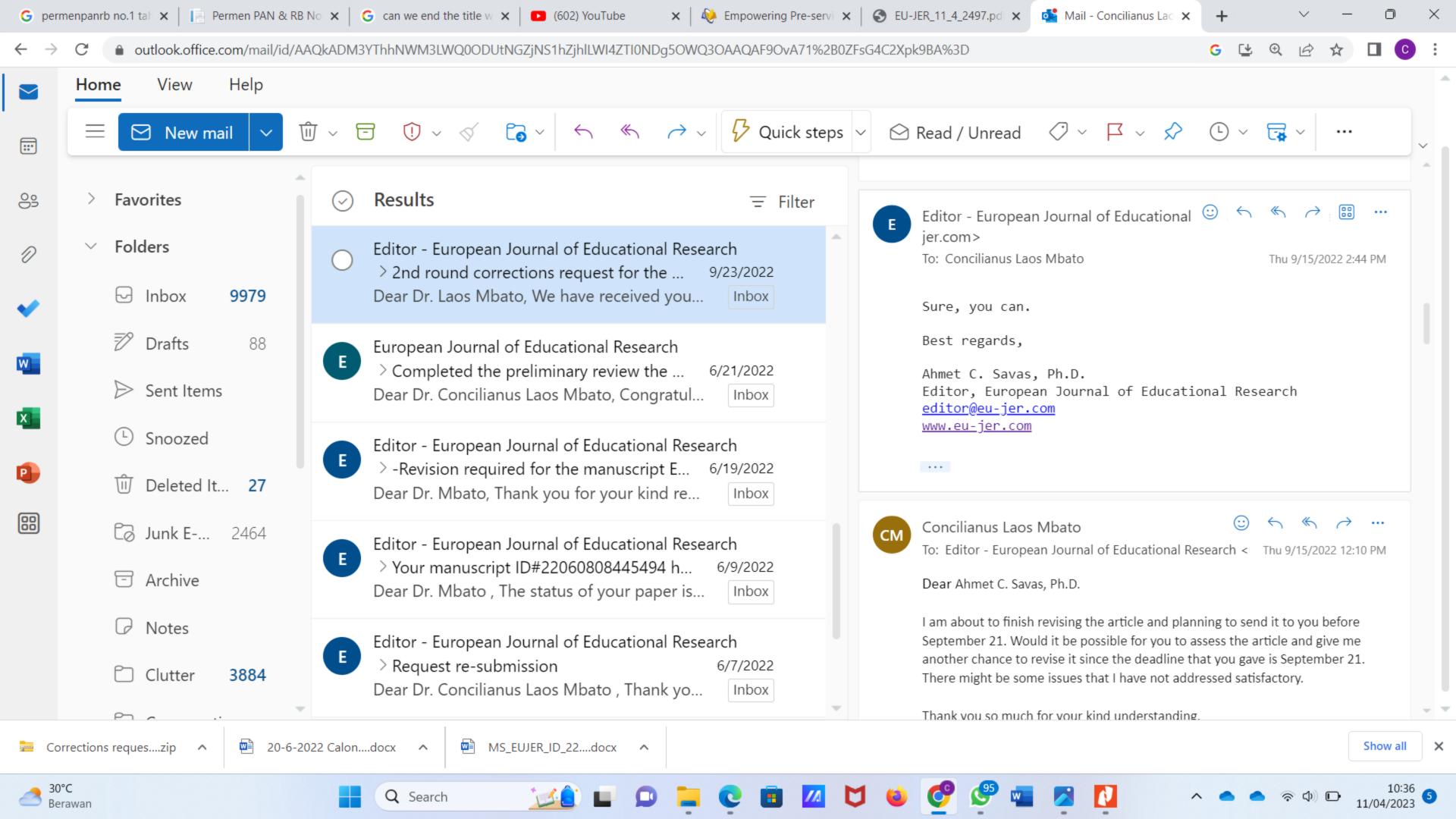
No	Statements
Decl1	I am aware of the strengths and weaknesses in my teaching.
Decl2	I know what skills are most important
Decl3	I have control over how well I teach.
Decl4	I know what I am expected to teach.
Proc5	I try to use teaching techniques that worked in the past.
Proc6	I have a specific reason for choosing each teaching technique in class.
Proc7	I am aware of what teaching techniques I use while I am teaching.
Proc8	I use helpful teaching techniques automatically.
Con9	I use my strengths to compensate for my weaknesses in my teaching.
Con10	I can motivate myself to teach when I really need to teach.
Con11	I use different teaching techniques depending on the situation.
Con12	I know when each teaching technique I use will be most effective.
Plan13	I pace myself while I am teaching in order to have enough time.
Plan14	I set my specific teaching goals before I start teaching.
Plan15	I ask myself questions about the teaching materials I am going to use.
Plan16	I organize my time to best accomplish my teaching goals.
Mon17	I ask myself periodically if I meet my teaching goals while I am teaching.
Mon18	I find myself assessing how useful my teaching techniques are while I am
	teaching.
Mon19	I check regularly to what extent my students comprehend the topic while I am
	teaching.
Mon20	I ask myself questions about how well I am doing while I am teaching.
Eval21	I ask myself how well I have accomplished my teaching goals once I am finished.
Eval22	I ask myself if I could have used different techniques after each teaching
	experience.
Eval23	After teaching a point, I ask myself if I'd teach it more effectively next time.
Eval24	I ask myself if I have considered all possible techniques after teaching a point.
C	Palaikanli E (2011)

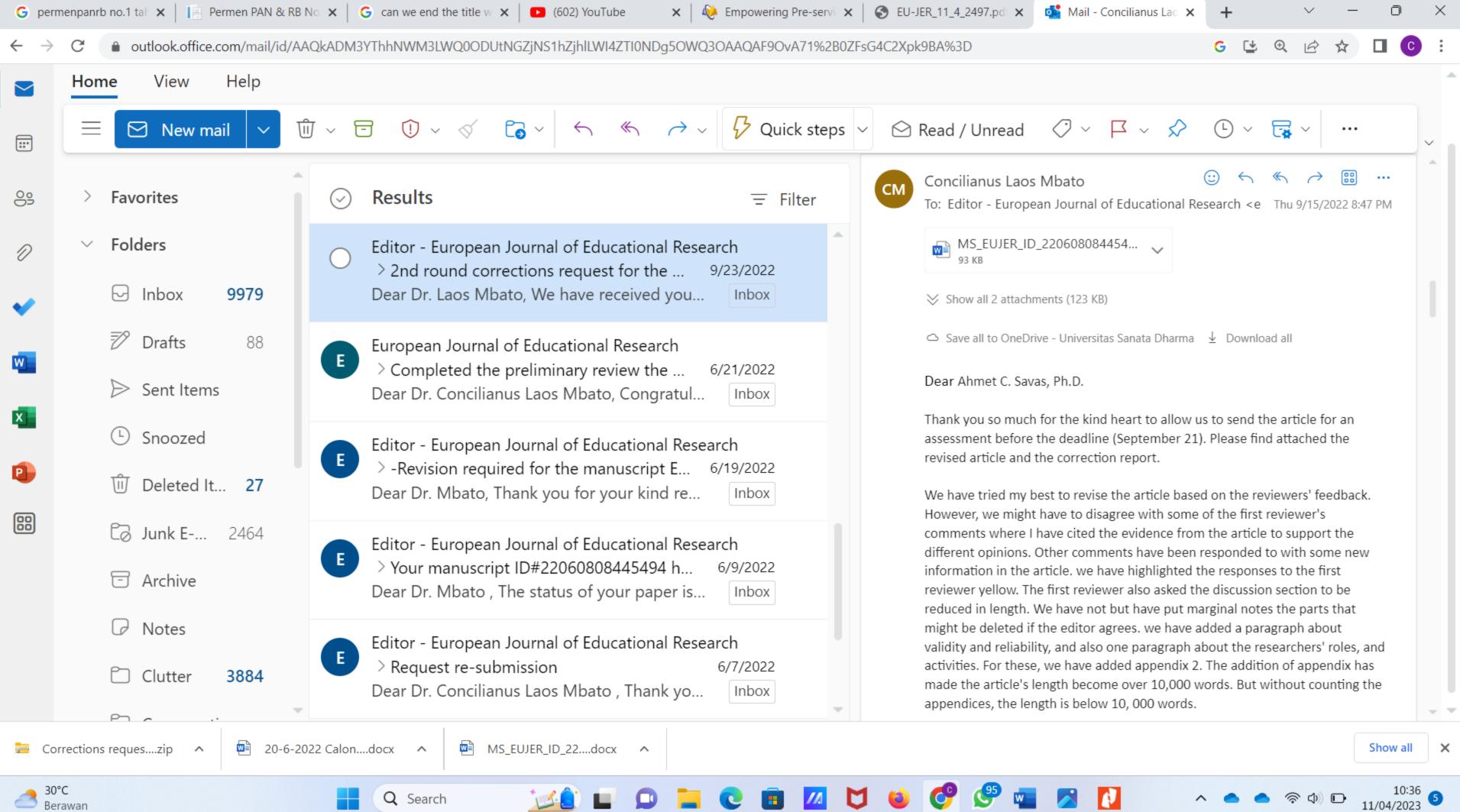
Source: Balcikanli, E. (2011).

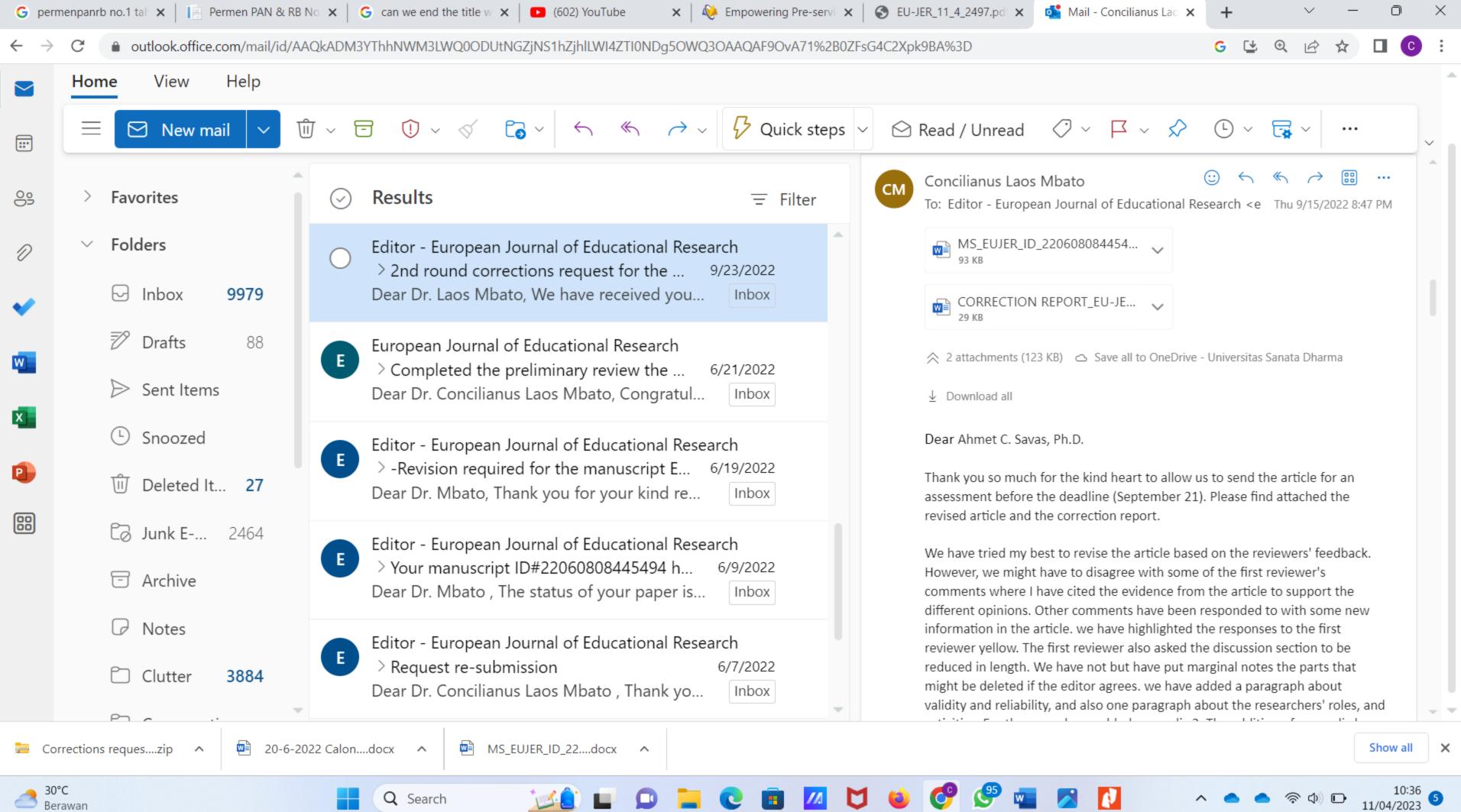
Γ











			REPORT
No	Reviewer Code	Reviews	Corrections made by the author
			Thanks a lot. We revised the end of the first paragraph:
1	R2612	First, the authors did not point out the research problem in the introduction. They need to explain the rationale behind this study.	 The professional development of pre-service English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper aimed to examine the perceived impacts of reflections on preservice teachers' metacognitive awareness in teaching. Ibegins by discussing the challenges facing teachers' professional development. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. In addition, reflections were reviewed as one of the tools tempower teachers' metacognitive awareness in teaching commendation, and limitations. This paper argues tha PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness. It was expected that this research would enrich, extend and partly fill the gap in the current literature about reflections and their impacts on pre-service English teachers' metacognitive awarenes in teaching. We also thought that the research problem as well as the rationale behind have been stated at the end of the literature review before the method section. These are the sentences: The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on a elements of metacognitive awareness in teaching and empower students' metacognition in learning, resulting in the learners' lack of succe in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (cf. Beziat et a 2018; Mattew et al., 2017) and student learning (Author, 2019; Soodla et al., 2017). This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching in the current the searching iterature by examini

2	R2612	Second, the authors included some studies conducted with primary school students. However, since this study is about preservice teachers, the authors must not include studies focusing on primary students. Both groups have different characteristics; therefore, this type of writing is unacceptable.	We agree. However, our argument was that pre-service teachers, at least in many countires, could become teachers at the primary and secondary schools. Therefore, while studying at the university, they need to develop their professionalism, one of which is through the practice of higher order thinking skills (HOTS). High order thinkings skills need to develop in all levels of education. We have added our argument in the paper as follows: The demand for teachers at different school levels to deliver good quality teaching is even greater in classroom learning involving higher- order thinking skills (HOTS). Since pre-service teachers could teach at primary and secondary schools, reviewing what happened at these schools concerning the implementation of HOTS was beneficial in preparing them for future teaching. Integrating HOTS into the teaching practice was also a requirement in our university's Micro Teaching Syllabus (see the method section on learning contents and activities).
3	R2612	Third, in the literature review, authors must explicitly point out the research gaps in the literature. They need to explain the strengths and weaknesses of previous studies on preservice English teachers and metacognitive awareness.	We agree. However, we thought that the research gaps have been addressed in the lirature review leading to the research question: Example 1: The research gap was stated at the end of the literature on metacognitive awareness in teaching: However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching. Another example:

			We agree. While keeping the purpose on page as the follow-up of the research gaps, we added the purpose at the end of paragraph one: This paper aimed to examine the perceived impacts of reflections on pre-service teachers' metacognitive awareness in teaching. It begins by discussing the challenges facing teachers' professional development. It
4	R2612	stated on page 6. After reading	then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. In addition, reflections were reviewed as one of the tools to empower teachers' metacognitive awareness in teaching, followed by the method, result, discussion, conclusion, recommendation, and limitations. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness. It was expected that this research would enrich, extend and partly fill the gap in the current literature about reflections and their impacts on pre-service English teachers' metacognitive awareness in teaching.
		Fifth, no details were given about	Thank you. Since there were no comprehensive instruments asking students about their perception of the impacts of reflections on MAIT, we decided to create one. We felt that more data were needed to demonstrate whether the participants perceived reflections as empowering their metacognitive awareness. We acknowledge that this instrument had not been tested its validity before its implementation. However, its data were supplementary rather than primary. The next researcher who wants to use the questionnaire may need to test its validity.
5	R2612	the second questionnaire.	We have revised it as follows: The second questionnaire (n=24) was adapted by the current researchers from Balcikanli's MAIT (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching.
			We have also added this in the limitation: In addition, the validity of the second questionnaire had not been tested before its administration. Future researchers may need to test its validity before using.

	1	
6	R2612	 We added this in the method: This inventory covered all teachers' metacognitive elements and had good validity and reliability (Balcikanli, 2011). The KMO validity was 0.794, the value for Barlett TKest was 2513.474, and the reliability ranged from 0.79 to 0.85. Validity and reliability. We did mention these in the research design through the use of mixed methods: The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data? 3- How did the researchers determine the codes and themes? However, we agreed that we needed to have discussed these two issues in more detail. Therefore we added thes (2. How we anaysed the data, the codes and themes): <i>Validity and Reliability in Data Collection an</i> <i>Analysis</i>
7	R2612	Seventh, the most important thing We have added a subheading in the method called about this work is that no details Researchers' roles, contents and activites. We have also about the activities were given provided the details in Appendix 2: What was the role of the researchers during these activities? Since this was a practicum class, PSETs learned about What were the contents of the teaching and practised peer, small groups, and the whole activities? I will not propose this class teaching, with teacher researchers acting as work for publication if these facilitators rather than instructors. Each meeting usually questions are not clarified. ended with PSETs reflecting on their learning and teaching experiences. The class met once a week for 200 minutes. The class contents and activities can be seen in Appendix 2.

9	R2612	Ninth, in conclusion, it is unclear what contribution this study makes to the literature. The authors did not explain what the new findings are to the literature? How could this study fill a research gap in the literature?	Thank you, but we thought these sentences address the gap: However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (Balcikanli, 2011). Another recent study by Davis & MacDonald (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study also tended to focus on one element of regulation of cognition, i.e., evaluation (Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-service teachers to possess metacognitive awareness in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (Alkam & Erdem, 2014). The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching could improve pre-service subject matter competence (Alkam & Erdem, 2014). The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017; Gopinath, 2019; Tosriadi et al., 2018). Reflections, used in this research also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (2019; Tosriadi et al., 2018). Reflections, used in this research or train PSETs' metacognitive awareness in teaching could increase their capability to examine their teaching and its results (Fox et al., 2019). The increas	Commented [A1]: Author mismatch Commented [A2]: Author mismatch
10	R2612	Language The text contains some grammatical, punctuation, and spelling errors. Proofreading would be better before publication.	Yes, it has been proofread and hopefully the issues raised have been rectified. Some grammatical mistakes in the quoted excerpts have not been fixed they were direct quotes	

	1	T	
11	R2613	There are too many "cf." in the text. "cf." stands for "conferre", which means "to compare". If you are using it as reference or a "see for example" than it is incorrect. "cf" should be used for "compare with", i.e. compare your ideas with someone else or idea of X with idea of Y. Example: Abbott (2010) found supportive results in her memory experiment, unlike those of previous work (cf. Zeller & Williams, 2007). Here, ideas of Abbott were compared with Zeller and Williams. An example in your manuscript: "The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (cf. Flavell, 1979)." Here,	
		if you cite idea of Flavell then usage of "cf." is incorrect. So, please revise all usages of "cf."	I have tried to fix these and I hope I have not missed.
12	R2613		Please help if there still some mistakes. Thank you. They have been highlighted
			Thank you. They have been fixed
13	R2613	Use lettered list instead of numbered list when items are phrases or incomplete sentences in a paragraph. (a), (b),	
14	R2613	Please, fix style errors indicated in the text and in the reference list. Use APA 7th Ed. Manual and Journal's template file available on the website.	Yes, I have tried to fix the errors but could not find the Doi or database link except researchgate. And they are very long. So please help. Thanks.
15			

16		
17		
18		
19		
20		
21		
22		

23		
24		
25		
26		
27		
28		
29		

30		
31		
32		
33		
34		
35		
36		

37		
38		
39		
40		
41		
42		
43		

44		
45		
46		
47		
48		
49		
50		

51		
52		
53		
54		
55		

Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, few studies have investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study aimed to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching. Mixed-methods research was conducted to collect quantitative and qualitative data from 45 pre-service English teachers (PSETs) in two Micro Teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD) focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness in teaching increased post-semester. They also admitted the positive contributions of reflections in enhancing their metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Intensive preparation and rigorous teaching practice in college are required in order to be able to teach effectively since teachers cannot give what they do not have (Okogbaa, 2017). The professional development of preservice English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper aimed to examine the perceived impacts of reflections on pre-service teachers' metacognitive awareness in teaching. It begins by discussing the challenges facing teachers' professional development. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. In addition, reflections were reviewed as one of the tools to empower teachers' metacognitive awareness in teaching, followed by the method, result, discussion, conclusion, recommendation, and limitations. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness. It was expected that this research would enrich, extend and partly fill the gap in the current literature about reflections and their impacts on pre-service English teachers' metacognitive awareness in teaching.

Teachers face complex challenges in actual classroom teaching, ranging from the teaching workload, big class size, and time limitations (Al-Shaboul et al., 2020). Other challenges include who assesses teachers' competence and performance (Utami et al., 2021). Accordingly, they need strong guidance from their mentors to face challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2010; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (Bakar et al., 2019; Filiz & Durnali, 2019; Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have examined pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-development. Another study (Holzberger et al., 2019) involving 3,483 high school students and their 155 mathematics teachers revealed that high-quality teaching corresponds with students' achievement but does not predict their excitement. A recent study (Senel, 2021) of four Turkish English Language Teaching (ELT) students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good quality teaching. The demand for teachers at different school levels to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS). Since pre-service teachers could teach at primary and secondary schools, reviewing what happened at these schools concerning the implementation of HOTS was beneficial in preparing them for future teaching. Integrating HOTS into the teaching practice was also a requirement in our university's Micro Teaching Syllabus (see the method section on learning contents and activities). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana et al. (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% related to HOTS.

Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020) revealed a low level of HOTS in mathematics subjects. A similar result was found in a study of student science teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities. This study urges lecturers to promote independent learning to students. However, training students to become

independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah

& Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (Flavell, 1979). Several recent studies have acknowledged the impacts of metacognition on students' learning and success (Bećirovic et al., 2017; Cao & Lin, 2020; Oxford, 2017).

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interest in teachers' metacognitive awareness in teaching (Abdellah, 2015; **Aktag et al.**, 2017; Alkam & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkam and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on their strategies to increase their metacognitive awareness in teaching performance. Other researchers (**Aktag et al.**, 2017) argued that teachers' metacognitive awareness in teaching affected students' learning positively and urged explicit

metacognitive awareness training for pre-service and in-service teachers. Similarly, research on primary school teachers in Puchong, Selangor (Palantis et al., 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practised regularly and intentionally for the teachers' teaching to impact students' learning positively.

Considering its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011) Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of 'the why and when' to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011, p. 1,032) argued that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching.

Commented [A1]: Based on the reviews above, the researchers arrived at this gap.

Reflection

Reflections are the self-conscious activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019). Similarly, Davis and McDonald (2019) found that teachers' reflections focusing on self-evaluation could positively impact their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & McDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers. Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in English as a foreign language (EFL) vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching EFL vocabulary. This research, however, did not explore how reflections could be used to increase teachers' cognition in EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive

awareness in teaching: lesson planning. They demonstrated the positive impact of reflective practice on the student teachers' lesson planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practise reflections during teaching. However, they should be coached on strategies to effectively and successfully engage in these reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in teaching (Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centred teaching. However, many teachers experience difficulty in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st-century skills learning in many classes in primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers could not teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (Beziat et al., 2018; Mattew et al., 2017) and student learning (Author, 2019; Soodla et al., 2017).

Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

Commented [A2]: Another gap and the rationale to conduct more study on the impacts of reflection on teachers' metacognitive awareness in teaching

Commented [A3]: Another reason why this current study needed to be conducted

How can reflections empower pre-service English_teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Research Design

This research adopted a mixed-methods approach, collecting quantitative and qualitative data (Creswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (Zohrabi, 2013).

Researcher Roles, Learning contents and activities

Since this was a practicum class, PSETs learned about teaching and practised peer, small groups, and the whole class teaching, with teacher researchers acting as facilitators rather than instructors. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. The class met once a week for 200 minutes. The class contents and activities can be seen in Appendix 2.

Sample and Data Collection

Commented [A4]: We assume that this is an international study. So, results are not limited to Indonesia. Please, delete "Indonesian" to make the research question more global and general. Reply: Indonesian, deleted

Using purposive sampling, thirty-six PSETs enrolled in two Micro Teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. As mentors for the class for more than ten years, we decided to introduce the Metacognitive Awareness Inventory in Teaching (MAIT) from Balcikanli (2011). This inventory covered all teachers' metacognitive elements and had good validity and reliability (Balcikanli, 2011). The KMO validity was 0.794, the value for Barlett TKest was 2513.474, and the reliability ranged from 0.79 to 0.85.

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to complete them. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition, and the second on the regulation of cognition. Statements on the knowledge of cognition constituted four items on declarative Knowledge (Decl1-Decl4), four items on procedural Knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted by the current researchers from Balcikanli's MAIT (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching. Qualitative data were gathered from students' answers to the questions about the dissemination of MAIT, summative reflections, and focus group discussions (FGDs) on the elements of metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they practiced teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination were gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. The FGDs involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e., (a) the benefits of metacognitive awareness in teaching; (b) the difficulties in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyze the participants' responses about their metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Author's (2019) mean category was used to interpret the mean for the expression motivation replaced with perception.

Table 1. Mean Range for Perception				
Mean Range	Interpretation			
3.68 - 5.00	A high degree of perception			
2.34 - 3.67	A moderate degree of perception			
1.00 -2 .33	A low degree of perception			

A paired-samples t-test was performed using **IBM SPSS Statistics (Version 17)** to determine whether there was a significant difference in students' perceptions about their metacognitive awareness in teaching in the post-semester.

Qualitative data analyses from reflections and FGD focused on finding key issues in students' answers (Gibson & Brown, 2009) about their metacognitive awareness in teaching, mainly on whether or not there were indications of improvements.

Validity and Reliability in Data Collection and Analysis

Validity and reliability of the data analyses were observed through triangulation, long-term observation, participatory research, and the handling of research bias (Lincoln & Guba, 1985; Merriam, 1998; Zohrabi, 2013). Two types of triangulation were undertaken, i.e., methods and data triangulation. The data from the questionnaires, dissemination, and summative reflections were triangulated in the analyses to corroborate the results. The researchers were involved in the research for four months (sixteen meetings), where they interacted with the research participants as facilitators in the micro-teaching class, designed the class contents and activities, repeatedly collected data on PSETs' metacognitive awareness in teaching through questionnaires, and students' reflections to arrive at data saturation. There was a collaboration with the participants in the data collection, so all the needed data in data analyses to answer the research questions were met. Research bias was addressed using Miles and Huberman's (1994) advice, namely: a) being in the micro-teaching class for four months (sixteen meetings); b) being less intrusive when students were doing practice teaching and conducting reflections based on MAIT; c) gaining rich data from pre-and post-semester questionnaires, a post semester questionnaire, students' reflections on the benefits of the dissemination of MAIT, and summative reflections; and d) preventing leading PSETs to expected answers. Through comparing and contrasting different data to the elements of MAIT, the findings of this research attained credibility and consistency. Through thematic analyses, different codes and themes

were recorded and compared with the elements of MAIT to reveal the perceived impacts of

reflections in empowering PSETs metacognitive awareness in teaching.

Results

Quantitative Data

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses.

Table 2. Students' Perceptions of the Role of Reflections in their Metacognitive Awareness

	Awareness						
No.	Statement	Mean	SD				
ReDecl1	Reflections increased my awareness of the strengths and weaknesses in teaching.	4.31	0.62				
ReDecl2	Reflections helped me to know the most important skills	4.31	0.55				
ReDecl3	Reflections helped me to have control over teaching	4.04	0.53				
ReDecl4	Reflections helped me to know the teaching expectations	4.31	0.47				
ReProc5	Reflections helped me to use proven teaching techniques	4.19	0.69				
ReProc6	Reflections helped me to have a specific reason for using a teaching technique	4.04	0.77				
ReProc7	Reflections helped me to have an awareness of the teaching techniques	4.15	0.78				
ReProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63				
ReCon9	Reflections helped me to compensate strengths for weaknesses	4.19	0.63				
ReCon10	Reflections helped me to motivate myself when having to teach	4.23	0.59				
ReCon11	Reflections helped me to use different teaching techniques as required by the situation.	4.00	0.75				
ReCon12	Reflections helped me to know when each teaching technique was most effective.	3.96	0.82				
RePlan13	Reflections helped me to pace myself in teaching	4.31	0.62				
RePlan14	Reflections helped me to set specific teaching goals before teaching	4.42	0.50				
RePlan15	Reflections helped me to ask questions about the teaching materials	4.27	0.60				
RePlan16	Reflections helped me to organize a time to accomplish teaching goals.	4.19	0.69				
ReMon17	Reflections helped me to ask periodically if teaching goals were being met	4.12	0.52				
ReMon18	Reflections helped me to assess how useful the teaching	4.12	0.59				

No.	Statement	Mean	SD
	techniques were		
ReMon19	Reflections helped my regular checking of students' comprehension	3.85	0.61
ReMon20	Reflections helped my self-questioning while teaching	4.19	0.49
ReEval21	Reflections helped me to ask myself about teaching goal accomplishment	4.19	0.57
ReEval22	Reflections helped me to ask myself if different techniques could have been used.	3.85	0.73
ReEval23	Reflections helped me to ask myself for more effective subsequent teaching	4.35	0.63
ReEval24	Reflections helped me to ask myself if all possible techniques had been considered	4.15	0.54
	Average	4.14	0.62

Adapted from Balcikanli (2011).

As indicated in Table 2, students generally admitted reflections' positive contributions in helping them develop their metacognitive awareness in teaching. The first four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with a mean range between 3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (Nurhapsari & Mbato, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

Table 3. Mean Comparison of Students' Responses to Metacognitive Awareness Statements in Teaching.

No	Statements	Pre-se	mester	Post-semester		Mean Increase
		Mean	Std. Dev	Mean	Std. Dev	-
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	0.77
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	0.75
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	1.33
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	0.48
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	0.54
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	0.59
Proc7	Awareness of the teaching techniques while teaching.	3.1	0.91	3.67	0.73	0.57
Proc8	Using teaching techniques automatically.	2.79	0.92	4.1	0.55	1.31
Con9	Compensating strengths for weaknesses	3.26	0.91	3.77	0.77	0.51
Con10	Being able to motivate oneself when having to teach	3.15	0.96	3.82	0.68	0.67
Con11	Using different teaching techniques as required by the situation.	3.33	0.95	3.67	0.66	0.34

0

Commented [A5]: In title case and centered

No	Statements	Pre-se	mester	Post-semester		Mean Increase
		Mean	Std. Dev	Mean	Std. Dev	-
Con12	Knowing when each teaching technique is most effective.	2.77	1.01	3.77	0.62	1.00
Plan13	Pacing oneself in teaching to have enough time.	3.31	0.92	3.67	0.57	0.36
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52
Eval24	Asking oneself if all possible techniques have been considered	3.15	0.70	3.74	0.54	0.59
	Average	3.19	0.89	3.90	0.62	0.71

Std. Dev, standard deviation.

The questionnaire was adopted from Balcikanli (2011), and its complete version can be seen in Appendix 1.

Table 3 above shows PSETs' responses to their metacognitive awareness in teaching pre- and post-semester teaching. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase

(1.33). The second highest response was the PSETs' awareness of their strengths and weaknesses in teaching (Decl1/ 0.77 mean increase) and their knowledge of the most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by PSETs' response to statement Pro6, which asked whether they had a particular reason for adopting a teaching technique in the classroom (Pro6/0.59 mean increase), and statement Pro7, which asked about their awareness of what teaching methods they used while teaching (Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase). Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

Parallel with their increased knowledge of cognition was their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, including time organization to accomplish their teaching goals (Plan16/with the highest

mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

Similarly, students agreed with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that they found themselves assessing how useful their teaching techniques were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

Additionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted to slightly improving their evaluation ability, as indicated in statements Eval23 and Eval21. Statement Eval23 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean

increase for this statement was 0.52. Statement Eval21, which focused on whether they asked themselves if they had accomplished their teaching goals after teaching, demonstrated a mean increase of 0.43.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.

			Table 4. Paired Sa	amples Statistic	25	
				•		Std.
Mean		Ν	Std. De	ev.	Error	Mean
3.19444444	444444	24	.2213378910940	002	.0451804	07827002
3.908119658	8119657	24	.2399292726905	547	.0489753	357704077
	7	Table 5. Pa	ired Samples Corr	elations		
		Ν	Correlation		Sig.	
Pair 1 Pre-semest	er & Post-	24	.031		.887	
semester						_
Std. Dev, standard de	eviation.					
			le 6. Paired Sampl	les Test		
			ired Differences			
		9	5% Confidence I			
		G		erence		
	Mean S	Std. Dev.	td. Error Mean Lower	. Unnor	t	Sig. a-tailed)
	Mean S	stu. Dev.	Mean Lower	r Upper df	ι	Sig. a-taileu)
Pair Pre-semester	-0.71368	0.32138	0.06560 -0.84 938	-0.57797	-10.879 23	.000 -
I Post-semester Std. Dev, standard de			938			
*						
A paired sample t-te	st was perfo	ormed to de	etermine students'	perception of	metacogni	tive
wareness in teaching as the dependent variable measured pre-and post-semester. The						
esults indicated a significant perceived increase between the pre-semester level, 3.19,						
standard deviation (S	SD) = 0.22	and nost-s	emester level 39	1 SD = 0.24	t(23) = -10	88
Sumaira actinition (<i></i> ,	una post s		1, 5D <mark>0.2 1</mark> , 1	(25) 10	.00,

p<.05. As a result, the null hypothesis was rejected, while the alternative hypothesis was accepted. It can be inferred that PSETs' perceived metacognitive awareness in teaching improved after participating in the research.

Qualitative Data

Qualitative data were collected through students' summative reflections and FGDs of the elements of metacognitive awareness in teaching. These activities were conducted after students had experienced teaching in the micro-teaching class for one month. Students practiced teaching their peers in small groups and the whole class in class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

1. Reflections on the Dissemination of MAIT

The researchers disseminated the ideas of the metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise students' awareness of metacognition in teaching. For example, SO8 wrote:

I learn something new from metacognition which is very beneficial for me as prospective teacher in the future. Teacher should be able to aware that every student is unique with their own intelligent. Even identical twin are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plan

that includes students various cognition.

The second benefit was that it assisted them in understanding their strengths and weaknesses in

teaching. S01 reported:

After understanding metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher; how to open class that makes the students are full of spirit, how to deliver the materials that makes the students can apply it in their lives, how to manage the class that makes the condition of the class is full of excitement, and how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me in order to understand whether the teaching goals is reached or not and understand what has to be improved.

Students also described four other benefits of MAIT, i.e., a) being more aware of the importance of teaching techniques; b) being more aware of possessing teaching skills; c) being more aware of knowing what to teach (planning); and d) being more aware of planning, monitoring and evaluating their teaching.

2. Summative Reflections

Reflections were a significant force in our efforts to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections based on MAIT throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching. The researchers summed up key ideas and, when relevant, cited a small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT:

I am really excited because finally I did well in this course. I am proud of myself because at the beginning of this semester, I felt uncomfortable and not sure I can do teaching. But, now I become more confident in teaching and feel more challenged. The fact is being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware with anything about teaching before, while and after teaching.

Another student (S20) emphasized that MAIT helped her to compensate for her weak

grammar with her cheerful personality in teaching. Understanding their strengths and

weaknesses in teaching seemed to be one of the most important contributions of MAIT to

many students. Similarly, S11 admitted, "In the final test teaching practice, my friends and

I have improved so much because we have applied MAIT, Higher Order Thinking, and

Bloom's Taxonomy." S28, in her long reflection constituting all aspects of MAIT, wrote:

I understand the materials that I am going to teach. I also remind myself that when I am teaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even the small things such as appearance and eye contact. I want to inspire my students to learn English and motivate them as well.

S17 described that the class had helped him understand teaching better. He reflected:

This class has given me a whole new world of college life. I got many experiences in this class especially how to teach something. Teaching is not easy but it is kind of challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparations that the teacher should prepare before they teach.

Most PSETs admitted that they had improved their declarative, procedural, and conditional knowledge in teaching. They also acknowledged regulating their teaching better through planning, monitoring, and evaluating. Their improvements are strengthened by the data gained in the FGDs.

3. Focus Group Discussions

FGD was conducted in small groups in class at the end of the semester. Individual students were given more than a week to write their reflections about the implementation of MAIT before the implementation of the FGDs. These FGDs discussed three main questions, i.e.: (a) benefits of metacognitive awareness in teaching; (b) challenges in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of

metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before, while, and after teaching. Before teaching, Group 1 asserted, "We can understand what points that we have to prepare before teaching in the class." Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4 acknowledged:

When we are teaching we learn how to manage the time allocation in order to have enough time. We try to implement and organize the material well. The teacher knows and explaining the learning objectives and try to implement the teaching technique that chosen in class. Then, we know how to monitor our students by asking them questions to make sure they understand the materials. In teaching learning activity we try to evaluate ourselves by asking ourselves about how well we are doing while we are teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that

MAIT helped them to know the best teaching strategies for their students, the lack of their

teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during,

and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses in the beginning of our teaching. To

be reflective on what we have to improve and what we have improved. To be used to with classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the student's needs, understanding students' character, and handling the nervous feeling (Group 1). Group 4 mentioned the challenge in terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching challenged them to (a) *"revise our lesson plan and the whole teaching; (b) find different techniques that will work better for the next teaching, and (c) ask ourselves how well we have accomplished our teaching goals once we are finished"*. Group 4 realized that metacognitive awareness used after teaching helped them "*always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance"*.

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: *(a) "Focus on each point of MAIT; and (b) Try to implement each point of MAIT in the learning activities"*. Group 3 came up with three suggestions, i.e.:

(1)The teachers should have list of teaching goals to be achieved; (2) The teachers should be aware of what their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching improved, consisting of declarative, procedural, and conditional knowledge, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept about teaching (Balcikanli, 2011; Mbato, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Mbato, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledged that they had improved conditional knowledge in teaching, namely, knowing when, why, and with whom to use specific knowledge and skills (Balcikanli, 2011; Mbato, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: a) knowing their strengths to compensate for their weaknesses in teaching; b) being able to motivate themselves to teach when they needed to teach; c) being able to employ various teaching techniques as required by the situation; and d) knowing when a teaching technique they used would be most productive.

Commented [A7]: May be deleted as a response to reviewer 1's suggestion that the section was too long, if the editor agrees.

Commented [A8]: May be deleted as a response to reviewer 1's suggestion that the section was too long, I f the editor agrees.

Commented [A9]: May be deleted as a response to reviewer 1's suggestion that the section was too long, if the editor agrees.

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after participating in the research. An instance of this improvement was shown in PSETs' response to statement 22. PSETs mentioned they asked themselves if they might have utilised other techniques after teaching (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the pre-semester level, 3.19, SD = 0.22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, p < 0.5).

The results from these quantitative data had much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGDs highlighted the considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in helping her to become more prepared and aware before, while, and after teaching. Another example was from Group1: "We can understand what points *we have to prepare before teaching in the class."* PSETs also appreciated the benefits of becoming aware of their metacognition while teaching. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage their time well while teaching.

Commented [A10]: May be deleted as a response to reviewer 1's suggestion that the section was too long, if the editor agrees.

Findings in this study corroborated previous studies (e.g., Aktag et al., 2017; Gopinath, 2014; Palantis et al., 2017), which asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere. Additionally, the results indicate the importance of teachers learning strategies to effectively and successfully engage in reflective practices (Ong et al., 2020). While acknowledging that metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and explicit training of metacognitive awareness for teachers need to be implemented (Aktag et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire post-semester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and supported by the qualitative data. The findings in this study enrich the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & McDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (Balcikanli, 2011). Another recent study by **Davis and McDonald** (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study focused on one element of regulation of cognition, i.e., evaluation (Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-service teachers to possess metacognition in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in teaching performance. This study indicated that increased metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (Alkam & Erdem, 2014).

The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017) in that it used a more comprehensive metacognitive awareness inventory (Balcikanli, 2011). The MAIT implemented in this research also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (Amalia et al., 2020; Arslan, 2019; Davis & McDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusion

This study provides significant evidence of the PSETs' positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them

to prepare strategies and materials to cope with 'the unexpected' in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. Facilitated through explicit reflections, possessing and displaying heightened metacognitive awareness in teaching could empower teachers, their teaching, and student learning. It was evident in this research that reflections could be utilized to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students. Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and in-service teachers.

Limitations

This research was conducted for a short period of only four months. This study did not collect data about the impacts of teachers' and peers' feedback on students' reflections and metacognitive awareness in teaching. In addition, the validity of the second questionnaire had not been tested before its administration. Future researchers may need to test its validity before using.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the

Centre for Research and Community Service (LPPM), Sanata Dharma University, Indonesia.

References

- Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of pre-service female teachers in Ajman University in UAE. *Procedia - Social and Behavioral Sciences*, 174, 560 – 567
- Aktag, I., Semsek, O., & Tuzcuoglu, S. (2017). Determination metacognitive awareness of physical education teachers. *Journal of Education and Training Studies*, 5(9), 63-69. http://doi.org/10.11114/jets.v5i9.2511
- Alkam, F., & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. *Procedia - Social and Behavioral Sciences*, 143, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475
- Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. *European Journal of Educational Research₂*, 10(1), 127-143. https://doi.org/10.12973/eu-jer.10.1.127
- Amalia, L. L., Widiati, U., Basthomi, Y., & Cahyono, B. Y. (2020). Reflective practice on lesson planning among EFL teacher educators. *Indonesian Journal of Applied Linguistics*, 10(1), 53-160. https://doi.org/10.17509/ijal.v10i1.25025
- Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*, 35(6), 117-132. https://doi.org/10.14221/ajte.2010v35n6.3
- Arslan, F. Y. (2019): Reflection in pre-service teacher education: Exploring the nature of four EFL pre-service teachers' reflections. *Reflective Practice*, 20(1), 111-124. https://doi.org/10.1080/14623943.2018.1564652
- Bakar, A. Y. A., Amat, S., & Mahmud, M. I. (2019). Issues and challenges of 21 century_ teaching and learning: The Malaysian experience. *International Journal of Management* and Applied Science, 5(12), 6-11. http://iraj.doionline.org/dx/IJMAS-IRAJ-DOIONLINE-16761
- Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). *Electronic Journal of Research in Educational Psychology*, 9(3), 1309-1332. http://doi.org/10.25115/ejrep.v9i25.1620
- Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading strategies among students at International Burch University: A case study. *European Journal of Contemporary Education*, 6(4), 645-655. https://doi.org/10.13187/ejced.2017.4.645
- Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in current and future principals. School Leadership Review, 12(2) 23-31. https://scholarworks.sfasu.edu/slr/vol12/iss2/4
- Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed method-theory and practice. Sequential, explanatory approach. *International Journal of Quantitative and Qualitative Research Methods*, 5, 10–27. https://www.eajournals.org/wp-content/uploads/Mixed-Methods-Theory-and-Practice.-Sequential-Explanatory-Approach.pdf
- Chang, B. (2019). Reflection in learning. *Online Learning*, 23(1), 95-110. http://doi.org/10.24059/olj.v23i1.1447
- Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension by vocational college students. *English Language Teaching*, 13(4), 127-139.

Commented [A11]: Please check entire reference list and fix incorrect and missing punctuations (Use APA 7 style punctuation).

Put space between name initials.

If you have the DOI for the journal article, you should include this as a link it in the reference. If the article without a DOI, provide the nondatabase URL of the article. (To find the DOI easily see: http://doi.crossref.org/simpleTextQuery)

Thanks, But some articles deriving from Researchgate poses difficulty in finding their nondatabase URL. For example, the one by Subia and Marcos.

Commented [A12]: Doi or nondatabase article link? Is it this one?

https://doi.org/10.1016/j.sbspro.2015.01.707 This is a Doi

Commented [A13]: <u>https://doi.org/</u>... Edit all

Commented [A14]: Put dot after initial

Use comma to separate authors. Do not use semi-colon.

Commented [A15]: Put space between initials. Fix other references, too.

Commented [A16]: Comma after surname

https://doi.org/10.5539/elt.v13n4p127

- Creswell, J.W., & Clark, V.L.P. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage.
- Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of ESL freshmen: A sequential explanatory mixed design. *TESOL International Journal*, 15(1), 20-30.
- Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Selfassessment through a standards-based appraisal process. *Reflective Practice*, 20(10), 125-141. https://doi.org/10.1080/14623943.2019.1569508
- de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive learning and the development of higher-order thinking skills. *Journal of University Teaching & Learning Practice*, *16*(3), 1-17. https://doi.org/10.53761/1.16.3.3
- Fakhomah, D.N., & Utami, M.S. (2019). Pre-service English teacher perception about higher order thinking skills (HOTS) in the 21st century learning. *International Journal of Indonesian Education and Teaching*, 3(1), 41-49. https://doi.org/10.24071/ijiet.2019.030104
- Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school on pedagogical formation program in Turkey. *European Journal of Educational Research*, 8(2), 395-407. https://doi.org/10.12973/eu-jer.8.2.395
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitivedevelopmental inquiry. *American Psychologist*, 34(10), 906-911. https://doi.org/10.1037/0003-066X.34.10.906
- Fox, R. K., Dodman, S., & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: developing critical reflective capacity in teachers and teacher educators, *Reflective Practice*, 20(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124
- Gabrijelčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional competences: A study among student teachers and students in education science in Slovenia. *European Journal of Educational Research*, 10(4), 2033-2044. https://doi.org/10.12973/eu-jer.10.4.2033
- Gibson, W., & Brown, A. (2009). Working with qualitative data. Sage.
- Gopinath, L. S. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. *IOSR Journal of Research & Method in Education*, 4(4), 33-35. https://www.iosrjournals.org/iosr-jrme/papers/Vol-4%20Issue-4/Version-5/D04453335.pdf
- Hamiddin, H., & Saukah, A. (2020) Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. *Indonesian Journal of Applied Linguistics*, 9(3), 608-615. https://doi.org/10.17509/ijal.v9i3.23211
- Hermagustiana, I., Hamra, A., Rahman, A. Q., & Salija, K. (2017). Reflection of teacher cognition in EFL vocabulary instructional practices. *International Journal of English Linguistics*, 7(5), 34-45. http://doi.org/10.5539/ijel.v7n5p34
- Holzberger, D., Praetorius, A.K., Seidel, T., & Kunter, M. (2019). Identifying effective teachers: The relation between teaching profiles and students' development in achievement and enjoyment. *European Journal of Psychology of Education*, 34, 801– 823. https://doi.org/10.1007/s10212-018-00410-8

Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. Sage.

- Kelle, U., Kühberger, C., & Bernhard, R. (2019). How to use mixed-methods and triangulation designs: An introduction to history education research. *History Education Research Journal*, 16(1), 5–23. https://doi.org/10.18546/HERJ.16.1.02.
- Külekçi, G. (2018). Identifying the perceptions of prospective English language teachers on characteristics of effective teachers: Who is the ideal teacher? <u>Novitas-ROYAL [Research</u>]

on Youth and Language], 12(1), 1-15.

- Lupascu, A.R., Pânisoară, G., & Pânisoară, I.O. (2014). Characteristics of effective teacher. *Procedia - Social and Behavioral Sciences*, 127, 534 – 538.
- Mattew, P., Mathew, P., & Peechattu, P.J. (2017). Reflective practices: A means to teacher development. Asia Pacific Journal of Contemporary Education and Communication Technology, 3(1), 126-131. https://doi.org/10.17509/ijal.v10i3.31752
- Merriam, S. B. (1998). Qualitative research and case study applications in education. Jossey-Bass.
- Mbato, C. L. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. *Humaniora*, *31*(1), 92-101. http://doi.org/10.22146/jh.v31i1.37295
- Miles, M. B., & Huberman. A. M. (1994). *Qualitative Data Analysis: An Expanded Source Book.* 2nd ed. Sage.
- Mitana, J. M. V., Muwagga, A. M., & Ssempala, C. (2018). Assessment of higher order thinking skills: A case of Uganda primary leaving examinations. *African Educational Research Journal*, 6(4), 240-249. http://doi.org/10.30918/AERJ.64.18.083
- Nurhapsari, A., & Mbato, C. L. (2019). Motivation to learn English: Why Indonesian adult learners join a community of interest. *Anima Indonesian Psychological Journal*, 34(2), 65-75. https://doi.org/10.24123/aipj.v34i2.2202
- Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. *Journal* of Education and Practice, 8(5), 81-86.
- Ong, W. A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL pre-service teachers. *Indonesian Journal of Applied Linguistics*, 9(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222
- Oxford, R. L. (2017). Teaching and researching language learning strategies: Self-regulation in context. Routledge.
- Palantis, N. J., Mohamed, A., Ibrahim, A. S. M., Ismail, S. H., Anuar, N. K., Marof, A. M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. https://doi.org/10.23917/varidika.v29i2.5629
- Poedjiastutie, D., Akhyar, F., Hidayati, D., & Gasmi, F. N. (2018). Does curriculum help students to develop their English competence? A case in Indonesia. *Arab World English Journal (AWEJ)*, 9(2),175-185. https://dx.doi.org/10.24093/awej/vol9no2.12
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, *19*(4), 460–475. https://doi/10.1006/ceps.1994.1033
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. *European Journal of Educational Research*, 10(2), 629-640. https://doi.org/10.12973/eu-jer.10.2.629
- Soodla, P., Jögi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education*, 32(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x.
- Subia, G. S., Marcos, M. C., Pascual, L. E., Tomas, A. V., & Liangco, M. M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of science, technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*, *62*(3), 261-268.
- Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, 13(3), 1-14. http://dx.doi.org/10.29333/iji.2020.13325a

Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers'

Commented [A17]: Can't find doi nor database link except research gate:

https://www.researchgate.net/publication/342762567 C ognitive Levels as Measure of Higher-Order Thinking Skills in Senior High School Mathematic s of Science Technology Engineering and Mathematics S TEM Graduates reflection as a pathway to develop teacher professionalism. *International Online Journal of Education and Teaching*, *5*(4), 921-932. https://files.eric.ed.gov/fulltext/EJ1250545.pdf

- Utami, D. R. T., Pranoto, Y. K. S., Latiana, L., & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, 10(2), 537-551. https://doi.org/10.12973/eu-jer.10.2.537
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, 3(2), 254-262. https://doi.org/10.4304/tpls.3.2.254-262

Appendix 1

Metacognitive Awareness Inventory in Teaching

No	Statements
Decl1	I am aware of the strengths and weaknesses in my teaching.
Decl2	I know what skills are most important
Decl3	I have control over how well I teach.
Decl4	I know what I am expected to teach.
Proc5	I try to use teaching techniques that worked in the past.
Proc6	I have a specific reason for choosing each teaching technique in class.
Proc7	I am aware of what teaching techniques I use while I am teaching.
Proc8	I use helpful teaching techniques automatically.
Con9	I use my strengths to compensate for my weaknesses in my teaching.
Con10	I can motivate myself to teach when I really need to teach.
Con11	I use different teaching techniques depending on the situation.
Con12	I know when each teaching technique I use will be most effective.
Plan13	I pace myself while I am teaching in order to have enough time.
Plan14	I set my specific teaching goals before I start teaching.
Plan15	I ask myself questions about the teaching materials I am going to use.
Plan16	I organize my time to best accomplish my teaching goals.
Mon17	I ask myself periodically if I meet my teaching goals while I am teaching.
Mon18	I find myself assessing how useful my teaching techniques are while I am
	teaching.
Mon19	I check regularly to what extent my students comprehend the topic while I am teaching.
Mon20	I ask myself questions about how well I am doing while I am teaching.
Eval21	I ask myself how well I have accomplished my teaching goals once I am finished.
Eval22	I ask myself if I could have used different techniques after each teaching
	experience.
Eval23	After teaching a point, I ask myself if I'd teach it more effectively next time.
Eval24	I ask myself if I have considered all possible techniques after teaching a point.
Source: I	Balcikanli, E. (2011).

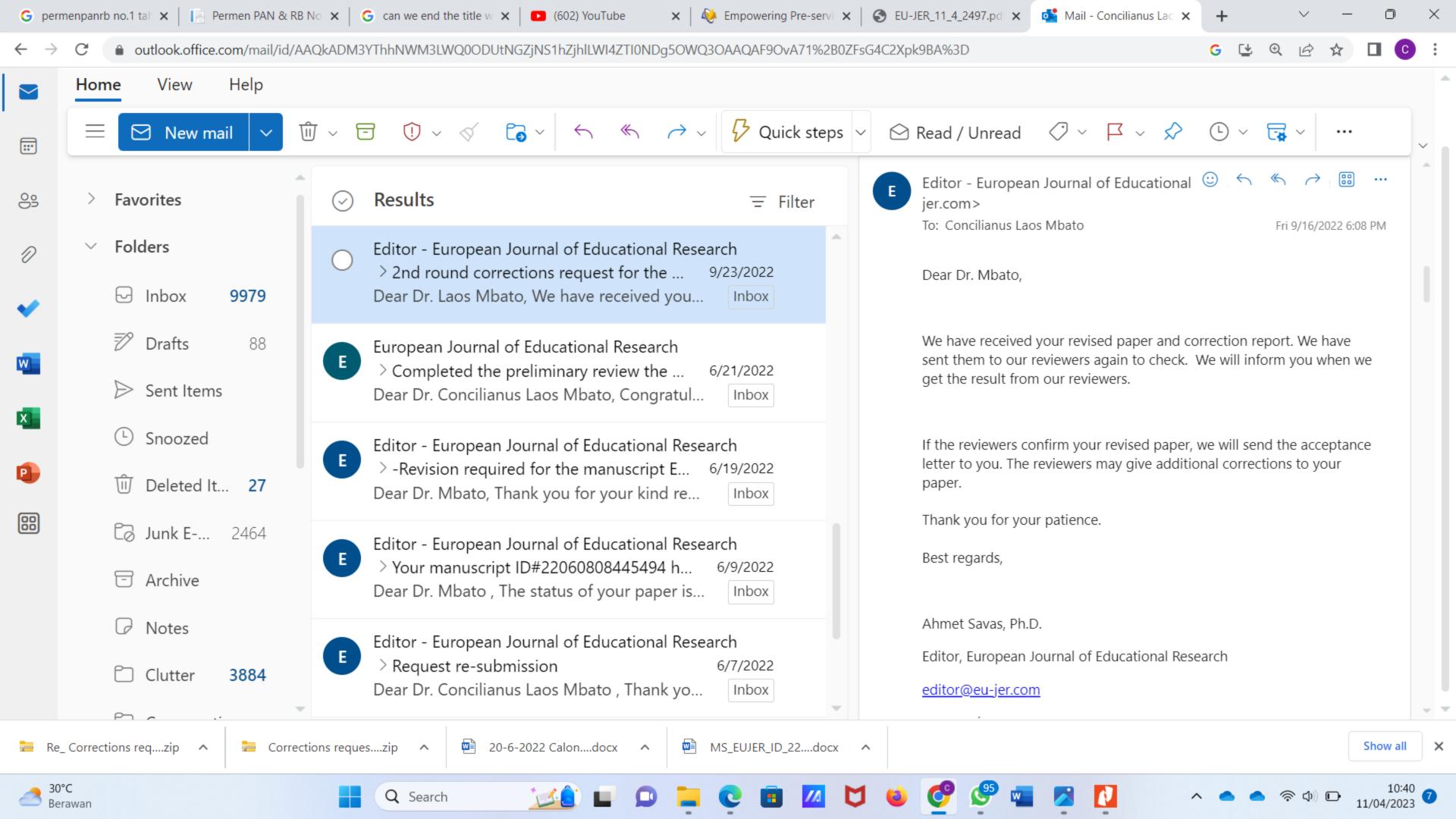
Appendix 2

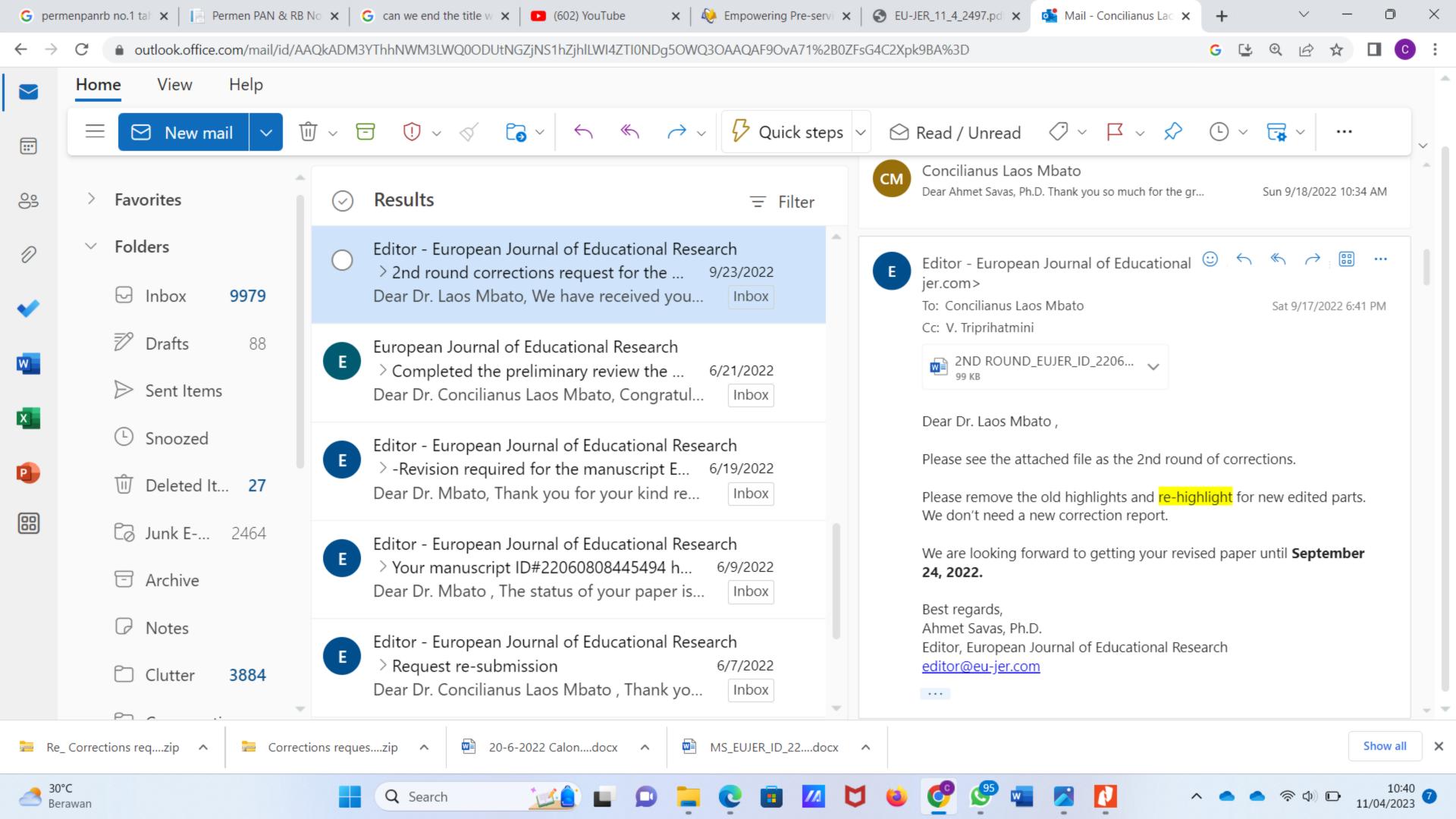
Content and Activities

Wee	Content	Activitie			
1	 Introduction: Overview of the course Competencies required for a teaching profession 	Lecture Discussion Student reflection			
2	 Classroom Management Activities for Creating A Positive Learning Environment (Positive classroom management activities) 	 Short Lecture Presentation Discussion Student written reflection 			

3	• Skill Practice 1: set induction, and	Peer teaching
	set closure	 Peer evaluation based on the
	Skill Practice 2: stimulus variation	observation sheet
4	Integrated teaching skill practice (1)	• Teaching small groups using the most
	88	appropriate teaching methods and
		strategies in their classes
5	Dissemination of Metacognitive	Teaching small groups
6	Integrated teaching skill practice (3)	Whole class teaching
7	Lesson Planning 1 using MAIT	Whole class teaching Workshop
	Lesson Flamming T using MATT	Teacher feedback
8	Mid-Test 1 using MAIT	• Individual teaching of the whole class
1		• Individual teaching the whole class @
1	Mid-Test 2 using MAIT Mid-Test 3 using MAIT	• Individual teaching the whole class @
1	BB	25-30 minutes*
		Peer feedback
		Teacher feedback
		Student written reflection based on
L		MAIT
1	Lesson Planning 2 using MAIT	Discussion
2		Workshop
		 Peer feedback Teacher feedback
		Teacher feedbackStudent written reflection based on
		• Student written renection based on MAIT
1	Final Test 1 using MAIT	• Individual teaching the whole class @
3	T mai Test T using withit	 Individual teaching the whole class @ 25-30 minutes*
-		 Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**
1	Final Test 2 using MAIT	 BASED ON MAIT** Individual teaching the whole class @ 25-30 minutes**
4		25-30 minutes**
		Whole class feedback Track on finally also
		• Teacher feedback
		SUMMATIVE REFLECTION BASED ON MAIT**
1		DAGED UN MALL
1	Final Test 3 using MAIT	• Individual teaching the whole class @
1 5	č	25-30 minutes*
		Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**
1	Final Test 4 using MAIT	 Individual teaching the whole class @ 25-30 minutes**
6	Ŭ	25-30 minutes**
		 Whole class feedback
1		Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**

* depends on the number of students in the class ** Applies to the students who taught in that particular week





Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, few studies have investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study aimed to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching. Mixed-methods research was conducted to collect quantitative and qualitative data from 45 pre-service English teachers (PSETs) in two Micro Teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD) focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness in teaching increased post-semester. They also admitted the positive contributions of reflections in enhancing their metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

Commented [A1]: Not special names Don't capitalize

Edit all.

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Intensive preparation and rigorous teaching practice in college are required in order to be able to teach effectively since teachers cannot give what they do not have (Okogbaa, 2017). The professional development of preservice English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper aimed to examine the perceived impacts of reflections on pre-service teachers' metacognitive awareness in teaching. It begins by discussing the challenges facing teachers' professional development. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. In addition, reflections were reviewed as one of the tools to empower teachers' metacognitive awareness in teaching, followed by the method, result, discussion, conclusion, recommendation, and limitations. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness. It was expected that this research would enrich, extend and partly fill the gap in the current literature about reflections and their impacts on pre-service English teachers' metacognitive awareness in teaching.

Teachers face complex challenges in actual classroom teaching, ranging from the teaching workload, big class size, and time limitations (Al-Shaboul et al., 2020). Other challenges include who assesses teachers' competence and performance (Utami et al., 2021). Accordingly, they need strong guidance from their mentors to face challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2010; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (Bakar et al., 2019; Filiz & Durnali, 2019; Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have examined pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-development. Another study (Holzberger et al., 2019) involving 3,483 high school students and their 155 mathematics teachers revealed that high-quality teaching corresponds with students' achievement but does not predict their excitement. A recent study (Senel, 2021) of four Turkish English Language Teaching (ELT) students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good quality teaching. The demand for teachers at different school levels to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS). Since pre-service teachers could teach at primary and secondary schools, reviewing what happened at these schools concerning the implementation of HOTS was beneficial in preparing them for future teaching. Integrating HOTS into the teaching practice was also a requirement in our university's Micro Teaching Syllabus (see the method section on learning contents and activities). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana et al. (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% related to HOTS.

Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020) revealed a low level of HOTS in mathematics subjects. A similar result was found in a study of student science teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities. This study urges lecturers to promote independent learning to students. However, training students to become

independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah

& Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (Flavell, 1979). Several recent studies have acknowledged the impacts of metacognition on students' learning and success (Bećirovic et al., 2017; Cao & Lin, 2020; Oxford, 2017).

Commented [A2]: Remove all empty lines

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interest in teachers' metacognitive awareness in teaching (Abdellah, 2015; **Aktag et al.**, 2017; Alkam & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkam and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on their strategies to increase their metacognitive awareness in teaching performance. Other researchers (**Aktag et al.**, 2017) argued that teachers' metacognitive awareness in teaching affected students' learning positively and urged explicit

metacognitive awareness training for pre-service and in-service teachers. Similarly, research on primary school teachers in Puchong, Selangor (Palantis et al., 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practised regularly and intentionally for the teachers' teaching to impact students' learning positively.

Considering its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011) Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of 'the why and when' to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011, p. 1,032) argued that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching.

Reflection

Reflections are the self-conscious activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019). Similarly, Davis and McDonald (2019) found that teachers' reflections focusing on self-evaluation could positively impact their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & McDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers. Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in English as a foreign language (EFL) vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching EFL vocabulary. This research, however, did not explore how reflections could be used to increase teachers' cognition in EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive

awareness in teaching: lesson planning. They demonstrated the positive impact of reflective practice on the student teachers' lesson planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practise reflections during teaching. However, they should be coached on strategies to effectively and successfully engage in these reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in teaching (Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centred teaching. However, many teachers experience difficulty in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st-century skills learning in many classes in primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers could not teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (Beziat et al., 2018; Mattew et al., 2017) and student learning (Author, 2019; Soodla et al., 2017). Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

Commented [A3]: Missing surname

Replace all blended authors

How can reflections empower pre-service English teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Research Design

This research adopted a mixed-methods approach, collecting quantitative and qualitative data (Creswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (Zohrabi, 2013).

Researcher Roles, Learning contents and activities

Since this was a practicum class, PSETs learned about teaching and practised peer, small groups, and the whole class teaching, with teacher researchers acting as facilitators rather than instructors. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. The class met once a week for 200 minutes. The class contents and activities can be seen in Appendix 2.

Sample and Data Collection

Commented [A5]: Title case

Using purposive sampling, thirty-six PSETs enrolled in two Micro Teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. As mentors for the class for more than ten years, we decided to introduce the Metacognitive Awareness Inventory in Teaching (MAIT) from Balcikanli (2011). This inventory covered all teachers' metacognitive elements and had good validity and reliability (Balcikanli, 2011). The KMO validity was 0.794, the value for Barlett TKest was 2513.474, and the reliability ranged from 0.79 to 0.85.

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to complete them. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition, and the second on the regulation of cognition. Statements on the knowledge of cognition constituted four items on declarative Knowledge (Decl1-Decl4), four items on procedural Knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted by the current researchers from Balcikanli's MAIT (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching. Qualitative data were gathered from students' answers to the questions about the dissemination of MAIT, summative reflections, and focus group discussions (FGDs) on the elements of metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they practiced teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination were gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. The FGDs involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e., (a) the benefits of metacognitive awareness in teaching; (b) the difficulties in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyze the participants' responses about their metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Author's (2019) mean category was used to interpret the mean for the expression motivation replaced with perception.

		Table 1. Mean Range for Perception			
Mean Range Interpretation					
	3.68 -5.00 A high degree of perception				
	2.34 - 3.67	A moderate degree of perception			
	1.00 -2 .33	A low degree of perception			

Commented [A6]: Not in the reference list **Commented [A7]:** Missing surname.

A paired-samples t-test was performed using **IBM SPSS Statistics (Version 17)** to determine whether there was a significant difference in students' perceptions about their metacognitive awareness in teaching in the post-semester.

Qualitative data analyses from reflections and FGD focused on finding key issues in students' answers (Gibson & Brown, 2009) about their metacognitive awareness in teaching, mainly on whether or not there were indications of improvements.

Validity and Reliability in Data Collection and Analysis

Validity and reliability of the data analyses were observed through triangulation, long-term observation, participatory research, and the handling of research bias (Lincoln & Guba, 1985; Merriam, 1998; Zohrabi, 2013). Two types of triangulation were undertaken, i.e., methods and data triangulation. The data from the questionnaires, dissemination, and summative reflections were triangulated in the analyses to corroborate the results. The researchers were involved in the research for four months (sixteen meetings), where they interacted with the research participants as facilitators in the micro-teaching class, designed the class contents and activities, repeatedly collected data on PSETs' metacognitive awareness in teaching through questionnaires, and students' reflections to arrive at data saturation. There was a collaboration with the participants in the data collection, so all the needed data in data analyses to answer the research questions were met. Research bias was addressed using Miles and Huberman's (1994) advice, namely: a) being in the micro-teaching class for four months (sixteen meetings); b) being less intrusive when students were doing practice teaching and conducting reflections based on MAIT; c) gaining rich data from pre-and post-semester questionnaires, a post semester questionnaire, students' reflections on the benefits of the dissemination of MAIT, and summative reflections; and d) preventing leading PSETs to expected answers. Through comparing and contrasting different data to the elements of MAIT, the findings of this research attained credibility and consistency. Through thematic analyses, different codes and themes

were recorded and compared with the elements of MAIT to reveal the perceived impacts of

reflections in empowering PSETs metacognitive awareness in teaching.

Results

Quantitative Data

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses.

Commented [A8]: Remove all empty lines

Table 2. Students' Perceptions of the Role of Reflections in their Metacognitive Awareness

No.	Statement	Mean	SD
ReDecl1	Reflections increased my awareness of the strengths and weaknesses in teaching.	4.31	0.62
ReDecl2	Reflections helped me to know the most important skills	4.31	0.55
ReDecl3	Reflections helped me to have control over teaching	4.04	0.53
ReDecl4	Reflections helped me to know the teaching expectations	4.31	0.47
ReProc5	Reflections helped me to use proven teaching techniques	4.19	0.69
ReProc6	Reflections helped me to have a specific reason for using a teaching technique	4.04	0.77
ReProc7	Reflections helped me to have an awareness of the teaching techniques	4.15	0.78
ReProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63
ReCon9	Reflections helped me to compensate strengths for weaknesses	4.19	0.63
ReCon10	Reflections helped me to motivate myself when having to teach	4.23	0.59
ReCon11	Reflections helped me to use different teaching techniques as required by the situation.	4.00	0.75
ReCon12	Reflections helped me to know when each teaching technique was most effective.	3.96	0.82
RePlan13	Reflections helped me to pace myself in teaching	4.31	0.62
RePlan14	Reflections helped me to set specific teaching goals before teaching	4.42	0.50
RePlan15	Reflections helped me to ask questions about the teaching materials	4.27	0.60
RePlan16	Reflections helped me to organize a time to accomplish teaching goals.	4.19	0.69
ReMon17	Reflections helped me to ask periodically if teaching goals were being met	4.12	0.52
ReMon18	Reflections helped me to assess how useful the teaching	4.12	0.59

No.	Statement	Mean	SD
	techniques were		
ReMon19	Reflections helped my regular checking of students' comprehension	3.85	0.61
ReMon20	Reflections helped my self-questioning while teaching	4.19	0.49
ReEval21	Reflections helped me to ask myself about teaching goal accomplishment	4.19	0.57
ReEval22	Reflections helped me to ask myself if different techniques could have been used.	3.85	0.73
ReEval23	Reflections helped me to ask myself for more effective subsequent teaching	4.35	0.63
ReEval24	Reflections helped me to ask myself if all possible techniques had been considered	4.15	0.54
	Average	4.14	0.62

Adapted from Balcikanli (2011).

As indicated in Table 2, students generally admitted reflections' positive contributions in helping them develop their metacognitive awareness in teaching. The first four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with a mean range between 3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (Nurhapsari & Mbato, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

Commented [A9]: Remove all empty lines

Table 3. Mean Comparison of Students' Responses to Metacognitive Awareness

No	No Statements		ents Pre-semester		emester	Mean Increase	
		Mean	Std. Dev	Mean	Std. Dev		
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	0.77	
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	0.75	
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	1.33	
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	0.48	
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	0.54	
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	0.59	
Proc7	Awareness of the teaching techniques while teaching.	3.1	0.91	3.67	0.73	0.57	
Proc8	Using teaching techniques automatically.	2.79	0.92	4.1	0.55	1.31	
Con9	Compensating strengths for weaknesses	3.26	0.91	3.77	0.77	0.51	
Con10	Being able to motivate oneself when having to teach	3.15	0.96	3.82	0.68	0.67	
Con11	Using different teaching techniques as required by the situation.	3.33	0.95	3.67	0.66	0.34	

Statements in Teaching.

No	Statements	Pre-semester		Post-semester		Mean Increase
		Mean	Std. Dev	Mean	Std. Dev	-
Con12	Knowing when each teaching technique is most effective.	2.77	1.01	3.77	0.62	1.00
Plan13	Pacing oneself in teaching to have enough time.	3.31	0.92	3.67	0.57	0.36
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52
Eval24	Asking oneself if all possible techniques have been considered	3.15	0.70	3.74	0.54	0.59
	Average	3.19	0.89	3.90	0.62	0.71

Commented [A10]: SD:

The questionnaire was adopted from Balcikanli (2011), and its complete version can be seen in

Appendix 1.

Table 3 above shows PSETs' responses to their metacognitive awareness in teaching pre- and post-semester teaching. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase

This abbreviation is better

Commented [A11]: A paragraph should consist of at least two sentences. Edit the whole paper.

(1.33). The second highest response was the PSETs' awareness of their strengths and weaknesses in teaching (Decl1/ 0.77 mean increase) and their knowledge of the most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by PSETs' response to statement Pro6, which asked whether they had a particular reason for adopting a teaching technique in the classroom (Pro6/0.59 mean increase), and statement Pro7, which asked about their awareness of what teaching methods they used while teaching (Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase). Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

Parallel with their increased knowledge of cognition was their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, including time organization to accomplish their teaching goals (Plan16/with the highest

mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

Similarly, students agreed with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that they found themselves assessing how useful their teaching techniques were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

Additionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted to slightly improving their evaluation ability, as indicated in statements Eval23 and Eval21. Statement Eval23 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean

increase for this statement was 0.52. Statement Eval21, which focused on whether they asked themselves if they had accomplished their teaching goals after teaching, demonstrated a mean increase of 0.43.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.

Table 4. Paired Samples Statistics								
				S	Std.			
Mean	Ν	Std. De	v.	Error 1	Mean			
<mark>3.19444444444444444</mark>	<mark>24</mark>	.2213378910940	<mark>02</mark>	.04518040	<mark>)7827002</mark>			
3.908119658119657	24	.23992927269054	47	.0489753	57704077	Commented [A12]: 1)Round up to two digits		
	Table 5. Pa	ired Samples Corre	elations			2)You can use zero before decimal fraction if the statistics can be greater than 1. So, Std.Dev and SEM values can start with zero.		
	Ν	Correlation		Sig.				
Pair 1 Pre-semester & Pos	t- 24	.031		.887				
semester								
Std. Dev, standard deviation.						-		
	Tab	e 6. Paired Sample	es Test			Commented [A13]: t-Test		
		ired Differences						
	q	5% Confidence In	nterval of the			edit the t-test table according to APA style see https://apastyle.apa.org/style-grammar-		
		Diffe				guidelines/tables-figures/sample-tables		
	S	td. Error	renee					
Mean	Std. Dev.	Mean Lower	Upper	t	Sig. a-tailed)			
			df	10.050.00	0.00	_		
Pair Pre-semester -0.7136 I Post-semester	8 0.32138	0.06560 -0.84 938	-0.57797	-10.879 23	<mark>.000</mark>			
Std. Dev, standard deviation.		<mark>750</mark>				_		
,								
A paired sample t-test was performed to determine students' perception of metacognitive								
awareness in teaching as the dependent variable measured pre-and post-semester. The								
	-		-					
results indicated a significan	t perceived in	crease between th	e pre-semest	er level, 3.	19,			
standard deviation (SD) = 0.22 , and post-semester level, 3.91, SD = 0.24 , $t(23) = -10.88$,								

Table 4. Paired Samples Statistics

p<.05. As a result, the null hypothesis was rejected, while the alternative hypothesis was accepted. It can be inferred that PSETs' perceived metacognitive awareness in teaching improved after participating in the research.

Qualitative Data

Qualitative data were collected through students' summative reflections and FGDs of the elements of metacognitive awareness in teaching. These activities were conducted after students had experienced teaching in the micro-teaching class for one month. Students practiced teaching their peers in small groups and the whole class in class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

1. Reflections on the Dissemination of MAIT

The researchers disseminated the ideas of the metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise students' awareness of metacognition in teaching. For example, SO8 wrote:

I learn something new from metacognition which is very beneficial for me as prospective teacher in the future. Teacher should be able to aware that every student is unique with their own intelligent. Even identical twin are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plan

that includes students various cognition.

The second benefit was that it assisted them in understanding their strengths and weaknesses in

teaching. S01 reported:

After understanding metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher; how to open class that makes the students are full of spirit, how to deliver the materials that makes the students can apply it in their lives, how to manage the class that makes the condition of the class is full of excitement, and how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me in order to understand whether the teaching goals is reached or not and understand what has to be improved.

Students also described four other benefits of MAIT, i.e., a) being more aware of the importance of teaching techniques; b) being more aware of possessing teaching skills; c) being more aware of knowing what to teach (planning); and d) being more aware of planning, monitoring and

evaluating their teaching.

2. Summative Reflections

Reflections were a significant force in our efforts to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections based on MAIT throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching. The researchers summed up key ideas and, when relevant, cited a Commented [A14]: APAA 7 format : (a) ... (b) ...

small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT:

I am really excited because finally I did well in this course. I am proud of myself because at the beginning of this semester, I felt uncomfortable and not sure I can do teaching. But, now I become more confident in teaching and feel more challenged. The fact is being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware with anything about teaching before, while and after teaching.

Another student (S20) emphasized that MAIT helped her to compensate for her weak

grammar with her cheerful personality in teaching. Understanding their strengths and

weaknesses in teaching seemed to be one of the most important contributions of MAIT to

many students. Similarly, S11 admitted, "In the final test teaching practice, my friends and

I have improved so much because we have applied MAIT, Higher Order Thinking, and

Bloom's Taxonomy." S28, in her long reflection constituting all aspects of MAIT, wrote:

I understand the materials that I am going to teach. I also remind myself that when I am teaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even the small things such as appearance and eye contact. I want to inspire my students to learn English and motivate them as well.

S17 described that the class had helped him understand teaching better. He reflected:

This class has given me a whole new world of college life. I got many experiences in this class especially how to teach something. Teaching is not easy but it is kind of challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparations that the teacher should prepare before they teach.

Most PSETs admitted that they had improved their declarative, procedural, and conditional knowledge in teaching. They also acknowledged regulating their teaching better through planning, monitoring, and evaluating. Their improvements are strengthened by the data gained in the FGDs.

3. Focus Group Discussions

FGD was conducted in small groups in class at the end of the semester. Individual students were given more than a week to write their reflections about the implementation of MAIT before the implementation of the FGDs. These FGDs discussed three main questions, i.e.: (a) benefits of metacognitive awareness in teaching; (b) challenges in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of

metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before, while, and after teaching. Before teaching, Group 1 asserted, "We can understand what points that we have to prepare before teaching in the class." Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4 acknowledged:

When we are teaching we learn how to manage the time allocation in order to have enough time. We try to implement and organize the material well. The teacher knows and explaining the learning objectives and try to implement the teaching technique that chosen in class. Then, we know how to monitor our students by asking them questions to make sure they understand the materials. In teaching learning activity we try to evaluate ourselves by asking ourselves about how well we are doing while we are teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that

MAIT helped them to know the best teaching strategies for their students, the lack of their

teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during,

and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses in the beginning of our teaching. To

be reflective on what we have to improve and what we have improved. To be used to with classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the student's needs, understanding students' character, and handling the nervous feeling (Group 1). Group 4 mentioned the challenge in terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching challenged them to (a) *"revise our lesson plan and the whole teaching; (b) find different techniques that will work better for the next teaching, and (c) ask ourselves how well we have accomplished our teaching goals once we are finished"*. Group 4 realized that metacognitive awareness used after teaching helped them "*always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance"*.

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: *(a) "Focus on each point of MAIT; and (b) Try to implement each point of MAIT in the learning activities"*. Group 3 came up with three suggestions, i.e.:

(1)The teachers should have list of teaching goals to be achieved; (2) The teachers should be aware of what their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching improved, consisting of declarative, procedural, and conditional knowledge, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept about teaching (Balcikanli, 2011; Mbato, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Mbato, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledged that they had improved conditional knowledge in teaching, namely, knowing when, why, and with whom to use specific knowledge and skills (Balcikanli, 2011; Mbato, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: a) knowing their strengths to compensate for their weaknesses in teaching; b) being able to motivate themselves to teach when they needed to teach; c) being able to employ various teaching techniques as required by the situation; and d) knowing when a teaching technique they used would be most productive.

Commented [A15]: APA 7 format: (a) ... (b) ...

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after participating in the research. An instance of this improvement was shown in PSETs' response to statement 22. PSETs mentioned they asked themselves if they might have utilised other techniques after teaching (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the pre-semester level, 3.19, SD = 0.22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, p < 0.5).

The results from these quantitative data had much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGDs highlighted the considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in helping her to become more prepared and aware before, while, and after teaching. Another example was from Group1: "We can understand what points *we have to prepare before teaching in the class."* PSETs also appreciated the benefits of becoming aware of their metacognition while teaching. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage their time well while teaching.

Commented [A16]: p<.05

Findings in this study corroborated previous studies (e.g., Aktag et al., 2017; Gopinath, 2014; Palantis et al., 2017), which asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere. Additionally, the results indicate the importance of teachers learning strategies to effectively and successfully engage in reflective practices (Ong et al., 2020). While acknowledging that metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and explicit training of metacognitive awareness for teachers need to be implemented (Aktag et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire post-semester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and supported by the qualitative data. The findings in this study enrich the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & McDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (Balcikanli, 2011). Another recent study by **Davis and McDonald** (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study focused on one element of regulation of cognition, i.e., evaluation (Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-service teachers to possess metacognition in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in teaching performance. This study indicated that increased metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (Alkam & Erdem, 2014).

The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017) in that it used a more comprehensive metacognitive awareness inventory (Balcikanli, 2011). The MAIT implemented in this research also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (Amalia et al., 2020; Arslan, 2019; Davis & McDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusion

This study provides significant evidence of the PSETs' positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them

to prepare strategies and materials to cope with 'the unexpected' in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. Facilitated through explicit reflections, possessing and displaying heightened metacognitive awareness in teaching could empower teachers, their teaching, and student learning. It was evident in this research that reflections could be utilized to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students. Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and in-service teachers.

Limitations

This research was conducted for a short period of only four months. This study did not collect data about the impacts of teachers' and peers' feedback on students' reflections and metacognitive awareness in teaching. In addition, the validity of the second questionnaire had not been tested before its administration. Future researchers may need to test its validity before using.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the

Centre for Research and Community Service (LPPM), Sanata Dharma University, Indonesia.

References

Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of pre-service female teachers in Ajman University in UAE. Procedia - Social and Behavioral Sciences, 174, 560 - 567. https://doi.org/10.1016/j.sbspro.2015.01.707 Aktag, I., Semsek, O., & Tuzcuoglu, S. (2017). Determination metacognitive awareness of physical education teachers. Journal of Education and Training Studies, 5(9), 63-69. http://doi.org/10.11114/jets.v5i9.2511 Alkam, F., & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. Procedia - Social and Behavioral Sciences, 143, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475 Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. European Journal of Educational Research, 10(1), 127-143. https://doi.org/10.12973/eu-jer.10.1.127 Amalia, L. L., Widiati, U., Basthomi, Y., & Cahyono, B. Y. (2020). Reflective practice on lesson planning among EFL teacher educators. Indonesian Journal of Applied Linguistics, 10(1), 53-160. https://doi.org/10.17509/ijal.v10i1.25025 Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. Australian Journal of Teacher Education, 35(6), 117-132. https://doi.org/10.14221/ajte.2010v35n6.3 Arslan, F. Y. (2019): Reflection in pre-service teacher education: Exploring the nature of four Commented [A17]: Replace colon (:) with dot EFL pre-service teachers' reflections. Reflective Practice, 20(1), 111-124. https://doi.org/10.1080/14623943.2018.1564652 Bakar, A. Y. A., Amat, S., & Mahmud, M. I. (2019). Issues and challenges of 21 century teaching and learning: The Malaysian experience. International Journal of Management Applied 6-11. http://iraj.doionline.org/dx/IJMAS-IRAJand *Science*, 5(12), DOIONLINE-16761 Commented [A18]: Shorten all long URLs by www.bit.ly Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). Electronic Journal of Research in Educational Psychology, 9(3), 1309-1332. http://doi.org/10.25115/ejrep.v9i25.1620 Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading strategies among students at International Burch University: A case study. European Journal of Contemporary Education, 6(4), 645-655. https://doi.org/10.13187/ejced.2017.4.645 Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in current and future principals. School *Leadership Review*, 12(2) 23-31. https://scholarworks.sfasu.edu/slr/vol12/iss2/4 Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed method-theory and practice. Sequential, explanatory approach. International Journal of Quantitative and Qualitative Research Methods, 5, 10–27. https://www.eajournals.org/wp-content/uploads/Mixed-Methods-Commented [A19]: 5(2) Theory-and-Practice.-Sequential-Explanatory-Approach.pdf Provide issue numbers Chang, B. (2019). Reflection in learning. Online Learning, 23(1), 95-110. Check the others http://doi.org/10.24059/olj.v23i1.1447 Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension by vocational college students. English Language Teaching, 13(4), 127-139.

https://doi.org/10.5539/elt.v13n4p127	
Creswell, J.W., & Clark, V.L.P. (2017). Designing and conducting mixed methods research	Commented [A20]: Put space between initials
(3rd ed.). Sage.	
Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of	
ESL freshmen: A sequential explanatory mixed design. TESOL International Journal,	
<i>15</i> (1), 20-30.	Commented (A21):
Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Self-	Commented [A21]:
assessment through a standards-based appraisal process. <i>Reflective Practice</i> , 20(10), 125-	
141. https://doi.org/10.1080/14623943.2019.1569508	
de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive	
learning and the development of higher-order thinking skills. Journal of University	
Teaching & Learning Practice, 16(3), 1-17. https://doi.org/10.53761/1.16.3.3	
Fakhomah, D.N., & Utami, M.S. (2019). Pre-service English teacher perception about higher	Commented [A22]: Put space between initials
order thinking skills (HOTS) in the 21st century learning. International Journal of	
Indonesian Education and Teaching, 3(1), 41-49.	
https://doi.org/10.24071/ijiet.2019.030104	Commented [A23]: Invalid DOI link. Please, include
Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school	valid DOI link.
on pedagogical formation program in Turkey. European Journal of Educational	
<i>Research</i> , 8(2), 395-407. https://doi.org/10.12973/eu-jer.8.2.395	
Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-	
developmental inquiry. American Psychologist, 34(10), 906-911.	
https://doi.org/10.1037/0003-066X.34.10.906	
Fox, R. K., Dodman, S., & Holincheck, N. (2019). Moving beyond reflection in a hall of	
mirrors: developing critical reflective capacity in teachers and teacher educators,	
Reflective Practice, 20(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124	
Gabrijelčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional	
competences: A study among student teachers and students in education science in	
Slovenia. European Journal of Educational Research, 10(4), 2033-2044.	
https://doi.org/10.12973/eu-jer.10.4.2033	
Gibson, W., & Brown, A. (2009). Working with qualitative data. Sage.	
	Commented [A24]: Provide DOI link
Gopinath, L. S. (2014). Metacognitive awareness in teaching and teaching competency: A	
survey on student teachers at secondary level. <i>IOSR Journal of Research & Method in</i>	
Education, 4(4), 33-35. https://www.iosrjournals.org/iosr-jrme/papers/Vol-4%20Issue-	
4/Version-5/D04453335.pdf	Commented [A25]: A DOI is available for this reference.
Hamiddin, H., & Saukah, A. (2020) Investigating metacognitive knowledge in reading	Use DOI link instead of URL link.
comprehension: The case of Indonesian undergraduate students. Indonesian Journal of	Commented [A26]: Put dot after parenthesis
Applied Linguistics, 9(3), 608-615. https://doi.org/10.17509/ijal.v9i3.23211	
Hermagustiana, I., Hamra, A., Rahman, A. Q., & Salija, K. (2017). Reflection of teacher	
cognition in EFL vocabulary instructional practices. International Journal of English	
Linguistics, 7(5), 34-45. http://doi.org/10.5539/ijel.v7n5p34	
Holzberger, D., Praetorius, A.K., Seidel, T., & Kunter, M. (2019). Identifying effective	Commented [A27]: Put space between initials
teachers: The relation between teaching profiles and students' development in	connicited [rizi]. I at space between initials
achievement and enjoyment. European Journal of Psychology of Education, 34, 801–	
823. https://doi.org/10.1007/s10212-018-00410-8	
Lincoln, Y. S., & Guba, E. G. (1985). <i>Naturalistic inquiry</i> . Sage.	Commented [A28]: Provide DOI link
Kelle, U., Kühberger, C., & Bernhard, R. (2019). How to use mixed-methods and triangulation	
designs: An introduction to history education research. History Education Research	
Journal, 16(1), 5-23. https://doi.org/10.18546/HERJ.16.1.02.	
Külekçi, G. (2018). Identifying the perceptions of prospective English language teachers on	
characteristics of effective teachers: Who is the ideal teacher? Novitas-ROYAL [Research	

on Youth and Language, 12(1), 1-15.

Lupascu, A.R., Pânisoară, G., & Pânisoară, I.O. (2014). Characteristics of effective teacher. Procedia - Social and Behavioral Sciences, 127, 534 – 538.

- Mattew, P., Mathew, P., & Peechattu, P.J. (2017). Reflective practices: A means to teacher development. Asia Pacific Journal of Contemporary Education and Communication Technology, 3(1), 126-131. https://doi.org/10.17509/ijal.v10i3.31752
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. Jossey-Bass.
- Mbato, C. L. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. *Humaniora*, 31(1), 92-101. http://doi.org/10.22146/jh.v31i1.37295

Miles, M. B., & Huberman. A. M. (1994). Qualitative Data Analysis: An Expanded Source Book. 2nd ed. Sage.

- Mitana, J. M. V., Muwagga, A. M., & Ssempala, C. (2018). Assessment of higher order thinking skills: A case of Uganda primary leaving examinations. *African Educational Research Journal*, 6(4), 240-249. http://doi.org/10.30918/AERJ.64.18.083
- Nurhapsari, A., & Mbato, C. L. (2019). Motivation to learn English: Why Indonesian adult learners join a community of interest. *Anima Indonesian Psychological Journal*, 34(2), 65-75. https://doi.org/10.24123/aipj.v34i2.2202
- Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. *Journal* of Education and Practice, 8(5), 81-86.
- Ong, W. A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL pre-service teachers. *Indonesian Journal of Applied Linguistics*, 9(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222
- Oxford, R. L. (2017). Teaching and researching language learning strategies: Self-regulation in context. Routledge.
- Palantis, N. J., Mohamed, A., Ibrahim, A. S. M., Ismail, S. H., Anuar, N. K., Marof, A. M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. https://doi.org/10.23917/varidika.v29i2.5629
- Poedjiastutie, D., Akhyar, F., Hidayati, D., & Gasmi, F. N. (2018). Does curriculum help students to develop their English competence? A case in Indonesia. *Arab World English Journal*-(AWEJ), 9(2),175-185. https://dx.doi.org/10.24093/awej/vol9no2.12
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475. https://doi/10.1006/ceps.1994.1033
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. *European Journal of Educational Research*, 10(2), 629-640. https://doi.org/10.12973/eu-jer.10.2.629
- Soodla, P., Jõgi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education*, 32(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x.
- Subia, G. S., Marcos, M. C., Pascual, L. E., Tomas, A. V., & Liangco, M. M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of science, technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*, 62(3), 261-268.
- Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, 13(3), 1-14. http://dx.doi.org/10.29333/iji.2020.13325a

Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers'

Commented [A29]: Provide URL link (Novitas ROYAL link)

Commented [A30]: Put space between initials

Commented [A31]: Provide DOI link

Commented [A32]: Put space between initials

Commented [A33]: Put comma after surname Commented [A34]: In sentence case Commented [A35]: (2nd ed.)

Commented [A36]: Provide URL link

Commented [A37]: Provide DOI link

Commented [A38]: doi.org

Commented [A39]: Can't find doi nor database link except research gate: https://www.researchgate.net/publication/342762567_C ognitive_Levels as Measure of Higher-

Order Thinking Skills in Senior High School Mathematic s of Science Technology Engineering and Mathematics S TEM Graduates

Commented [A40R39]: please leave empty

Commented [A41]: <u>https://doi.org/</u> edit all reflection as a pathway to develop teacher professionalism. *International Online Journal of Education and Teaching*, 5(4), 921-932. https://files.eric.ed.gov/fulltext/EJ1250545.pdf

- Utami, D. R. T., Pranoto, Y. K. S., Latiana, L., & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, 10(2), 537-551. https://doi.org/10.12973/eu-jer.10.2.537
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, 3(2), 254-262. https://doi.org/10.4304/tpls.3.2.254-262

Commented [A42]: Provide IOJET URL link.

Don't use database links of the articles

Appendix 1

Metacognitive Awareness Inventory in Teaching

No	Statements					
Decl1	I am aware of the strengths and weaknesses in my teaching.					
Decl2	8 , 8					
Decl3 I have control over how well I teach.						
Decl4	I know what I am expected to teach.					
Proc5	I try to use teaching techniques that worked in the past.					
Proc6	I have a specific reason for choosing each teaching technique in class.					
Proc7	I am aware of what teaching techniques I use while I am teaching.					
Proc8	I use helpful teaching techniques automatically.					
Con9	I use my strengths to compensate for my weaknesses in my teaching.					
Con10	I can motivate myself to teach when I really need to teach.					
Con11	I use different teaching techniques depending on the situation.					
Con12	I know when each teaching technique I use will be most effective.					
Plan13 I pace myself while I am teaching in order to have enough time.						
Plan14	I set my specific teaching goals before I start teaching.					
Plan15	I ask myself questions about the teaching materials I am going to use.					
Plan16	5 I organize my time to best accomplish my teaching goals.					
Mon17	I ask myself periodically if I meet my teaching goals while I am teaching.					
Mon18	I find myself assessing how useful my teaching techniques are while I am					
	teaching.					
Mon19	I check regularly to what extent my students comprehend the topic while I am teaching.					
Mon20	I ask myself questions about how well I am doing while I am teaching.					
Eval21	I ask myself how well I have accomplished my teaching goals once I am finished.					
Eval22	I ask myself if I could have used different techniques after each teaching					
	experience.					
Eval23	After teaching a point, I ask myself if I'd teach it more effectively next time.					
Eval24 I ask myself if I have considered all possible techniques after teaching a point.						
Source: I	Source: Balcikanli, E. (2011).					

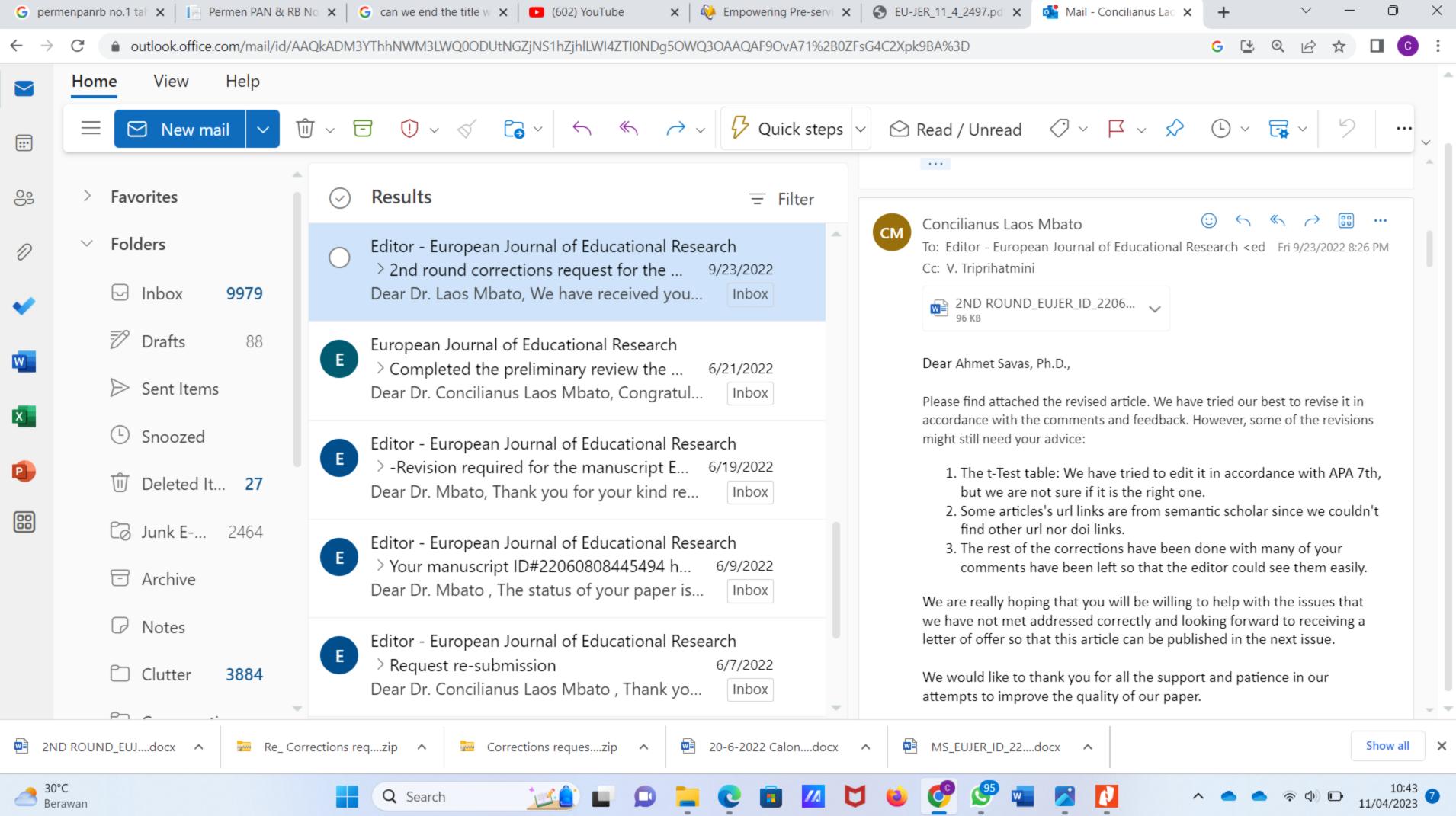
Appendix 2

Content and Activities

Wee	Content	Activitie			
1	 Introduction: Overview of the course Competencies required for a teaching profession 	Lecture Discussion Student reflection			
2	 Classroom Management Activities for Creating A Positive Learning Environment (Positive classroom management activities) 	 Short Lecture Presentation Discussion Student written reflection 			

3	Skill Practice 1: set induction, and	Peer teaching
	set closure	Peer evaluation based on the
	Skill Practice 2: stimulus variation	observation sheet
4	Integrated teaching skill practice (1)	Teaching small groups using the most
	88(-)	appropriate teaching methods and
5	Dissemination of Metacognitive	strategies in their classes Teaching small groups
-	Integrated teaching skill practice (3)	
6	Lesson Planning 1 using MAIT	Whole class teaching
7	Lesson Planning T using MATT	WorkshopTeacher feedback
8	Mid-Test 1 using MAIT	 Individual teaching of the whole class
-		 Individual teaching of the whole class @
1	Mid-Test 2 using MAIT Mid-Test 3 using MAIT	 Individual teaching the whole class @ Individual teaching the whole class @
1	Mid-Test 5 using MATT	 Individual teaching the whole class @ 25-30 minutes*
1		 Peer feedback
		 Teacher feedback
		 Student written reflection based on
		MAIT
1	Lesson Planning 2 using MAIT	Discussion
2	88	Workshop
_		Peer feedback
		Teacher feedback
		Student written reflection based on
		MAIT
1	Final Test 1 using MAIT	 Individual teaching the whole class @ 25-30 minutes*
3	-	25-30 minutes*
		Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION
		 BASED ON MAIT** Individual teaching the whole class @ 25-30 minutes**
1	Final Test 2 using MAIT	• Individual teaching the whole class @
4		25-30 minutes**
		Whole class feedback Taashar faadbaak
		Teacher feedback SUMMATIVE PEELECTION
		SUMMATIVE REFLECTION BASED ON MAIT**
		DAGED UN MALL
1	Final Test 3 using MAIT	• Individual teaching the whole class @
$\frac{1}{5}$	č	25-30 minutes*
		Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**
1	Final Test 4 using MAIT	• Individual teaching the whole class @
6		 Individual teaching the whole class @ 25-30 minutes**
		Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**

* depends on the number of students in the class ** Applies to the students who taught in that particular week



Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, few studies have investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study aimed to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching. Mixed-methods research was conducted to collect quantitative and qualitative data from 45 pre-service English teachers (PSETs) in two micro teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD) focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness in teaching increased post-semester. They also admitted the positive contributions of reflections in enhancing their metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

Commented [A1]: Not special names Don't capitalize Edit all. Reply: They have been edited

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Intensive preparation and rigorous teaching practice in college are required in order to be able to teach effectively since teachers cannot give what they do not have (Okogbaa, 2017). The professional development of preservice English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper aimed to examine the perceived impacts of reflections on pre-service teachers' metacognitive awareness in teaching. It begins by discussing the challenges facing teachers' professional development. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. In addition, reflections were reviewed as one of the tools to empower teachers' metacognitive awareness in teaching, followed by the method, result, discussion, conclusion, recommendation, and limitations. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness. It was expected that this research would enrich, extend and partly fill the gap in the current literature about reflections and their impacts on pre-service English teachers' metacognitive awareness in teaching.

Teachers face complex challenges in actual classroom teaching, ranging from the teaching workload, big class size, and time limitations (Al-Shaboul et al., 2020). Other challenges include who assesses teachers' competence and performance (Utami et al., 2021). Accordingly, they need strong guidance from their mentors to face challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2010; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (Bakar et al., 2019; Filiz & Durnali, 2019; Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have examined pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-development. Another study (Holzberger et al., 2019) involving 3,483 high school students and their 155 mathematics teachers revealed that high-quality teaching corresponds with students' achievement but does not predict their excitement. A recent study (Senel, 2021) of four Turkish English Language Teaching (ELT) students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good quality teaching. The demand for teachers at different school levels to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS). Since pre-service teachers could teach at primary and secondary schools, reviewing what happened at these schools concerning the implementation of HOTS was beneficial in preparing them for future teaching. Integrating HOTS into the teaching practice was also a requirement in our university's micro teaching Syllabus (see the method section on learning contents and activities). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana et al. (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% related to HOTS.

Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020) revealed a low level of HOTS in mathematics subjects. A similar result was found in a study of student science teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities. This study urges lecturers to promote independent learning to students. However, training students to become

independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah & Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (Flavell, 1979). Several recent studies have acknowledged the impacts of metacognition on students' learning and success (Bećirovic et al., 2017; Cao & Lin, 2020; Oxford, 2017).

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interest in teachers' metacognitive awareness in teaching (Abdellah, 2015; Aktag et al., 2017; Alkam & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkam and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on their strategies to increase their metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness training for pre-service teachers. Similarly, research on

primary school teachers in Puchong, Selangor (Palantis et al., 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practised regularly and intentionally for the teachers' teaching to impact students' learning positively.

Considering its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011) Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of 'the why and when' to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011, p. 1,032) argued that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching.

Reflection

Reflections are the self-conscious activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019). Similarly, Davis and McDonald (2019) found that teachers' reflections focusing on self-evaluation could positively impact their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & McDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers. Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in English as a foreign language (EFL) vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching EFL vocabulary. This research, however, did not explore how reflections could be used to increase teachers' cognition in EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive awareness in teaching: lesson planning. They demonstrated the positive impact of reflective

practice on the student teachers' lesson planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practise reflections during teaching. However, they should be coached on strategies to effectively and successfully engage in these reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in teaching (Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centred teaching. However, many teachers experience difficulty in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st-century skills learning in many classes in primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers could not teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (Beziat et al., 2018; Mattew et al., 2017) and student learning (Mbato, 2019; Soodla et al., 2017).

Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

Commented [A2]: Missing surname Replace all blended authors How can reflections empower pre-service English teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Research Design

This research adopted a mixed-methods approach, collecting quantitative and qualitative data (Creswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (Zohrabi, 2013).

Researcher roles, learning contents and activities

Since this was a practicum class, PSETs learned about teaching and practised peer, small groups, and the whole class teaching, with teacher researchers acting as facilitators rather than instructors. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. The class met once a week for 200 minutes. The class contents and activities can be seen in Appendix 2.

Sample and Data Collection

Commented [A3]: All subtitles should be left aligned

Commented [A4]: Title case

Using purposive sampling, thirty-six PSETs enrolled in two micro teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. As mentors for the class for more than ten years, we decided to introduce the Metacognitive Awareness Inventory in Teaching (MAIT) from Balcikanli (2011). This inventory covered all teachers' metacognitive elements and had good validity and reliability (Balcikanli, 2011). The KMO validity was 0.794, the value for Barlett TKest was 2513.474, and the reliability ranged from 0.79 to 0.85.

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to complete them. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition, and the second on the regulation of cognition. Statements on the knowledge of cognition constituted four items on declarative Knowledge (Decl1-Decl4), four items on procedural Knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted by the current researchers from Balcikanli's MAIT (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching. Qualitative data were gathered from students' answers to the questions about the dissemination

of MAIT, summative reflections, and focus group discussions (FGDs) on the elements of

metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they practiced teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination were gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. The FGDs involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e., (a) the benefits of metacognitive awareness in teaching; (b) the difficulties in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyze the participants' responses about their metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Mbato (2019) mean_category was used to interpret the mean for the expression motivation replaced with perception.

	Table 1. Mean Range for Perception
Mean Range	Interpretation
3.68 - 5.00	A high degree of perception
2.34 - 3.67	A moderate degree of perception
1.00 - 2.33	A low degree of perception

Commented [A5]: Not in the reference list Reply: It is in the reference list Commented [A6]: Missing surname. Reply: Done A paired-samples t-test was performed using IBM SPSS Statistics (Version 17) to determine whether there was a significant difference in students' perceptions about their metacognitive awareness in teaching in the post-semester.

Qualitative data analyses from reflections and FGD focused on finding key issues in students' answers (Gibson & Brown, 2009) about their metacognitive awareness in teaching, mainly on whether or not there were indications of improvements.

Validity and Reliability in Data Collection and Analysis

Validity and reliability of the data analyses were observed through triangulation, long-term observation, participatory research, and the handling of research bias (Lincoln & Guba, 1985; Merriam, 1998; Zohrabi, 2013). Two types of triangulation were undertaken, i.e., methods and data triangulation. The data from the questionnaires, dissemination, and summative reflections were triangulated in the analyses to corroborate the results. The researchers were involved in the research for four months (sixteen meetings), where they interacted with the research participants as facilitators in the micro-teaching class, designed the class contents and activities, repeatedly collected data on PSETs' metacognitive awareness in teaching through questionnaires, and students' reflections to arrive at data saturation. There was a collaboration with the participants in the data collection, so all the needed data in data analyses to answer the research questions were met. Research bias was addressed using Miles and Huberman's (1994) advice, namely: a) being in the micro-teaching class for four months (sixteen meetings); b) being less intrusive when students were doing practice teaching and conducting reflections based on MAIT; c) gaining rich data from pre-and post-semester questionnaires, a post semester questionnaire, students' reflections on the benefits of the dissemination of MAIT, and summative reflections; and d) preventing leading PSETs to expected answers. Through comparing and contrasting different data to the elements of MAIT, the findings of this research attained credibility and consistency. Through thematic analyses, different codes and themes

were recorded and compared with the elements of MAIT to reveal the perceived impacts of

reflections in empowering PSETs metacognitive awareness in teaching.

Results

Quantitative Data

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses.

Commented [A7]: Remove all empty lines

No.	Statement	Mean	SD
ReDecl1	Reflections increased my awareness of the strengths and weaknesses in teaching.	4.31	0.62
ReDecl2	Reflections helped me to know the most important skills	4.31	0.55
ReDecl3	Reflections helped me to have control over teaching	4.04	0.53
ReDecl4	Reflections helped me to know the teaching expectations	4.31	0.47
ReProc5	Reflections helped me to use proven teaching techniques	4.19	0.69
ReProc6	Reflections helped me to have a specific reason for using a teaching technique	4.04	0.77
ReProc7	Reflections helped me to have an awareness of the teaching techniques	4.15	0.78
ReProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63
ReCon9	Reflections helped me to compensate strengths for weaknesses	4.19	0.63
ReCon10	Reflections helped me to motivate myself when having to teach	4.23	0.59
ReCon11	Reflections helped me to use different teaching techniques as required by the situation.	4.00	0.75
ReCon12	Reflections helped me to know when each teaching technique was most effective.	3.96	0.82
RePlan13	Reflections helped me to pace myself in teaching	4.31	0.62
RePlan14	Reflections helped me to set specific teaching goals before teaching	4.42	0.50
RePlan15	Reflections helped me to ask questions about the teaching materials	4.27	0.60
RePlan16	Reflections helped me to organize a time to accomplish teaching goals.	4.19	0.69
ReMon17	Reflections helped me to ask periodically if teaching goals were being met	4.12	0.52
ReMon18	Reflections helped me to assess how useful the teaching techniques were	4.12	0.59
ReMon19	Reflections helped my regular checking of students' comprehension	3.85	0.61
ReMon20	Reflections helped my self-questioning while teaching	4.19	0.49

No.	Statement	Mean	SD
ReEval21	Reflections helped me to ask myself about teaching goal accomplishment	4.19	0.57
ReEval22	Reflections helped me to ask myself if different techniques could have been used.	3.85	0.73
ReEval23	Reflections helped me to ask myself for more effective subsequent teaching	4.35	0.63
ReEval24	Reflections helped me to ask myself if all possible techniques had been considered	4.15	0.54
	Average	4.14	0.62

Adapted from Balcikanli (2011).

As indicated in Table 2, students generally admitted reflections' positive contributions in helping them develop their metacognitive awareness in teaching. The first four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with a mean range between 3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (Nurhapsari & Mbato, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

Table 3. Mean Comparison of Students' Responses to Metacognitive Awareness Statements in Teaching

No	Statements	Pre-semester		Post-semester		Mean Increase
		Mean	Mean Std. Dev		Std. Dev	-
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	0.77
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	0.75
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	1.33
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	0.48
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	0.54
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	0.59
Proc7	Awareness of the teaching techniques while teaching.	3.1	0.91	3.67	0.73	0.57
Proc8	Using teaching techniques automatically.	2.79	0.92	4.1	0.55	1.31
Con9	Compensating strengths for weaknesses	3.26	0.91	3.77	0.77	0.51
Con10	Being able to motivate oneself when having to teach	3.15	0.96	3.82	0.68	0.67
Con11	Using different teaching techniques as required by the situation.	3.33	0.95	3.67	0.66	0.34
Con12	Knowing when each teaching technique is most effective.	2.77	1.01	3.77	0.62	1.00
Plan13	Pacing oneself in teaching to have enough time.	3.31	0.92	3.67	0.57	0.36
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31

Commented [A8]: Remove all empty lines

No	Statements	Pre-se	mester	Post-se	Mean Increase	
		Mean	Std. Dev	Mean	Std. Dev	-
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52
Eval24	Asking oneself if all possible techniques have been considered	3.15	0.70	3.74	0.54	0.59
	Average	3.19	0.89	3.90	0.62	0.71

Commented [A9]: SD:

This abbreviation is better

version can be seen in Appendix 1. It shows PSETs' responses to their metacognitive awareness in teaching pre- and post-semester teaching. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase (1.33). The second highest response was the PSETs' awareness of their strengths and weaknesses in teaching (Decl1/ 0.77 mean increase) and their knowledge of the most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

The questionnaire in Table 3 above was adopted from Balcikanli (2011), and its complete

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by

Commented [A10]: A paragraph should consist of at least two sentences. Edit the whole paper.

PSETs' response to statement Pro6, which asked whether they had a particular reason for adopting a teaching technique in the classroom (Pro6/0.59 mean increase), and statement Pro7, which asked about their awareness of what teaching methods they used while teaching (Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase). Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

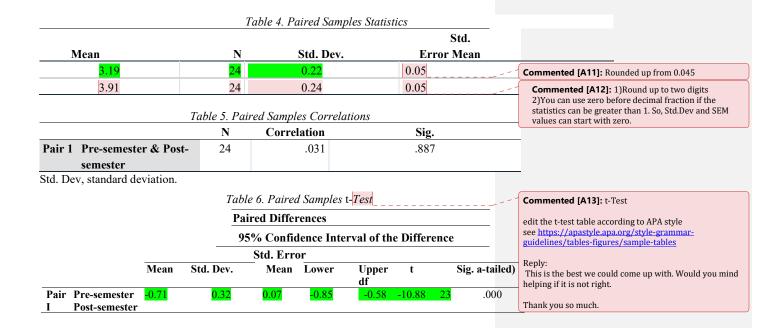
Parallel with their increased knowledge of cognition was their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, including time organization to accomplish their teaching goals (Plan16/with the highest mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

Similarly, students agreed with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that

they found themselves assessing how useful their teaching techniques were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

Additionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted to slightly improving their evaluation ability, as indicated in statements Eval23 and Eval21. Statement Eval23 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean increase for this statement was 0.52. Statement Eval21, which focused on whether they asked themselves if they accomplished their teaching goals after teaching, demonstrated a mean increase of 0.43.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.



A paired sample t-test was performed to determine students' perception of metacognitive awareness in teaching as the dependent variable measured pre-and post-semester. The results indicated a significant perceived increase between the pre-semester level, 3.19, standard deviation (SD) = 0.22, and post-semester level, 3.91, SD = 0.24, t(23) = -10.88, p < .05. As a result, the null hypothesis was rejected, while the alternative hypothesis was accepted. It can be inferred that PSETs' perceived metacognitive awareness in teaching improved after participating in the research.

Qualitative Data

Qualitative data were collected through students' summative reflections and FGDs of the elements of metacognitive awareness in teaching. These activities were conducted after students had experienced teaching in the micro-teaching class for one month. Students practiced teaching their peers in small groups and the whole class in class. The practice

aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

1. Reflections on the Dissemination of MAIT

The researchers disseminated the ideas of the metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise students' awareness of metacognition in teaching. For example, SO8 wrote:

I learn something new from metacognition which is very beneficial for me as prospective teacher in the future. Teacher should be able to aware that every student is unique with their own intelligent. Even identical twin are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plan that includes students various cognition.

The second benefit was that it assisted them in understanding their strengths and weaknesses in

teaching. S01 reported:

After understanding metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher; how to open class that makes the students are full of spirit, how to deliver the materials that makes the students can apply it in their lives, how to manage the class that makes the condition of the class is full of excitement, and how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me in order to understand whether

the teaching goals is reached or not and understand what has to be improved.

Students also described four other benefits of MAIT, i.e. (a) being more aware of the ______ importance of teaching techniques; (b) being more aware of possessing teaching skills; (c) being more aware of knowing what to teach (planning); and (d) being more aware of planning, monitoring and evaluating their teaching.

2. Summative Reflections

Reflections were a significant force in our efforts to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections based on MAIT throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching. The researchers summed up key ideas and, when relevant, cited a small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT:

I am really excited because finally I did well in this course. I am proud of myself because at the beginning of this semester, I felt uncomfortable and not sure I can do teaching. But, now I become more confident in teaching and feel more challenged. The fact is being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware with anything about teaching before, while and after teaching.

Another student (S20) emphasized that MAIT helped her to compensate for her weak grammar with her cheerful personality in teaching. Understanding their strengths and weaknesses in teaching seemed to be one of the most important contributions of MAIT to Commented [A14]: APAA 7 format : (a) ... (b) ...

many students. Similarly, S11 admitted, "In the final test teaching practice, my friends and

I have improved so much because we have applied MAIT, Higher Order Thinking, and

Bloom's Taxonomy." S28, in her long reflection constituting all aspects of MAIT, wrote:

I understand the materials that I am going to teach. I also remind myself that when I am teaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even the small things such as appearance and eye contact. I want to inspire my students to learn English and motivate them as well.

S17 described that the class had helped him understand teaching better. He reflected:

This class has given me a whole new world of college life. I got many experiences in this class especially how to teach something. Teaching is not easy but it is kind of challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparations that the teacher should prepare before they teach.

Most PSETs admitted that they had improved their declarative, procedural, and conditional knowledge in teaching. They also acknowledged regulating their teaching better through planning, monitoring, and evaluating. Their improvements are strengthened by the data gained in the FGDs.

3. Focus Group Discussions

FGD was conducted in small groups in class at the end of the semester. Individual students were given more than a week to write their reflections about the implementation of MAIT before the implementation of the FGDs. These FGDs discussed three main questions, i.e.: (a) benefits of metacognitive awareness in teaching; (b) challenges in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before, while, and after teaching. Before teaching, Group 1 asserted, "We can understand what

points that we have to prepare before teaching in the class." Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4

acknowledged:

When we are teaching we learn how to manage the time allocation in order to have enough time. We try to implement and organize the material well. The teacher knows and explaining the learning objectives and try to implement the teaching technique that chosen in class. Then, we know how to monitor our students by asking them questions to make sure they understand the materials. In teaching learning activity we try to evaluate ourselves by asking ourselves about how well we are doing while we are teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that

MAIT helped them to know the best teaching strategies for their students, the lack of their

teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during,

and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses in the beginning of our teaching. To be reflective on what we have to improve and what we have improved. To be used to with classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the student's needs, understanding students' character, and handling the nervous feeling (Group 1). Group 4 mentioned the challenge in terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching challenged them to (a) *"revise our lesson plan and the whole teaching; (b) find different*

techniques that will work better for the next teaching, and (c) ask ourselves how well we have accomplished our teaching goals once we are finished". Group 4 realized that metacognitive awareness used after teaching helped them "always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance".

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: (a) "Focus on each point of MAIT; and (b) Try to implement each point of MAIT in the learning activities". Group 3 came up with three suggestions, i.e.:

(1)The teachers should have list of teaching goals to be achieved; (2) The teachers should be aware of what their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching improved, consisting of declarative, procedural, and conditional knowledge, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept about teaching (Balcikanli, 2011; Mbato, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Mbato, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledged that they had improved conditional knowledge in teaching, namely, knowing when, why, and with whom to use specific knowledge and skills (Balcikanli, 2011; Mbato, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: (a) knowing their strengths to compensate for their weaknesses in teaching; (b) being able to motivate themselves to teach when they needed to teach; (c) being able to employ various teaching techniques as required by the situation; and (d) knowing when a teaching technique they used would be most productive.

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after participating in the research. An instance of this improvement was shown in PSETs' Commented [A15]: APA 7 format: (a) ... (b) ..

response to statement 22. PSETs mentioned they asked themselves if they might have utilised other techniques after teaching (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the pre-semester level, 3.19, SD = 0.22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, p < .05).

The results from these quantitative data had much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGDs highlighted the considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in helping her to become more prepared and aware before, while, and after teaching. Another example was from Group1: "We can understand what points *we have to prepare before teaching in the class.*" PSETs also appreciated the benefits of becoming aware of their metacognition while teaching. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage their time well while teaching.

Findings in this study corroborated previous studies (e.g., Aktag et al., 2017; Gopinath, 2014; Palantis et al., 2017), which asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere. Additionally, the results indicate the importance of teachers learning strategies to effectively and successfully engage in reflective practices (Ong et al., 2020). While acknowledging that metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and explicit training of metacognitive awareness for teachers need to be implemented (Aktag

Commented [A16]: p<.05

et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire post-semester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and supported by the qualitative data. The findings in this study enrich the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & McDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (Balcikanli, 2011). Another recent study by Davis and McDonald (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study focused on one element of regulation of cognition, i.e., evaluation (Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-service teachers to possess metacognition in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (Alkam & Erdem, 2014).

The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017) in that it used a more comprehensive metacognitive awareness inventory (Balcikanli, 2011). The MAIT implemented in this research also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (Amalia et al., 2020; Arslan, 2019; Davis & McDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusion

This study provides significant evidence of the PSETs' positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them to prepare strategies and materials to cope with 'the unexpected' in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. Facilitated through explicit reflections, possessing and displaying heightened metacognitive awareness in teaching could empower teachers, their teaching, and student learning. It was evident in this research that reflections could be utilized to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students. Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and in-service teachers.

Limitations

This research was conducted for a short period of only four months. This study did not collect

data about the impacts of teachers' and peers' feedback on students' reflections and

metacognitive awareness in teaching. In addition, the validity of the second questionnaire had

not been tested before its administration. Future researchers may need to test its validity

before using.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the

Centre for Research and Community Service (LPPM), Sanata Dharma University, Indonesia.

References

Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement	
and teaching performance of pre-service female teachers in Ajman University in UAE.	
Procedia - Social and Behavioral Sciences, 174, 560 – 567.	 Commented [A17]: I can't find the issue numb
https://doi.org/10.1016/j.sbspro.2015.01.707	

- Aktag, I., Semsek, O., & Tuzcuoglu, S. (2017). Determination metacognitive awareness of physical education teachers. Journal of Education and Training Studies, 5(9), 63-69. http://doi.org/10.11114/jets.v5i9.2511
- Alkam, F., & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. Procedia - Social and Behavioral Sciences, 143, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475
- Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. European Journal of Educational Research, 10(1), 127-143. https://doi.org/10.12973/eu-jer.10.1.127

Commented [A18]: I can't find the issue number

- Amalia, L. L., Widiati, U., Basthomi, Y., & Cahyono, B. Y. (2020). Reflective practice on lesson planning among EFL teacher educators. *Indonesian Journal of Applied Linguistics*, 10(1), 53-160. https://doi.org/10.17509/ijal.v10i1.25025
- Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*, 35(6), 117-132. https://doi.org/10.14221/ajte.2010v35n6.3
- Arslan, F. Y. (2019) Reflection in pre-service teacher education: Exploring the nature of four_ EFL pre-service teachers' reflections. *Reflective Practice*, 20(1), 111-124. https://doi.org/10.1080/14623943.2018.1564652
- Bakar, A. Y. A., Amat, S., & Mahmud, M. I. (2019). Issues and challenges of 21 century teaching and learning: The Malaysian experience. *International Journal of Management and Applied Science*, 5(12), 6-11. https://bit.ly/3DDvRRM
- Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). *Electronic Journal of Research in Educational Psychology*, 9(3), 1309-1332. http://doi.org/10.25115/ejrep.v9i25.1620
- Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading strategies among students at International Burch University: A case study. *European Journal of Contemporary Education*, 6(4), 645-655. https://doi.org/10.13187/ejced.2017.4.645
- Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in current and future principals. School Leadership Review, 12(2) 23-31. https://scholarworks.sfasu.edu/slr/vol12/iss2/4
- Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed method-theory and practice. Sequential, explanatory approach. *International Journal of Quantitative and Qualitative Research Methods*, 5(2), 10–27. https://bit.ly/3qZsehi
- Chang, B. (2019). Reflection in learning. *Online Learning*, 23(1), 95-110. http://doi.org/10.24059/olj.v23i1.1447
- Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension by vocational college students. *English Language Teaching*, 13(4), 127-139. https://doi.org/10.5539/elt.v13n4p127
- Creswell, J. W., & Clark, V. L. P. (2017). Designing and conducting mixed methods research (3rd ed.). Sage.
- Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of ESL freshmen: A sequential explanatory mixed design. *TESOL International Journal*, 15(1), 20-30. https://bit.ly/3UJKV6q
- Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Selfassessment through a standards-based appraisal process. *Reflective Practice*, 20(10), 125-141. https://doi.org/10.1080/14623943.2019.1569508
- de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive learning and the development of higher-order thinking skills. *Journal of University Teaching & Learning Practice, 16*(3), 1-17. https://doi.org/10.53761/1.16.3.3
- Fakhomah, D. N., & Utami, M. S. (2019). Pre-service English teacher perception about higher order thinking skills (HOTS) in the 21st century learning. *International Journal of Indonesian Education and Teaching*, 3(1), 41-49. https://bit.ly/3QY3QY3
- Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school on pedagogical formation program in Turkey. *European Journal of Educational Research*, 8(2), 395-407. https://doi.org/10.12973/eu-jer.8.2.395
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitivedevelopmental inquiry. *American Psychologist*, 34(10), 906-911. https://doi.org/10.1037/0003-066X.34.10.906

Commented [A19]: Replace colon (:) with dot

Commented [A20]: *5*(2) Provide issue numbers

Check the others

Original link: https://www.eajournals.org/wp_ content/uploads/Mixed-Methods-Theory-and-Practice.-Sequential-Explanatory-Approach.pdf Shortened one using bit.ly. https://bit.ly/3qZsehi

Commented [A21]: Put space between initials

Commented [A22]: No doi link

Commented [A23]:

Commented [A24]: There is no url nor doi link for this article except Eric and research gate so I used the link from semantic scholar and shortened it using bit.ly. I am not sure if this is the right link. It also applies to some articles that have no url and doi. Please help with this. Thank you.

Commented [A25]: Put space between initials

Commented [A26]: The Doi link is invalid so I used their url link and shorten it using bitly

But I used this one before: https://doi.org/10.24071/ijiet.v3i1.1676 And when I clicked on it, it took me to the article. Please advise.

- Fox, R. K., Dodman, S., & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: developing critical reflective capacity in teachers and teacher educators, *Reflective Practice*, 20(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124
- Gabrijelčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional competences: A study among student teachers and students in education science in Slovenia. *European Journal of Educational Research*, 10(4), 2033-2044. https://doi.org/10.12973/eu-jer.10.4.2033
- Gibson, W., & Brown, A. (2009). Working with qualitative data. Sage. Commented [A27]: Provide DOI link https://doi.org/10.4135/9780857029041
- Gopinath, L. S. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. *IOSR Journal of Research & Method in Education*, 4(4), 33-35. https://doi.org/10.9790/7388-04453335
- Hamiddin, H., & Saukah, A. (2020). Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. *Indonesian Journal of Applied Linguistics*, 9(3), 608-615. https://doi.org/10.17509/ijal.v9i3.23211
- Hermagustiana, I., Hamra, A., Rahman, A. Q., & Salija, K. (2017). Reflection of teacher cognition in EFL vocabulary instructional practices. *International Journal of English Linguistics*, 7(5), 34-45. http://doi.org/10.5539/ijel.v7n5p34
- Holzberger, D., Praetorius, A. K., Seidel, T., & Kunter, M. (2019). Identifying effective teachers: The relation between teaching profiles and students' development in achievement and enjoyment. *European Journal of Psychology of Education*, 34(4), 801–823. https://doi.org/10.1007/s10212-018-00410-8
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage. https://doi.org/10.1016/0147-1767(85)90062-8
- Kelle, U., Kühberger, C., & Bernhard, R. (2019). How to use mixed-methods and triangulation designs: An introduction to history education research. *History Education Research Journal*, 16(1), 5–23. https://doi.org/10.18546/HERJ.16.1.02.
- Külekçi, G. (2018). Identifying the perceptions of prospective English language teachers on characteristics of effective teachers: Who is the ideal teacher? *Novitas-ROYAL*, 12(1), 1-15. https://bit.ly/3BmyHre

Lupascu, A. R., Pânisoară, G., & Pânisoară, I. O. (2014). Characteristics of effective teacher. Procedia - Social and Behavioral Sciences, 127, 534 – 538. https://doi.org/10.1016/j.sbspro.2014.03.305

- Mattew, P., Mathew, P., & Peechattu, P. J. (2017). Reflective practices: A means to teacher development. Asia Pacific Journal of Contemporary Education and Communication Technology, 3(1), 126-131. https://doi.org/10.17509/ijal.v10i3.31752
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. Jossey-Bass.
- Mbato, C. L. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. *Humaniora*, 31(1), 92-101. http://doi.org/10.22146/jh.v31i1.37295

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book*. (2nd ed). Sage.

- Mitana, J. M. V., Muwagga, A. M., & Ssempala, C. (2018). Assessment of higher order thinking skills: A case of Uganda primary leaving examinations. *African Educational Research Journal*, 6(4), 240-249. http://doi.org/10.30918/AERJ.64.18.083
- Nurhapsari, A., & Mbato, C. L. (2019). Motivation to learn English: Why Indonesian adult learners join a community of interest. *Anima Indonesian Psychological Journal*, 34(2), 65-75. https://doi.org/10.24123/aipj.v34i2.2202
- Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. Journal

Commented [A31]: Provide URL link (Novitas ROYAL

link) This one is from semantic scholar but I am not sure if it is the right URL (could not find others)

Commented [A32]: Put space between initials

Commented [A33]: No issue number

Commented [A34]: Provide DOI link

Commented [A35]: Put space between initials

Commented [A36]: I can't find the Doi link

- Commented [A37]: Put comma after surname
- Commented [A38]: In sentence case
- Commented [A39]: (2nd ed.)

Commented [A40]: I could not find doi link

Commented [A28]: Put dot after parenthesis

Commented [A29]: Put space between initials

Commented [A30]: Provide DOI link

of Education and Practice, 8(5), 81-86. https://bit.ly/3xBFSuB

- Ong, W. A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL pre-service teachers. *Indonesian Journal of Applied Linguistics*, 9(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222
- Oxford, R. L. (2017). Teaching and researching language learning strategies: Self-regulation in context. Routledge, https://doi.org/10.4324/9781315719146
- Palantis, N. J., Mohamed, A., Ibrahim, A. S. M., Ismail, S. H., Anuar, N. K., Marof, A. M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. https://doi.org/10.23917/varidika.v29i2.5629
- Poedjiastutie, D., Akhyar, F., Hidayati, D., & Gasmi, F. N. (2018). Does curriculum help students to develop their English competence? A case in Indonesia. Arab World English Journal, 9(2),175-185. https://doi.org/10.24093/awej/vol9no2.12
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, 19(4), 460–475. https://doi.org/10.1006/ceps.1994.1033
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. *European Journal of Educational Research*, 10(2), 629-640. https://doi.org/10.12973/eu-jer.10.2.629
- Soodla, P., Jõgi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education*, 32(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x.
- Subia, G. S., Marcos, M. C., Pascual, L. E., Tomas, A. V., & Liangco, M. M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of science, technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*, 62(3), 261-268.
- Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, 13(3), 1-14. http://doi.org/10.29333/iji.2020.13325a
- Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers' reflection as a pathway to develop teacher professionalism. *International Online Journal of Education and Teaching*, 5(4), 921-932. http://iojet.org/index.php/IOJET/article/view/467/302
- Utami, D. R. T., Pranoto, Y. K. S., Latiana, L., & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, 10(2), 537-551. https://doi.org/10.12973/eu-jer.10.2.537
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, 3(2), 254-262. https://doi.org/10.4304/tpls.3.2.254-262

Commented [A41]: Provide URL link This is from semantic scholar; please advise

Commented [A42]: Provide DOI link

Commented [A43]: doi.org

Commented [A44]: Can't find doi nor database link except research gate:

https://www.researchgate.net/publication/342762567_C ognitive_Levels as Measure of Higher-Order Thinking Skills in Senior High School Mathematic s of Science Technology Engineering and Mathematics S TEM Graduates

Commented [A45R44]: please leave empty

Commented [A46]: <u>https://doi.org/</u>edit all

Appendix 1

Metacognitive Awareness Inventory in Teaching

No	Statements						
Decl1	I am aware of the strengths and weaknesses in my teaching.						
Decl2	I know what skills are most important						
Decl2 Decl3	I have control over how well I teach.						
Decl4	I know what I am expected to teach.						
Proc5	I try to use teaching techniques that worked in the past.						
Proc6	I have a specific reason for choosing each teaching technique in class.						
Proc7	I am aware of what teaching techniques I use while I am teaching.						
Proc8	I use helpful teaching techniques automatically.						
Con9	I use my strengths to compensate for my weaknesses in my teaching.						
Con10	I can motivate myself to teach when I really need to teach.						
Con11	I use different teaching techniques depending on the situation.						
Con12	I know when each teaching technique I use will be most effective.						
Plan13	I pace myself while I am teaching in order to have enough time.						
Plan14	I set my specific teaching goals before I start teaching.						
Plan15	I ask myself questions about the teaching materials I am going to use.						
Plan16	I organize my time to best accomplish my teaching goals.						
Mon17	I ask myself periodically if I meet my teaching goals while I am teaching.						
Mon18							
	teaching.						
Mon19	I check regularly to what extent my students comprehend the topic while I am teaching.						
Mon20	I ask myself questions about how well I am doing while I am teaching.						
Eval21	I ask myself how well I have accomplished my teaching goals once I am finished.						
Eval22	I ask myself if I could have used different techniques after each teaching						
	experience.						
Eval23	After teaching a point, I ask myself if I'd teach it more effectively next time.						
Eval24	I ask myself if I have considered all possible techniques after teaching a point.						
Source: I	Source: Balcikanli, E. (2011).						

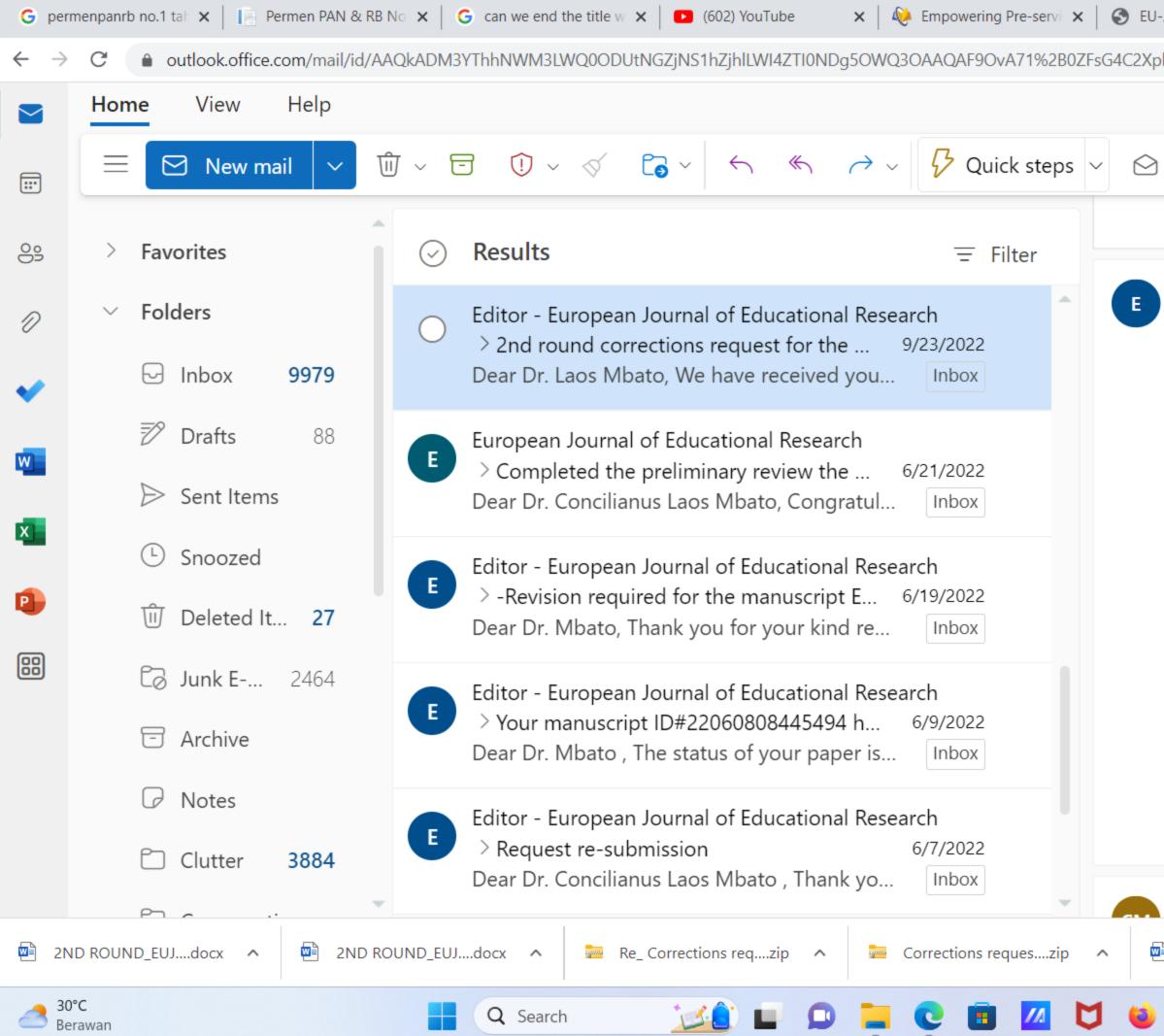
Appendix 2

Content and Activities

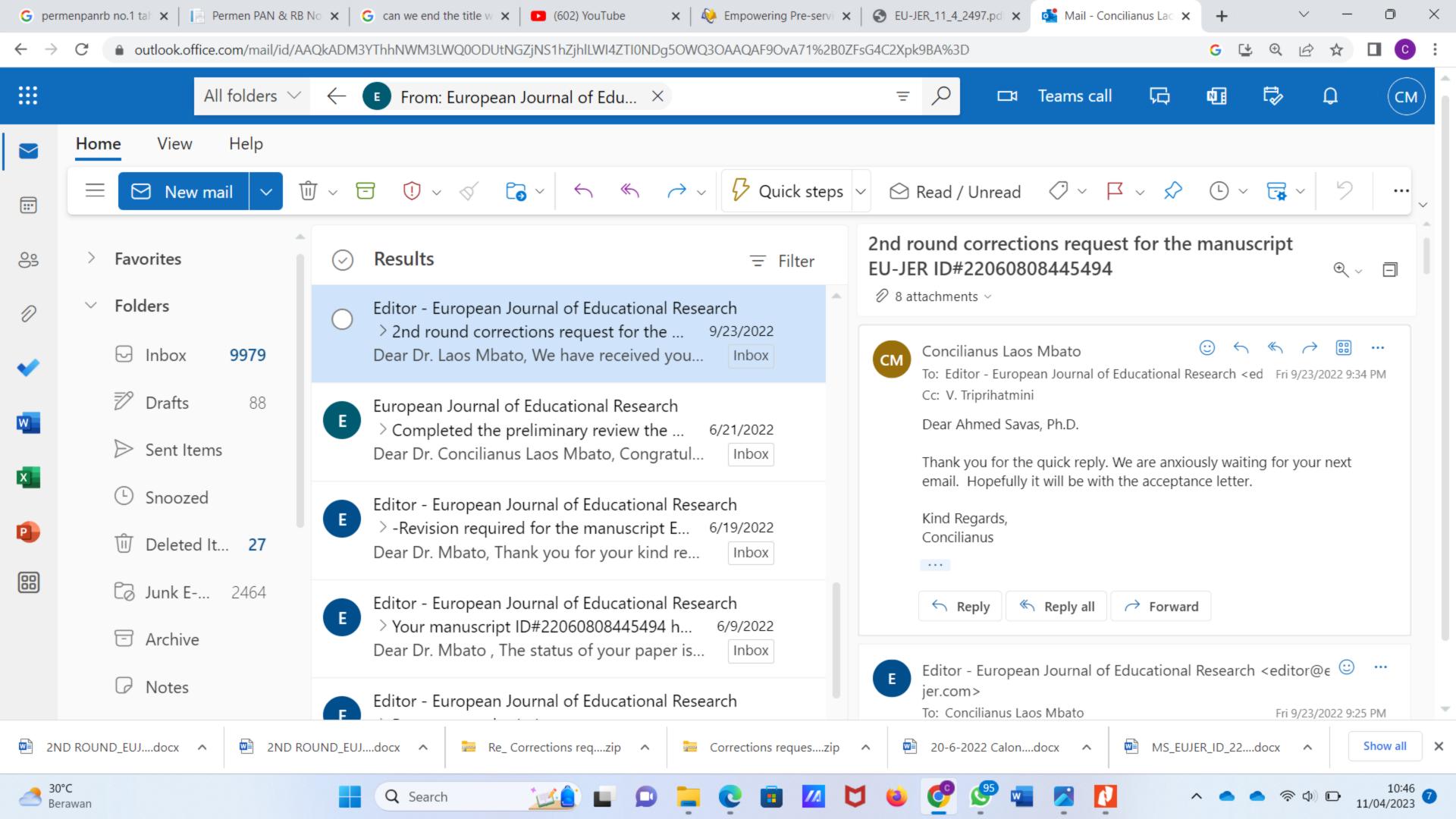
Wee	Content	Activitie						
1	 Introduction: Overview of the course Competencies required for a teaching profession 	Lecture Discussion Student reflection						
2	 Classroom Management Activities for Creating A Positive Learning Environment (Positive classroom management activities) 	 Short Lecture Presentation Discussion Student written reflection 						

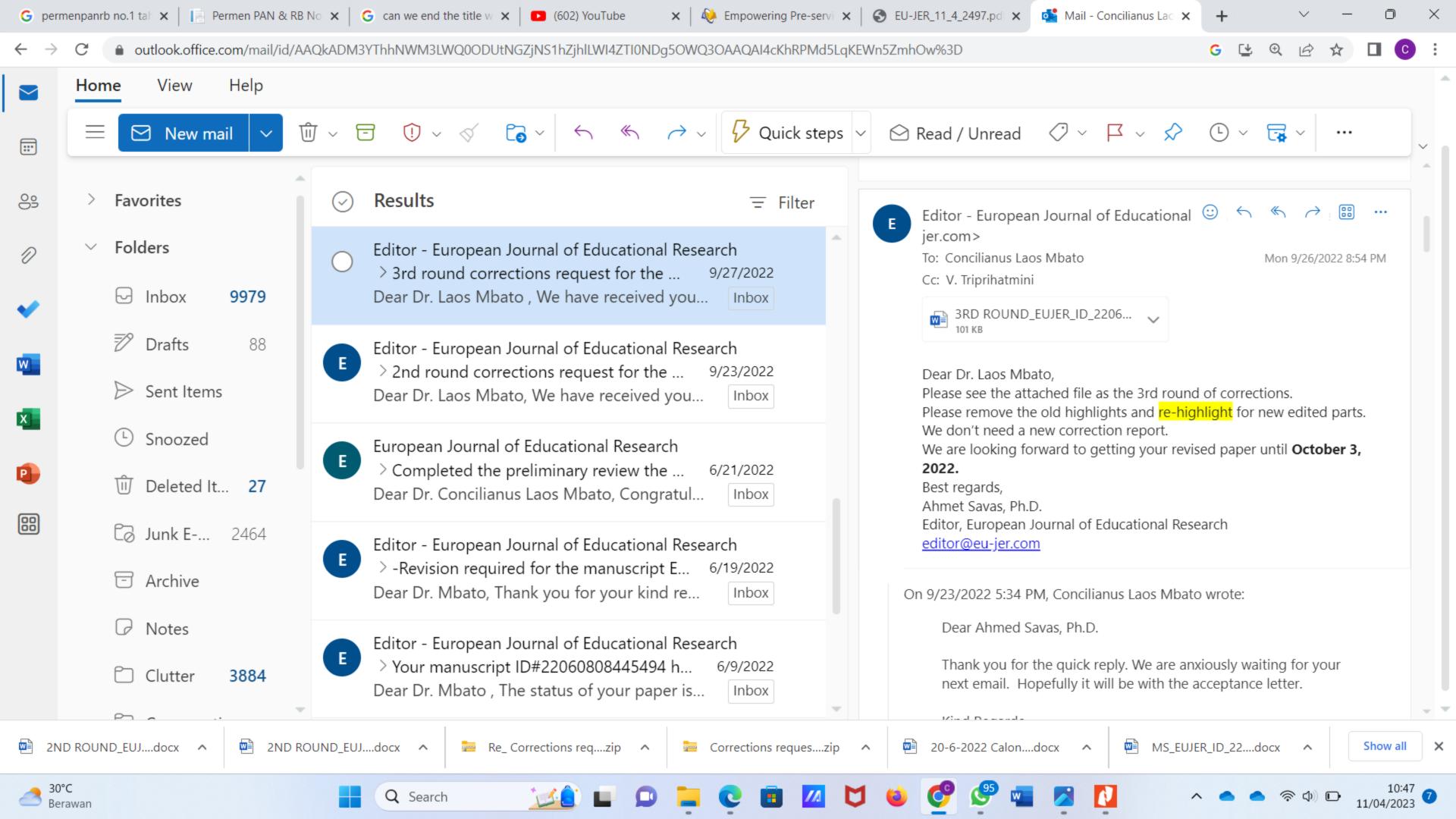
3	• Skill Practice 1: set induction, and	Peer teaching
	set closure	 Peer evaluation based on the
	Skill Practice 2: stimulus variation	observation sheet
4	Integrated teaching skill practice (1)	• Teaching small groups using the most
	88	appropriate teaching methods and
		strategies in their classes
5	Dissemination of Metacognitive	Teaching small groups
6	Integrated teaching skill practice (3)	Whole class teaching
7	Lesson Planning 1 using MAIT	Whole class teaching Workshop
	Lesson Flamming T using MATT	Teacher feedback
8	Mid-Test 1 using MAIT	• Individual teaching of the whole class
1		• Individual teaching the whole class @
1	Mid-Test 2 using MAIT Mid-Test 3 using MAIT	• Individual teaching the whole class @
1	BB	25-30 minutes*
		Peer feedback
		Teacher feedback
		Student written reflection based on
L		MAIT
1	Lesson Planning 2 using MAIT	Discussion
2		Workshop
		 Peer feedback Teacher feedback
		Teacher feedbackStudent written reflection based on
		• Student written renection based on MAIT
1	Final Test 1 using MAIT	• Individual teaching the whole class @
3	T mai Test T using withit	 Individual teaching the whole class @ 25-30 minutes*
-		 Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**
1	Final Test 2 using MAIT	 BASED ON MAIT** Individual teaching the whole class @ 25-30 minutes**
4		25-30 minutes**
		Whole class feedback Track on finally also
		• Teacher feedback
		SUMMATIVE REFLECTION BASED ON MAIT**
1		DAGED UN MALL
1	Final Test 3 using MAIT	• Individual teaching the whole class @
1 5	č	25-30 minutes*
		Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**
1	Final Test 4 using MAIT	 Individual teaching the whole class @ 25-30 minutes**
6	Ŭ	25-30 minutes**
		 Whole class feedback
1		Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**

* depends on the number of students in the class ** Applies to the students who taught in that particular week



-J	ER_11_4_2497.pd 🗙 📑 Mail -	Concilianus Lao 🗙	+			\sim	-	Ć		×	
ok	9BA%3D		G		Ð	É	☆		С	:	
											*
	Read / Unread 🛛 📿 🗸	☆ ∨ ⊅	Ŀ	\sim	T	~	9		,	~	
	← Reply ≪ Reply all	→ Forward								•	
)	Editor - European Journal jer.com> To: Concilianus Laos Mbato Cc: V. Triprihatmini	of Educational	Resea	arch			e ☺	 5 PM			
	Dear Dr. Laos Mbato,										
	We have received your seco reviewers again in order to a result from our reviewers.							е			
	If the reviewers confirm you letter to you.	r revised paper, v	we wi	ll sen	nd the	e acce	eptano	e			
	Thank you for your patience	2.									
	Best regards,										
	Ahmet Savas, Ph.D. Editor, European Journal of I <u>editor@eu-jer.com</u> <u>www.eu-jer.com</u>	Educational Rese	arch								
	Concilianus Laos Mbato			<u>;;</u>	4	≪	\rightarrow			-	-
	20-6-2022 Calondocx 🔨	MS_EUJE	R_ID_	22d	locx	^		Shov	v all	>	<
	🥑 🥙 👞 🔁	2			(î;	r ()		L1/04/	10:46 /2023	0	





Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, few studies have investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study aimed to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching. Mixed-methods research was conducted to collect quantitative and qualitative data from 45 pre-service English teachers (PSETs) in two micro teachingmicro-teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD) focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness in teaching increased post-semester. They also admitted the positive contributions of reflections in enhancing their metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Intensive preparation and rigorous teaching practice in college are required in order to be able to teach effectively since teachers cannot give what they do not have (Okogbaa, 2017). The professional development of preservice English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper aimed to examine the perceived impacts of reflections on pre-service teachers' metacognitive awareness in teaching. It begins by discussing the challenges facing teachers' professional development. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. In addition, reflections were reviewed as one of the tools to empower teachers' metacognitive awareness in teaching, followed by the method, result, discussion, conclusion, recommendation, and limitations. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness. It was expected that this research would enrich, extend and partly fill the gap in the current literature about reflections and their impacts on pre-service English teachers' metacognitive awareness in teaching.

Teachers face complex challenges in actual classroom teaching, ranging from the teaching workload, big class sizes, and time limitations (Al-Shaboul et al., 2020). Other challenges include who assesses teachers' competence and performance (Utami et al., 2021). Accordingly, they need strong guidance from their mentors to face challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2010; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (Bakar et al., 2019; Filiz & Durnali, 2019; Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have examined pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-development. Another study (Holzberger et al., 2019) involving 3,483 high school students and their 155 mathematics teachers revealed that high-quality teaching corresponds with students' achievement but does not predict their excitement. A recent study (Senel, 2021) of four Turkish English <u>l</u>-anguage <u>t</u>-eaching (ELT) students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good quality teaching. The demand for teachers at different school levels to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS). Since pre-service teachers could teach at primary and secondary schools, reviewing what happened at these schools concerning the implementation of HOTS was beneficial in preparing them for future teaching. Integrating HOTS into the teaching practice was also a requirement in our university's micro-teaching Syllabus (see the method section on learning contents and activities). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana et al. (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% related to HOTS.

Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020) revealed a low level of HOTS in mathematics subjects. A similar result was found in a study of student science teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities. This study urges lecturers to promote independent learning to students. However, training students to become

independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah & Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (Flavell, 1979). Several recent studies have acknowledged the impacts of metacognition on students' learning and success (Bećirovic et al., 2017; Cao & Lin, 2020; Oxford, 2017).

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interest in teachers' metacognitive awareness in teaching (Abdellah, 2015; Aktag et al., 2017; Alkam & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkam and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on their strategies to increase their metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness training for pre-service teachers. Similarly, research on

primary school teachers in Puchong, Selangor (Palantis et al., 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practised regularly and intentionally for the teachers' teaching to impact students' learning positively.

Considering its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011) Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of 'the why and when' to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011, p. 1,032) argued that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching.

Reflection

Reflections are the self-conscious activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019). Similarly, Davis and McDonald (2019) found that teachers' reflections focusing on self-evaluation could positively impact their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & McDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers. Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in English as a foreign language (EFL) vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching EFL vocabulary. This research, however, did not explore how reflections could be used to increase teachers' cognition in EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive awareness in teaching: lesson planning. They demonstrated the positive impact of reflective

practice on the student teachers' lesson planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practise reflections during teaching. However, they should be coached on strategies to effectively and successfully engage in these reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in teaching (Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centered teaching. However, many teachers experience difficulty in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st-century_skills_learning_in_many_classes_in_primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers could not teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (Beziat et al., 2018; Mattew et al., 2017) and student learning (Mbato, 2019; Soodla et al., 2017).

Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

Formatted: Not Superscript/ Subscript

How can reflections empower pre-service English teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Research Design

This research adopted a mixed-methods approach, collecting quantitative and qualitative data (Creswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (Zohrabi, 2013).

Researcher roles, learning contents and activities

Since this was a practicum class, PSETs learned about teaching and practised peer, small groups, and the whole class teaching, with teacher researchers acting as facilitators rather than instructors. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. The class met once a week for 200 minutes. The class contents and activities can be seen in Appendix 2.

Sample and Data Collection

Commented [A1]: Title case
Commented [A2R1]: In title case, please

Using purposive sampling, thirty-six PSETs enrolled in two micro teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. As mentors for the class for more than ten years, we decided to introduce the Metacognitive Awareness Inventory in Teaching (MAIT) from Balcikanli (2011). This inventory covered all teachers' metacognitive elements and had good validity and reliability (Balcikanli, 2011). The KMO validity was 0.794, the value for Barlett TKest was 2513.474, and the reliability ranged from 0.79 to 0.85.

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to complete them. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition, and the second on the regulation of cognition. Statements on the knowledge of cognition constituted four items on declarative Knowledge (Decl1-Decl4), four items on procedural Knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted by the current researchers from Balcikanli's MAIT (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching. Qualitative data were gathered from students' answers to the questions about the dissemination

of MAIT, summative reflections, and focus group discussions (FGDs) on the elements of

metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they practiced teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination were gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. The FGDs involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e., (a) the benefits of metacognitive awareness in teaching; (b) the difficulties in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyze the participants' responses about their metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Mbato (2019) mean category was used to interpret the mean for the expression motivation replaced with perception.

Table 1. Mean Range for Perception			
Mean Range	Interpretation		
3.68 - 5.00	A high degree of perception		
2.34 - 3.67	A moderate degree of perception		
1.00 -2 .33	A low degree of perception		

A paired-samples t-test was performed using IBM SPSS Statistics (Version 17) to determine whether there was a significant difference in students' perceptions about their metacognitive awareness in teaching in the post-semester.

Qualitative data analyses from reflections and FGD focused on finding key issues in students' answers (Gibson & Brown, 2009) about their metacognitive awareness in teaching, mainly on whether or not there were indications of improvements.

Validity and Reliability in Data Collection and Analysis

Validity and reliability of the data analyses were observed through triangulation, long-term observation, participatory research, and the handling of research bias (Lincoln & Guba, 1985; Merriam, 1998; Zohrabi, 2013). Two types of triangulation were undertaken, i.e., methods and data triangulation. The data from the questionnaires, dissemination, and summative reflections were triangulated in the analyses to corroborate the results. The researchers were involved in the research for four months (sixteen meetings), where they interacted with the research participants as facilitators in the micro-teaching class, designed the class contents and activities, repeatedly collected data on PSETs' metacognitive awareness in teaching through questionnaires, and students' reflections to arrive at data saturation. There was a collaboration with the participants in the data collection, so all the needed data in data analyses to answer the research questions were met. Research bias was addressed using Miles and Huberman's (1994) advice, namely: a) being in the micro-teaching class for four months (sixteen meetings); b) being less intrusive when students were doing practice teaching and conducting reflections based on MAIT; c) gaining rich data from pre-and post-semester questionnaires, a post semester questionnaire, students' reflections on the benefits of the dissemination of MAIT, and summative reflections; and d) preventing leading PSETs to expected answers. Through comparing and contrasting different data to the elements of MAIT, the findings of this research attained credibility and consistency. Through thematic analyses, different codes and themes

were recorded and compared with the elements of MAIT to reveal the perceived impacts of

reflections in empowering PSETs metacognitive awareness in teaching.

Results

Quantitative Data

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses.

Table 2. Students' Perceptions of the Role of Reflections in their Metacognitive Awareness

Commented [A3]: centered

No.	Statement	Mean	SD
ReDecl1	Reflections increased my awareness of the strengths and weaknesses in teaching.	4.31	0.62
ReDecl2	Reflections helped me to know the most important skills	4.31	0.55
ReDecl3	Reflections helped me to have control over teaching	4.04	0.53
ReDecl4	Reflections helped me to know the teaching expectations	4.31	0.47
ReProc5	Reflections helped me to use proven teaching techniques	4.19	0.69
ReProc6	Reflections helped me to have a specific reason for using a teaching technique	4.04	0.77
ReProc7	Reflections helped me to have an awareness of the teaching techniques	4.15	0.78
ReProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63
ReCon9	Reflections helped me to compensate strengths for weaknesses	4.19	0.63
ReCon10	Reflections helped me to motivate myself when having to teach	4.23	0.59
ReCon11	Reflections helped me to use different teaching techniques as required by the situation.	4.00	0.75
ReCon12	Reflections helped me to know when each teaching technique was most effective.	3.96	0.82
RePlan13	Reflections helped me to pace myself in teaching	4.31	0.62
RePlan14	Reflections helped me to set specific teaching goals before teaching	4.42	0.50
RePlan15	Reflections helped me to ask questions about the teaching materials	4.27	0.60
RePlan16	Reflections helped me to organize a time to accomplish teaching goals.	4.19	0.69
ReMon17	Reflections helped me to ask periodically if teaching goals were being met	4.12	0.52
ReMon18	Reflections helped me to assess how useful the teaching techniques were	4.12	0.59
ReMon19	Reflections helped my regular checking of students' comprehension	3.85	0.61
ReMon20	Reflections helped my self-questioning while teaching	4.19	0.49

No.	Statement	Mean	SD
ReEval21	Reflections helped me to ask myself about teaching goal accomplishment	4.19	0.57
ReEval22	Reflections helped me to ask myself if different techniques could have been used.	3.85	0.73
ReEval23	Reflections helped me to ask myself for more effective subsequent teaching	4.35	0.63
ReEval24	Reflections helped me to ask myself if all possible techniques had been considered	4.15	0.54
	Average	4.14	0.62

Adapted from Balcikanli (2011).

As indicated in Table 2, students generally admitted reflections' positive contributions in helping them develop their metacognitive awareness in teaching. The first four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with a mean range between 3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (Nurhapsari & Mbato, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

Table 3. Mean Comparison of Students' Responses to Metacognitive Awareness Statements in Teaching

No	Statements	Pre-semester		Post-semester		Mean Increase
		Mean	Std. Dev	Mean	Std. Dev	-
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	0.77
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	0.75
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	1.33
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	0.48
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	0.54
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	0.59
Proc7	Awareness of the teaching techniques while teaching.	3.1	0.91	3.67	0.73	0.57
Proc8	Using teaching techniques automatically.	2.79	0.92	4.1	0.55	1.31
Con9	Compensating strengths for weaknesses	3.26	0.91	3.77	0.77	0.51
Con10	Being able to motivate oneself when having to teach	3.15	0.96	3.82	0.68	0.67
Con11	Using different teaching techniques as required by the situation.	3.33	0.95	3.67	0.66	0.34
Con12	Knowing when each teaching technique is most effective.	2.77	1.01	3.77	0.62	1.00
Plan13	Pacing oneself in teaching to have enough time.	3.31	0.92	3.67	0.57	0.36
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31

Commented [A4]: centered

No	Statements	Pre-semester		Post-semester		Mean Increase
		Mean	Std. Dev	Mean	Std. Dev	
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52
Eval24	Asking oneself if all possible techniques have been considered	3.15	0.70	3.74	0.54	0.59
	Average	3.19	0.89	3.90	0.62	0.71

The questionnaire **in** Table 3 above was adopted from Balcikanli (2011), and its complete version can be seen in Appendix 1. It shows PSETs' responses to their metacognitive awareness in teaching pre- and post-semester teaching. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase (1.33). The second highest response was the PSETs' awareness of their strengths and weaknesses in teaching (Decl1/ 0.77 mean increase) and their knowledge of the most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by

PSETs' response to statement Pro6, which asked whether they had a particular reason for adopting a teaching technique in the classroom (Pro6/0.59 mean increase), and statement Pro7, which asked about their awareness of what teaching methods they used while teaching (Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase). Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

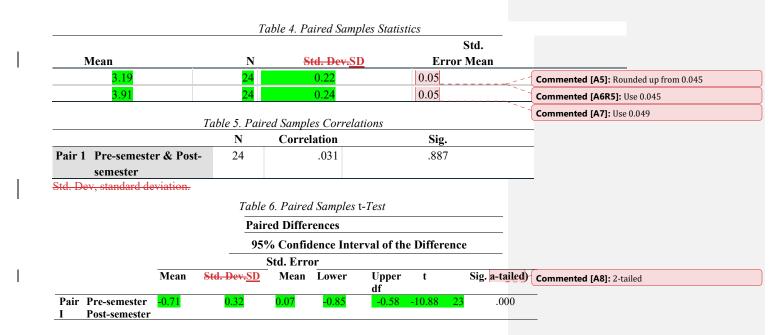
Parallel with their increased knowledge of cognition was their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, including time organization to accomplish their teaching goals (Plan16/with the highest mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

Similarly, students agreed with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that

they found themselves assessing how useful their teaching techniques were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

Additionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted to slightly improving their evaluation ability, as indicated in statements Eval23 and Eval21. Statement Eval23 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean increase for this statement was 0.52. Statement Eval21, which focused on whether they asked themselves if they asked their teaching goals after teaching, demonstrated a mean increase of 0.43.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.



A paired sample t-test was performed to determine students' perception of metacognitive awareness in teaching as the dependent variable measured pre-and post-semester. The results indicated a significant perceived increase between the pre-semester level, 3.19, standard deviation (SD) = 0.22, and post-semester level, 3.91, SD = 0.24, t(23) = -10.88, p < .05. As a result, the null hypothesis was rejected, while the alternative hypothesis was accepted. It can be inferred that PSETs' perceived metacognitive awareness in teaching improved after participating in the research.

Qualitative Data

Qualitative data were collected through students' summative reflections and FGDs of the elements of metacognitive awareness in teaching. These activities were conducted after students had experienced teaching in the micro-teaching class for one month. Students practiced teaching their peers in small groups and the whole class in class. The practice

aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

1. Reflections on the Dissemination of MAIT

The researchers disseminated the ideas of the metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise students' awareness of metacognition in teaching. For example, SO8 wrote:

I learn something new from metacognition which is very beneficial for me as a prospective teacher in the future. Teacher should be able to aware that every student is unique with their own <u>intelligentintelligence</u>. Even identical <u>twin twins</u> are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plan that includes <u>students students'</u> various cognition.

The second benefit was that it assisted them in understanding their strengths and weaknesses in

teaching. S01 reported:

After understanding <u>the</u> metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher; how to open <u>a</u> class that makes the students <u>are-full</u> of spirit, how to deliver the materials that <u>makes-make</u> the students can apply it in their lives, how to manage the class that makes the condition of the class is full of excitement, and how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me in order to understand whether the teaching goals *is*-are reached or not and understand what has to be improved.

Students also described four other benefits of MAIT, i.e, (a) being more aware of the importance of teaching techniques; (b) being more aware of possessing teaching skills; (c) being more aware of knowing what to teach (planning); and (d) being more aware of planning, monitoring and evaluating their teaching.

2. Summative Reflections

Reflections were a significant force in our efforts to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections based on MAIT throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching. The researchers summed up key ideas and, when relevant, cited a small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT:

I am really excited because finally I did well in this course. I am proud of myself because, at the beginning of this semester, I felt uncomfortable and not sure I can do <u>the</u> teaching. But, now I become more confident in teaching and feel more challenged. The fact is <u>that</u> being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware <u>with of</u> anything about teaching before, while and after teaching.

Another student (S20) emphasized that MAIT helped her to compensate for her weak grammar with her cheerful personality in teaching. Understanding their strengths and weaknesses in teaching seemed to be one of the most important contributions of MAIT to many students. Similarly, S11 admitted, "In the final test teaching practice, my friends and

I have improved so much because we have applied MAIT, Higher Order Thinking, and

Bloom's Taxonomy." S28, in her long reflection constituting all aspects of MAIT, wrote:

I understand the materials that I am going to teach. I also remind myself that when I am teaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even the small things such as appearance and eye contact. I want to inspire my students to learn English and motivate them as well.

S17 described that the class had helped him understand teaching better. He reflected:

This class has given me a whole new world of college life. I got many experiences in this class_{\perp} especially how to teach something. Teaching is not easy but it is kind of challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparations that the teacher should prepare before they teach.

Most PSETs admitted that they had improved their declarative, procedural, and conditional knowledge in teaching. They also acknowledged regulating their teaching better through planning, monitoring, and evaluating. Their improvements are strengthened by the data gained in the FGDs.

3. Focus Group Discussions

FGD was conducted in small groups in class at the end of the semester. Individual students were given more than a week to write their reflections about the implementation of MAIT before the implementation of the FGDs. These FGDs discussed three main questions, i.e.: (a) benefits of metacognitive awareness in teaching; (b) challenges in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before, while, and after teaching. Before teaching, Group 1 asserted, "We can understand what

points that we have to prepare before teaching in the class." Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4 acknowledged:

When we are teaching we learn how to manage the time allocation in order to have enough time. We try to implement and organize the material well. The teacher knows and <u>explaining explains</u> the learning objectives and <u>try-tries</u> to implement the teaching technique <u>that</u> chosen in class. Then, we know how to monitor our students by asking them questions to make sure they understand the materials. In teaching learning <u>activity activities</u> we try to evaluate ourselves by asking ourselves about how well we are doing while we are teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that

MAIT helped them to know the best teaching strategies for their students, the lack of their

teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during,

and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses *in at* the beginning of our teaching. To be reflective on what we have to improve and what we have improved. To be used to with classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the student's needs, understanding students' character, and handling the nervous feeling (Group 1). Group 4 mentioned the challenge in terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching challenged them to (a) *"revise our lesson plan and the whole teaching; (b) find different*

techniques that will work better for the next teaching, and (c) ask ourselves how well we have accomplished our teaching goals once we are finished". Group 4 realized that metacognitive awareness used after teaching helped them "always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance".

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: (a) "Focus on each point of MAIT; and (b) Try to implement each point of MAIT in the learning activities". Group 3 came up with three suggestions, i.e.:

(1)The teachers should have <u>a</u> list of teaching goals to be achieved; (2) The teachers should be aware of what their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching improved, consisting of declarative, procedural, and conditional knowledge, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept about teaching (Balcikanli, 2011; Mbato, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Mbato, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledged that they had improved conditional knowledge in teaching, namely, knowing when, why, and with whom to use specific knowledge and skills (Balcikanli, 2011; Mbato, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: (a) knowing their strengths to compensate for their weaknesses in teaching; (b) being able to motivate themselves to teach when they needed to teach; (c) being able to employ various teaching techniques as required by the situation; and (d) knowing when a teaching technique they used would be most productive.

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after participating in the research. An instance of this improvement was shown in PSETs' response to statement 22. PSETs mentioned they asked themselves if they might have utilised other techniques after teaching (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the pre-semester level, 3.19, SD = 0.22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, p < .05)

The results from these quantitative data had much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGDs highlighted the considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in helping her to become more prepared and aware before, while, and after teaching. Another example was from Group1: "We can understand what points *we have to prepare before teaching in the class.*" PSETs also appreciated the benefits of becoming aware of their metacognition while teaching. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage their time well while teaching.

Findings in this study corroborated previous studies (e.g., Aktag et al., 2017; Gopinath, 2014; Palantis et al., 2017), which asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere. Additionally, the results indicate the importance of teachers learning strategies to effectively and successfully engage in reflective practices (Ong et al., 2020). While acknowledging that metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and explicit training of metacognitive awareness for teachers need to be implemented (Aktag

Formatted: Font: Not Italic Formatted: Font: Not Italic

et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire post-semester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and supported by the qualitative data. The findings in this study enrich the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & McDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (Balcikanli, 2011). Another recent study by Davis and McDonald (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study focused on one element of regulation of cognition, i.e., evaluation (Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-service teachers to possess metacognition in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (Alkam & Erdem, 2014).

The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017) in that it used a more comprehensive metacognitive awareness inventory (Balcikanli, 2011). The MAIT implemented in this research also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (Amalia et al., 2020; Arslan, 2019; Davis & McDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusion

This study provides significant evidence of the PSETs' positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them to prepare strategies and materials to cope with 'the unexpected' in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. Facilitated through explicit reflections, possessing and displaying heightened metacognitive awareness in teaching could empower teachers, their teaching, and student learning. It was evident in this research that reflections could be utilized to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students. Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and in-service teachers.

Limitations

Formatted: Justified

This research was conducted for a short period of only four months. This study did not collect data about the impacts of teachers' and peers' feedback on students' reflections and metacognitive awareness in teaching. In addition, the validity of the second questionnaire had not been tested before its administration. Future researchers may need to test its validity before

using<u>it</u>.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the

Centre for Research and Community Service (LPPM), Sanata Dharma University, Indonesia.

References

- Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of pre-service female teachers in Ajman University in UAE. *Procedia - Social and Behavioral Sciences*, 174, 560 – 567. https://doi.org/10.1016/j.sbspro.2015.01.707
- Aktag, I., Semsek, O., & Tuzcuoglu, S. (2017). Determination metacognitive awareness of physical education teachers. *Journal of Education and Training Studies*, 5(9), 63-69. http://doi.org/10.11114/jets.v5i9.2511
- Alkam, F., & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. *Procedia - Social and Behavioral Sciences*, 143, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475
- Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. *European Journal of Educational Research*, 10(1), 127-143. https://doi.org/10.12973/eu-jer.10.1.127

- Amalia, L. L., Widiati, U., Basthomi, Y., & Cahyono, B. Y. (2020). Reflective practice on lesson planning among EFL teacher educators. *Indonesian Journal of Applied Linguistics*, 10(1), 53-160. https://doi.org/10.17509/ijal.v10i1.25025
- Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*, 35(6), 117-132. https://doi.org/10.14221/ajte.2010v35n6.3
- Arslan, F. Y. (2019) Reflection in pre-service teacher education: Exploring the nature of four EFL pre-service teachers' reflections. *Reflective Practice*, 20(1), 111-124. https://doi.org/10.1080/14623943.2018.1564652
- Bakar, A. Y. A., Amat, S., & Mahmud, M. I. (2019). Issues and challenges of 21st century teaching and learning: The Malaysian experience. *International Journal of Management and Applied Science*, 5(12), 6-11. https://bit.ly/3DDvRRM_https://bit.ly/3r5ov1Q
- Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). *Electronic Journal of Research in Educational Psychology*, 9(3), 1309-1332. http://doi.org/10.25115/ejrep.v9i25.1620
- Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading strategies among students at International Burch University: A case study. *European Journal of Contemporary Education*, 6(4), 645-655. https://doi.org/10.13187/ejced.2017.4.645
- Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in current and future principals. *School Leadership Review*, 12(2) 23-31. https://scholarworks.sfasu.edu/slr/vol12/iss2/4
- Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed method-theory and practice. Sequential, explanatory approach. *International Journal of Quantitative and Qualitative Research Methods*, 5(2), 10–27. https://bit.ly/3qZsehi
- Chang, B. (2019). Reflection in learning. *Online Learning*, 23(1), 95-110. http://doi.org/10.24059/olj.v23i1.1447
- Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension by vocational college students. *English Language Teaching*, 13(4), 127-139. https://doi.org/10.5539/elt.v13n4p127
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage.
- Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of ESL freshmen: A sequential explanatory mixed design. *TESOL International Journal*, 15(1), 20-30. https://bit.ly/3UJKV6q
- Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Selfassessment through a standards-based appraisal process. *Reflective Practice*, 20(10), 125-141. https://doi.org/10.1080/14623943.2019.1569508
- de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive learning and the development of higher-order thinking skills. *Journal of University Teaching & Learning Practice*, *16*(3), 1-17. https://doi.org/10.53761/1.16.3.3
- Fakhomah, D. N., & Utami, M. S. (2019). Pre-service English teacher perception about higher order thinking skills (HOTS) in the 21st century learning. *International Journal of Indonesian Education and Teaching*, 3(1), 41-49. https://bit.ly/3QY3QY3
- Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school on pedagogical formation program in Turkey. *European Journal of Educational Research*, 8(2), 395-407. https://doi.org/10.12973/eu-jer.8.2.395
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitivedevelopmental inquiry. *American Psychologist*, 34(10), 906-911. https://doi.org/10.1037/0003-066X.34.10.906

Formatted: Font: Not Italic

Commented [A9]: Incorrect alphabetical order. After Cao ... (2020)

Commented [A10]: https://www.tesol-international-

journal.com/volume-15-issue-1-2020/

Commented [A11]: The Doi link is invalid so I used their url link and shorten it using bitly

But I used this one before: https://doi.org/10.24071/ijiet.v3i1.1676 And when I clicked on it, it took me to the article. Please advise.

Commented [A12R11]: https://doi.org/10.24071/ijiet.v <u>3i1.1676</u> is the valid link. You can use it. The link you used before was different and invalid.

- Fox, R. K., Dodman, S., & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: developing critical reflective capacity in teachers and teacher educators, *Reflective Practice*, 20(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124
- Gabrijelčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional competences: A study among student teachers and students in education science in Slovenia. *European Journal of Educational Research*, 10(4), 2033-2044. https://doi.org/10.12973/eu-jer.10.4.2033
- Gibson, W., & Brown, A. (2009). Working with qualitative data. Sage. https://doi.org/10.4135/9780857029041
- Gopinath, L. S. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. *IOSR Journal of Research & Method in Education*, 4(4), 33-35. https://doi.org/10.9790/7388-04453335
- Hamiddin, H., & Saukah, A. (2020). Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. *Indonesian Journal of Applied Linguistics*, 9(3), 608-615. https://doi.org/10.17509/ijal.v9i3.23211
- Hermagustiana, I., Hamra, A., Rahman, A. Q., & Salija, K. (2017). Reflection of teacher cognition in EFL vocabulary instructional practices. *International Journal of English Linguistics*, 7(5), 34-45. http://doi.org/10.5539/ijel.v7n5p34
- Holzberger, D., Praetorius, A. K., Seidel, T., & Kunter, M. (2019). Identifying effective teachers: The relation between teaching profiles and students' development in achievement and enjoyment. *European Journal of Psychology of Education*, 34(4), 801– 823. https://doi.org/10.1007/s10212-018-00410-8
- Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. Sage. https://doi.org/10.1016/0147-1767(85)90062-8
- Kelle, U., Kühberger, C., & Bernhard, R. (2019). How to use mixed-methods and triangulation designs: An introduction to history education research. *History Education Research Journal*, 16(1), 5–23. https://doi.org/10.18546/HERJ.16.1.02.
- Külekçi, G. (2018). Identifying the perceptions of prospective English language teachers on characteristics of effective teachers: Who is the ideal teacher? *Novitas-ROYAL*, 12(1), 1-15. https://bit.ly/3BmyHre
- Lupascu, A. R., Pânisoară, G., & Pânisoară, I. O. (2014). Characteristics of effective teacher. Procedia - Social and Behavioral Sciences, 127, 534 – 538. https://doi.org/10.1016/j.sbspro.2014.03.305
- Mattew, P., Mathew, P., & Peechattu, P.J. (2017). Reflective practices: A means to teacher development. Asia Pacific Journal of Contemporary Education and Communication Technology, 3(1), 126-131. https://doi.org/10.17509/ijal.v10i3.31752
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. Jossey-Bass.
- Mbato, C. L. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. *Humaniora*, 31(1), 92-101. http://doi.org/10.22146/jh.v31i1.37295
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book* (2nd ed). Sage.
- Mitana, J. M. V., Muwagga, A. M., & Ssempala, C. (2018). Assessment of higher order thinking skills: A case of Uganda primary leaving examinations. *African Educational Research Journal*, 6(4), 240-249. http://doi.org/10.30918/AERJ.64.18.083
- Nurhapsari, A., & Mbato, C. L. (2019). Motivation to learn English: Why Indonesian adult learners join a community of interest. *Anima Indonesian Psychological Journal*, 34(2), 65-75. https://doi.org/10.24123/aipj.v34i2.2202

Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. Journal

Commented [A13]: Both incorrect alphabetical order. Move to line after Külekçi...

Commented [A14]: Provide URL link (Novitas ROYAL link) This one is from semantic scholar but I am not sure if it is

This one is from semantic scholar but I am not sure if it is the right URL (could not find others)

Commented [A15R14]: https://novitasroyal.org/volum e-12-issue-1-april-2018/

Commented [A16]: Incorrect alphabetical order. After Mbato ... (2019)

Commented [A17]: (2nd ed.)

Formatted: Font: Not Italic

of Education and Practice, 8(5), 81-86. https://bit.ly/3xBFSuB

- Ong, W. A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL pre-service teachers. *Indonesian Journal of Applied Linguistics*, 9(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222
- Oxford, R. L. (2017). Teaching and researching language learning strategies: Self-regulation in context. Routledge. https://doi.org/10.4324/9781315719146
- Palantis, N. J., Mohamed, A., Ibrahim, A. S. M., Ismail, S. H., Anuar, N. K., Marof, A. M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. https://doi.org/10.23917/varidika.v29i2.5629
- Poedjiastutie, D., Akhyar, F., Hidayati, D., & Gasmi, F. N. (2018). Does curriculum help students to develop their English competence? A case in Indonesia. Arab World English Journal, 9(2),175-185. https://doi.org/10.24093/awej/vol9no2.12
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475. https://doi.org/10.1006/ceps.1994.1033
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. *European Journal of Educational Research*, 10(2), 629-640. https://doi.org/10.12973/eu-jer.10.2.629
- Soodla, P., Jõgi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education*, 32(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x.
- Subia, G. S., Marcos, M. C., Pascual, L. E., Tomas, A. V., & Liangco, M. M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of science, technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*, 62(3), 261-268.
- Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, 13(3), 1-14. http://doi.org/10.29333/iji.2020.13325a
- Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers' reflection as a pathway to develop teacher professionalism. *International Online Journal of Education and Teaching*, 5(4), 921-932. http://iojet.org/index.php/IOJET/article/view/467/302
- Utami, D. R. T., Pranoto, Y. K. S., Latiana, L., & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, 10(2), 537-551. https://doi.org/10.12973/eu-jer.10.2.537
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, 3(2), 254-262. https://doi.org/10.4304/tpls.3.2.254-262

Commented [A19]: Provide URL link This is from semantic scholar; please advise

Commented [A20R19]: Just search "Journal of Education and Practice" using Google search and you can find journal's website. https://www.iiste.org/Journals/index.php/JEP/article/vi

ew/35468/36485

Commented [A21]: Can't find doi nor database link except research gate:

https://www.researchgate.net/publication/342762567 C ognitive Levels as Measure of Higher-Order Thinking Skills in Senior High School Mathematic s of Science Technology Engineering and Mathematics S TEM Graduates

Commented [A22R21]: https://www.kansaiuniversityr eports.com/article/cognitive-levels-as-measure-ofhigher-order-thinking-skills-in-senior-high-schoolmathematics-of-science-technology-engineering-andmathematics-stem-graduates

shorten the link above and add to the reference

Appendix 1

Metacognitive Awareness Inventory in Teaching

No	Statements			
Decl1				
	I am aware of the strengths and weaknesses in my teaching.			
Decl2	I know what skills are most important			
Decl3	I have control over how well I teach.			
Decl4	I know what I am expected to teach.			
Proc5	I try to use teaching techniques that worked in the past.			
Proc6	I have a specific reason for choosing each teaching technique in class.			
Proc7	I am aware of what teaching techniques I use while I am teaching.			
Proc8	I use helpful teaching techniques automatically.			
Con9	I use my strengths to compensate for my weaknesses in my teaching.			
Con10	I can motivate myself to teach when I really need to teach.			
Con11	I use different teaching techniques depending on the situation.			
Con12	I know when each teaching technique I use will be most effective.			
Plan13	I pace myself while I am teaching in order to have enough time.			
Plan14	I set my specific teaching goals before I start teaching.			
Plan15	I ask myself questions about the teaching materials I am going to use.			
Plan16	I organize my time to best accomplish my teaching goals.			
Mon17	I ask myself periodically if I meet my teaching goals while I am teaching.			
Mon18	I find myself assessing how useful my teaching techniques are while I am			
	teaching.			
Mon19	I check regularly to what extent my students comprehend the topic while I am			
	teaching.			
Mon20				
Eval21	I ask myself how well I have accomplished my teaching goals once I am finished.			
Eval22	I ask myself if I could have used different techniques after each teaching			
	experience.			
Eval23	After teaching a point, I ask myself if I'd teach it more effectively next time.			
Eval24	I ask myself if I have considered all possible techniques after teaching a point.			
	Ralcikanli, F. (2011).			

Source: Balcikanli, E. (2011).

l

Γ

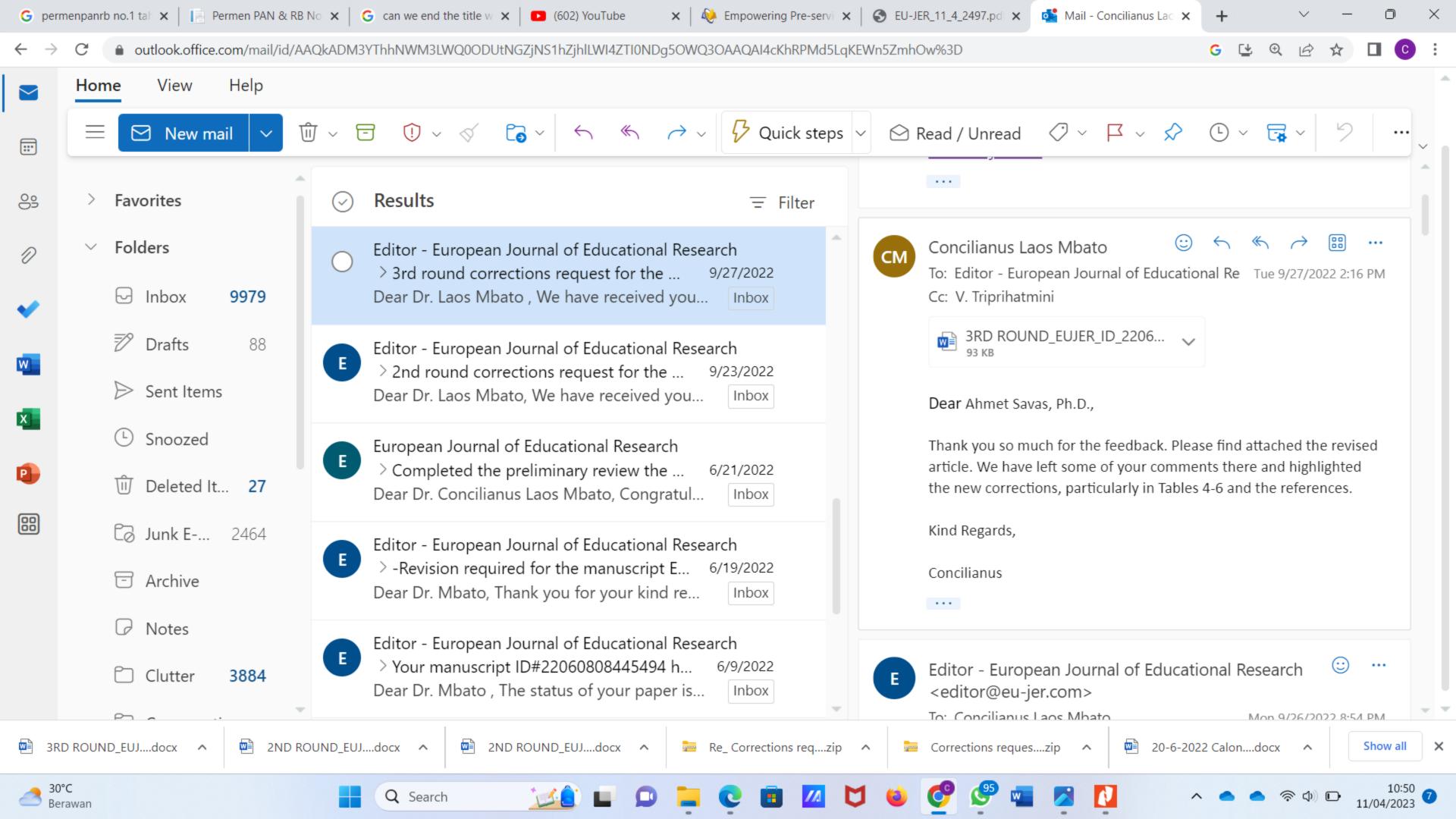
Appendix 2

Content and Activities

Wee	Content	Activitie
1	• Introduction: Overview of the course	• Lecture
1	• Competencies required for a	Discussion
	Classroom Management Activities	Student reflection Short Lecture
	for Creating	Presentation
2	 A Positive Learning Environment (Positive classroom management) 	DiscussionStudent written reflection
	activities)	- Student written reneemen
3	 Skill Practice 1: set induction, and set closure 	Peer teachingPeer evaluation based on the
	 Skill Practice 2: stimulus variation 	• Peer evaluation based on the observation sheet
4	Integrated teaching skill practice (1)	Teaching small groups using the most
		appropriate teaching methods and
5	Dissemination of Metacognitive	 strategies in their classes Teaching small groups
6	Integrated teaching skill practice (3)	Whole class teaching
7	Lesson Planning 1 using MAIT	Workshop
0	Mid Test 1 yeine MAIT	 Teacher feedback Individual teaching of the whole class
8	Mid-Test 1 using MAIT Mid-Test 2 using MAIT	 Individual teaching of the whole class Individual teaching the whole class @
1	Mid-Test 2 using MAIT Mid-Test 3 using MAIT	• Individual teaching the whole class @
1	_	25-30 minutes* • Peer feedback
		Teacher feedback
		 Student written reflection based on MAIT
1	Lesson Planning 2 using MAIT	Discussion
2		WorkshopPeer feedback
		 Feer feedback Teacher feedback
		• Student written reflection based on
1	Final Test 1 using MAIT	 MAIT Individual teaching the whole class @
3		 Individual teaching the whole class @ 25-30 minutes*
		 Whole class feedback Teacher feedback
		SUMMATIVE REFLECTION
1	Final Test 2 using MAIT	 BASED ON MAIT** Individual teaching the whole class @ 25-30 minutes**
4	i mar 1050 2 using MATI	25-30 minutes**
		 Whole class feedback Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**
1	Final Test 3 using MAIT	 Individual teaching the whole class @ 25-30 minutes*
5		 25-30 minutes* Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION BASED ON MAIT**
1	Final Test 4 using MAIT	
$1 \\ 6$	Final Test 4 using MAIT	 Individual teaching the whole class @ 25-30 minutes**

	 Whole class feedback Teacher feedback SUMMATIVE REFLECTION BASED ON MAIT**
--	--

* depends on the number of students in the class ** Applies to the students who taught in that particular week



Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, few studies have investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study aimed to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching. Mixed-methods research was conducted to collect quantitative and qualitative data from 45 pre-service English teachers (PSETs) in two micro-teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD) focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness in teaching increased post-semester. They also admitted the positive contributions of reflections in enhancing their metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Intensive preparation and rigorous teaching practice in college are required in order to be able to teach effectively since teachers cannot give what they do not have (Okogbaa, 2017). The professional development of preservice English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper aimed to examine the perceived impacts of reflections on pre-service teachers' metacognitive awareness in teaching. It begins by discussing the challenges facing teachers' professional development. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. In addition, reflections were reviewed as one of the tools to empower teachers' metacognitive awareness in teaching, followed by the method, result, discussion, conclusion, recommendation, and limitations. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness. It was expected that this research would enrich, extend and partly fill the gap in the current literature about reflections and their impacts on pre-service English teachers' metacognitive awareness in teaching.

Teachers face complex challenges in actual classroom teaching, ranging from the teaching workload, big class sizes, and time limitations (Al-Shaboul et al., 2020). Other challenges include who assesses teachers' competence and performance (Utami et al., 2021). Accordingly, they need strong guidance from their mentors to face challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2010; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (Bakar et al., 2019; Filiz & Durnali, 2019; Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have examined pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-development. Another study (Holzberger et al., 2019) involving 3,483 high school students and their 155 mathematics teachers revealed that high-quality teaching corresponds with students' achievement but does not predict their excitement. A recent study (Senel, 2021) of four Turkish English language teaching (ELT) students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good quality teaching. The demand for teachers at different school levels to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS). Since pre-service teachers could teach at primary and secondary schools, reviewing what happened at these schools concerning the implementation of HOTS was beneficial in preparing them for future teaching. Integrating HOTS into the teaching practice was also a requirement in our university's micro-teaching Syllabus (see the method section on learning contents and activities). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana et al. (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% related to HOTS.

Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020) revealed a low level of HOTS in mathematics subjects. A similar result was found in a study of student science teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities. This study urges lecturers to promote independent learning to students. However, training students to become

independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah & Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (Flavell, 1979). Several recent studies have acknowledged the impacts of metacognition on students' learning and success (Bećirovic et al., 2017; Cao & Lin, 2020; Oxford, 2017).

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interest in teachers' metacognitive awareness in teaching (Abdellah, 2015; Aktag et al., 2017; Alkam & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkam and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on their strategies to increase their metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness training for pre-service teachers. Similarly, research on

primary school teachers in Puchong, Selangor (Palantis et al., 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practised regularly and intentionally for the teachers' teaching to impact students' learning positively.

Considering its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011) Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of 'the why and when to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011) argued that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching.

Reflection

Reflections are the self-conscious activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019). Similarly, Davis and McDonald (2019) found that teachers' reflections focusing on self-evaluation could positively impact their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & McDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers. Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in English as a EFL vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching EFL vocabulary. This research, however, did not explore how reflections could be used to increase teachers' cognition in EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive awareness in teaching: lesson planning. They demonstrated the positive impact of reflective practice on the student

teachers' lesson planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practise reflections during teaching. However, they should be coached on strategies to effectively and successfully engage in these reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in teaching (Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centered teaching. However, many teachers experience difficulty in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st century skills learning in many classes in primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers could not teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (Beziat et al., 2018; Mattew et al., 2017) and student learning (Mbato, 2019; Soodla et al., 2017).

Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

How can reflections empower pre-service English teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Research Design

This research adopted a mixed-methods approach, collecting quantitative and qualitative data (Creswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (Zohrabi, 2013).

Researcher Roles, Learning Contents and Activities

Since this was a practicum class, PSETs learned about teaching and practised peer, small groups, and the whole class teaching, with teacher researchers acting as facilitators rather than instructors. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. The class met once a week for 200 minutes. The class contents and activities can be seen in Appendix 2.

Sample and Data Collection

Using purposive sampling, thirty-six PSETs enrolled in two micro teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. As mentors for the class for more than ten years, we decided to introduce the Metacognitive Awareness Inventory in Teaching (MAIT) from Balcikanli (2011). This inventory covered all teachers' metacognitive elements and had good validity and reliability (Balcikanli, 2011). The KMO validity was 0.794, the value for Barlett TKest was 2513.474, and the reliability ranged from 0.79 to 0.85.

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to complete them. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition, and the second on the regulation of cognition. Statements on the knowledge of cognition constituted four items on declarative Knowledge (Decl1-Decl4), four items on procedural Knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted by the current researchers from Balcikanli's MAIT (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching. Qualitative data were gathered from students' answers to the questions about the dissemination

of MAIT, summative reflections, and focus group discussions (FGDs) on the elements of

metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they practiced teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination were gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. The FGDs involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e., (a) the benefits of metacognitive awareness in teaching; (b) the difficulties in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyze the participants' responses about their metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Mbato (2019) mean category was used to interpret the mean for the expression motivation replaced with perception.

	Table 1. Mean Range for Perception
Mean Range	Interpretation
3.68 - 5.00	A high degree of perception
2.34 - 3.67	A moderate degree of perception
1.00 -2 .33	A low degree of perception

A paired-samples t-test was performed using IBM SPSS Statistics (Version 17) to determine whether there was a significant difference in students' perceptions about their metacognitive awareness in teaching in the post-semester.

Qualitative data analyses from reflections and FGD focused on finding key issues in students' answers (Gibson & Brown, 2009) about their metacognitive awareness in teaching, mainly on whether or not there were indications of improvements.

Validity and Reliability in Data Collection and Analysis

Validity and reliability of the data analyses were observed through triangulation, long-term observation, participatory research, and the handling of research bias (Lincoln & Guba, 1985; Merriam, 1998; Zohrabi, 2013). Two types of triangulation were undertaken, i.e., methods and data triangulation. The data from the questionnaires, dissemination, and summative reflections were triangulated in the analyses to corroborate the results. The researchers were involved in the research for four months (sixteen meetings), where they interacted with the research participants as facilitators in the micro-teaching class, designed the class contents and activities, repeatedly collected data on PSETs' metacognitive awareness in teaching through questionnaires, and students' reflections to arrive at data saturation. There was a collaboration with the participants in the data collection, so all the needed data in data analyses to answer the research questions were met. Research bias was addressed using Miles and Huberman's (1994) advice, namely: a) being in the micro-teaching class for four months (sixteen meetings); b) being less intrusive when students were doing practice teaching and conducting reflections based on MAIT; c) gaining rich data from pre-and post-semester questionnaires, a post semester questionnaire, students' reflections on the benefits of the dissemination of MAIT, and summative reflections; and d) preventing leading PSETs to expected answers. Through comparing and contrasting different data to the elements of MAIT, the findings of this research attained credibility and consistency. Through thematic analyses, different codes and themes

were recorded and compared with the elements of MAIT to reveal the perceived impacts of reflections in empowering PSETs metacognitive awareness in teaching.

Results

Quantitative Data

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses.

Table 2. Students' Perceptions of the Role of Reflections in their Metacognitive

Awareness

No.	Statement	Mean	SD
ReDecl1	Reflections increased my awareness of the strengths and weaknesses in teaching.	4.31	0.62
ReDecl2	Reflections helped me to know the most important skills	4.31	0.55
ReDecl3	Reflections helped me to have control over teaching	4.04	0.53
ReDecl4	Reflections helped me to know the teaching expectations	4.31	0.47
ReProc5	Reflections helped me to use proven teaching techniques	4.19	0.69
ReProc6	Reflections helped me to have a specific reason for using a teaching technique	4.04	0.77
ReProc7	Reflections helped me to have an awareness of the teaching techniques	4.15	0.78
ReProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63
ReCon9	Reflections helped me to compensate strengths for weaknesses	4.19	0.63
ReCon10	Reflections helped me to motivate myself when having to teach	4.23	0.59
ReCon11	Reflections helped me to use different teaching techniques as required by the situation.	4.00	0.75
ReCon12	Reflections helped me to know when each teaching technique was most effective.	3.96	0.82
RePlan13	Reflections helped me to pace myself in teaching	4.31	0.62
RePlan14	Reflections helped me to set specific teaching goals before teaching	4.42	0.50
RePlan15	Reflections helped me to ask questions about the teaching materials	4.27	0.60
RePlan16	Reflections helped me to organize a time to accomplish teaching goals.	4.19	0.69
ReMon17	Reflections helped me to ask periodically if teaching goals were being met	4.12	0.52
ReMon18	Reflections helped me to assess how useful the teaching techniques were	4.12	0.59
ReMon19	Reflections helped my regular checking of students'	3.85	0.61

No.	Statement	Mean	SD
	comprehension		
ReMon20	Reflections helped my self-questioning while teaching	4.19	0.49
ReEval21	Reflections helped me to ask myself about teaching goal accomplishment	4.19	0.57
ReEval22	Reflections helped me to ask myself if different techniques could have been used.	3.85	0.73
ReEval23	Reflections helped me to ask myself for more effective subsequent teaching	4.35	0.63
ReEval24	Reflections helped me to ask myself if all possible techniques had been considered	4.15	0.54
	Average	4.14	0.62

Adapted from Balcikanli (2011).

As indicated in Table 2, students generally admitted reflections' positive contributions in helping them develop their metacognitive awareness in teaching. The first four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with a mean range between

3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (Nurhapsari & Mbato, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

Table 3. Mean Comparison of Students	' Responses to	Metacognitive Awareness Statements
	in Teaching	

No	Statements Pre-		Pre-semester Post-semester			Mean Increase	
		Mean	Std. Dev	Mean	Std. Dev		
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	0.77	
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	0.75	
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	1.33	
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	0.48	
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	0.54	
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	0.59	
Proc7	Awareness of the teaching techniques while teaching.	3.1	0.91	3.67	0.73	0.57	
Proc8	Using teaching techniques automatically.	2.79	0.92	4.1	0.55	1.31	
Con9	Compensating strengths for weaknesses	3.26	0.91	3.77	0.77	0.51	
Con10	Being able to motivate oneself when having to teach	3.15	0.96	3.82	0.68	0.67	
Con11	Using different teaching techniques as required by the situation.	3.33	0.95	3.67	0.66	0.34	
Con12	Knowing when each teaching technique is most effective.	2.77	1.01	3.77	0.62	1.00	
Plan13	Pacing oneself in teaching to have enough time.	3.31	0.92	3.67	0.57	0.36	
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67	
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59	
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26	
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56	

No	Statements	Pre-sei	mester	Post-semester		Mean Increase
		Mean	Std. Dev	Mean	Std. Dev	
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52
Eval24	Asking oneself if all possible techniques have been considered	3.15	0.70	3.74	0.54	0.59
	Average	3.19	0.89	3.90	0.62	0.71

SD: standard deviation.

The questionnaire in Table 3 above was adopted from Balcikanli (2011), and its complete version can be seen in Appendix 1. It shows PSETs' responses to their metacognitive awareness in teaching pre- and post-semester teaching. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase (1.33). The second highest response was the PSETs' awareness of their strengths and weaknesses in teaching (Decl1/ 0.77 mean increase) and their knowledge of the most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching

automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by PSETs' response to statement Pro6, which asked whether they had a particular reason for adopting a teaching technique in the classroom (Pro6/0.59 mean increase), and statement Pro7, which asked about their awareness of what teaching methods they used while teaching (Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase). Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

Parallel with their increased knowledge of cognition was their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, including time organization to accomplish their teaching goals (Plan16/with the highest mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

Similarly, students agreed with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that they found themselves assessing how useful their teaching techniques were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

Additionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted to slightly improving their evaluation ability, as indicated in statements Eval23 and Eval21. Statement Eval23 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean increase for this statement was 0.52. Statement Eval21, which focused on whether they asked themselves if they had accomplished their teaching goals after teaching, demonstrated a mean increase of 0.43.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.

		7	able 4. Paired	Samples Statis	tics			
		1		Sumpres Statis		Std.		
Mean		Ν	S	D	Er	ror Mean		
3.19		24	0.22		0.045			Commented [A1]: Rounded up from 0.045
3.91		24	0.24		0.0 <mark>49</mark>			Commented [A2R1]: Use 0.045
	Т	able 5. Pair	ed Samples Co	orrelations				Commented [A3]: Use 0.049
		Ν	Correlatior	1	Sig.			
Pair 1 Pre-semest semester	er & Post-	24	.03	1	.887			-
		Table	e 6. Paired Sam	ples t-Test				-
		Pai	red Difference	s				
		95	% Confidence	Interval of th	e Differe	ence		
			Std. Error					
	Mean	SD	Mean Low	ver Upper df	t	Sig. <mark>2</mark> -ta	uled)	Commented [A4]: 2-tailed
Pair Pre-semester I Post-semester	-0.71	0.32	0.07 -0.	85 -0.58	-10.88	23 .0	00	

A paired sample t-test was performed to determine students' perception of metacognitive awareness in teaching as the dependent variable measured pre-and post-semester. The results indicated a significant perceived increase between the pre-semester level, 3.19, standard deviation (SD) = 0.22, and post-semester level, 3.91, SD = 0.24, t(23) = -10.88, p < .05. As a result, the null hypothesis was rejected, while the alternative hypothesis was accepted. It can be inferred that PSETs' perceived metacognitive awareness in teaching improved after participating in the research.

Qualitative Data

Qualitative data were collected through students' summative reflections and FGDs of the elements of metacognitive awareness in teaching. These activities were conducted after students had experienced teaching in the micro-teaching class for one month. Students practiced teaching their peers in small groups and the whole class in class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

1. Reflections on the Dissemination of MAIT

The researchers disseminated the ideas of the metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise students' awareness of metacognition in teaching. For example, SO8 wrote:

I learn something new from metacognition which is very beneficial for me as a prospective teacher in the future. Teacher should be able to aware that every student is unique with their own intelligence. Even identical twins are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plan that includes students' various cognition.

The second benefit was that it assisted them in understanding their strengths and weaknesses in

teaching. S01 reported:

After understanding the metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher; how to open a class that makes the students full of spirit, how to deliver the materials that make the students can apply it in their lives, how to manage the class that makes the condition of the class is full of excitement, and how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me in order to understand whether the teaching goals are reached or not and understand what has to be improved.

Students also described four other benefits of MAIT, i.e., (a) being more aware of the importance of teaching techniques; (b) being more aware of possessing teaching skills; (c) being more aware of knowing what to teach (planning); and (d) being more aware of planning, monitoring and evaluating their teaching.

2. Summative Reflections

Reflections were a significant force in our efforts to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections based on MAIT throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching. The researchers summed up key ideas and, when relevant, cited a small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT:

I am really excited because finally I did well in this course. I am proud of myself because, at the beginning of this semester, I felt uncomfortable and not sure I can do the teaching. But, now I become more confident in teaching and feel more challenged. The fact is that being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware of anything about teaching before, while and after teaching.

Another student (S20) emphasized that MAIT helped her to compensate for her weak grammar with her cheerful personality in teaching. Understanding their strengths and weaknesses in teaching seemed to be one of the most important contributions of MAIT to many students. Similarly, S11 admitted, "*In the final test teaching practice, my friends and I have improved so much because we have applied MAIT, Higher Order Thinking, and*

Bloom's Taxonomy." S28, in her long reflection constituting all aspects of MAIT, wrote:

I understand the materials that I am going to teach. I also remind myself that when I am teaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even the small things such as appearance and eye contact. I want to inspire my students to learn English and motivate them as well.

S17 described that the class had helped him understand teaching better. He reflected:

This class has given me a whole new world of college life. I got many experiences in this class, especially how to teach something. Teaching is not easy but it is kind of challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparations that the teacher should prepare before they teach.

Most PSETs admitted that they had improved their declarative, procedural, and conditional knowledge in teaching. They also acknowledged regulating their teaching better through planning, monitoring, and evaluating. Their improvements are strengthened by the data gained in the FGDs.

3. Focus Group Discussions

FGD was conducted in small groups in class at the end of the semester. Individual students were given more than a week to write their reflections about the implementation of MAIT before the implementation of the FGDs. These FGDs discussed three main questions, i.e.: (a) benefits of metacognitive awareness in teaching; (b) challenges in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before,

while, and after teaching. Before teaching, Group 1 asserted, "We can understand what points that we have to prepare before teaching in the class." Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4 acknowledged:

When we are teaching we learn how to manage the time allocation in order to have enough time. We try to implement and organize the material well. The teacher knows and explains the learning objectives and tries to implement the teaching technique chosen in class. Then, we know how to monitor our students by asking them questions to make sure they understand the materials. In teaching learning activities we try to evaluate ourselves by asking ourselves about how well we are doing while we are teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that

MAIT helped them to know the best teaching strategies for their students, the lack of their

teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during,

and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses at the beginning of our teaching. To be reflective on what we have to improve and what we have improved. To be used to classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the student's needs, understanding students' character, and handling the nervous feeling (Group 1). Group 4 mentioned the challenge in terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching

challenged them to (a) "revise our lesson plan and the whole teaching; (b) find different techniques that will work better for the next teaching, and (c) ask ourselves how well we have accomplished our teaching goals once we are finished". Group 4 realized that metacognitive awareness used after teaching helped them "always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance".

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: (a) "Focus on each point of MAIT; and (b) Try to implement each point of MAIT in the learning activities". Group 3 came up with three suggestions, i.e.:

(1)The teachers should have a list of teaching goals to be achieved; (2) The teachers should be aware of their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching improved, consisting of declarative, procedural, and conditional knowledge, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept about teaching (Balcikanli, 2011; Mbato, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Mbato, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledged that they had improved conditional knowledge in teaching, namely, knowing when, why, and with whom to use specific knowledge and skills (Balcikanli, 2011; Mbato, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: (a) knowing their strengths to compensate for their weaknesses in teaching; (b) being able to motivate themselves to teach when they needed to teach; (c) being able to employ various teaching techniques as required by the situation; and (d) knowing when a teaching technique they used would be most productive.

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after

participating in the research. An instance of this improvement was shown in PSETs' response to statement 22. PSETs mentioned they asked themselves if they might have utilised other techniques after teaching (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the pre-semester level, 3.19, SD = 0.22, and post-semester level, 3.91, SD = .24, t(23) =-10.88, p<.05).

The results from these quantitative data had much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGDs highlighted the considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in helping her to become more prepared and aware before, while, and after teaching. Another example was from Group1: "We can understand what points *we have to prepare before teaching in the class.*" PSETs also appreciated the benefits of becoming aware of their metacognition while teaching. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage their time well while teaching.

Findings in this study corroborated previous studies (e.g., Aktag et al., 2017; Gopinath, 2014; Palantis et al., 2017), which asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere. Additionally, the results indicate the importance of teachers learning strategies to effectively and successfully engage in reflective practices (Ong et al., 2020). While acknowledging that metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and

explicit training of metacognitive awareness for teachers need to be implemented (Aktag et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire post-semester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and supported by the qualitative data. The findings in this study enrich the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & McDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (Balcikanli, 2011). Another recent study by Davis and McDonald (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study focused on one element of regulation of cognition, i.e., evaluation (Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-service teachers to possess metacognitive awareness in teaching performance. This study indicated that increased metacognitive awareness in teaching could improve pre-service teachers' strategies to

belief and perception of subject matter competence (Alkam & Erdem, 2014).

The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017) in that it used a more comprehensive metacognitive awareness inventory (Balcikanli, 2011). The MAIT implemented in this research also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (Amalia et al., 2020; Arslan, 2019; Davis & McDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusion

This study provides significant evidence of the PSETs' positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them to prepare strategies and materials to cope with 'the unexpected' in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. Facilitated through explicit reflections, possessing and displaying heightened metacognitive awareness in teaching. It was

evident in this research that reflections could be utilized to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students. Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and in-service teachers.

Limitations

This research was conducted for a short period of only four months. This study did not collect data about the impacts of teachers' and peers' feedback on students' reflections and metacognitive awareness in teaching. In addition, the validity of the second questionnaire had not been tested before its administration. Future researchers may need to test its validity before using it.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the Centre for Research and Community Service (*LPPM*), Sanata Dharma University, Indonesia.

References

- Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of pre-service female teachers in Ajman University in UAE. *Procedia - Social and Behavioral Sciences*, 174, 560 – 567. https://doi.org/10.1016/j.sbspro.2015.01.707
- Aktag, I., Semsek, O., & Tuzcuoglu, S. (2017). Determination metacognitive awareness of physical education teachers. *Journal of Education and Training Studies*, 5(9), 63-69. http://doi.org/10.11114/jets.v5i9.2511
- Alkam, F., & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. *Procedia Social and Behavioral*

Sciences, 143, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475

- Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. *European Journal of Educational Research*, 10(1), 127-143. https://doi.org/10.12973/eu-jer.10.1.127
- Amalia, L. L., Widiati, U., Basthomi, Y., & Cahyono, B. Y. (2020). Reflective practice on lesson planning among EFL teacher educators. *Indonesian Journal of Applied Linguistics*, 10(1), 53-160. https://doi.org/10.17509/ijal.v10i1.25025
- Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*, 35(6), 117-132. https://doi.org/10.14221/ajte.2010v35n6.3
- Arslan, F. Y. (2019). Reflection in pre-service teacher education: Exploring the nature of four EFL pre-service teachers' reflections. *Reflective Practice*, 20(1), 111-124. https://doi.org/10.1080/14623943.2018.1564652
- Bakar, A. Y. A., Amat, S., & Mahmud, M. I. (2019). Issues and challenges of 21st century teaching and learning: The Malaysian experience. *International Journal of Management* and Applied Science, 5(12), 6-11. https://bit.ly/3r5ov1Q
- Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). *Electronic Journal of Research in Educational Psychology*, 9(3), 1309-1332. http://doi.org/10.25115/ejrep.v9i25.1620
- Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading strategies among students at International Burch University: A case study. *European Journal of Contemporary Education*, 6(4), 645-655. https://doi.org/10.13187/ejced.2017.4.645
- Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in current and future principals. School Leadership Review, 12(2) 23-31. https://scholarworks.sfasu.edu/slr/vol12/iss2/4
- Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed method-theory and practice. Sequential, explanatory approach. *International Journal of Quantitative and Qualitative Research Methods*, 5(2), 10–27. https://bit.ly/3qZsehi
- Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension by vocational college students. *English Language Teaching*, 13(4), 127-139. https://doi.org/10.5539/elt.v13n4p127
- Chang, B. (2019). Reflection in learning. *Online Learning*, 23(1), 95-110. http://doi.org/10.24059/olj.v23i1.1447
- Creswell, J. W., & Clark, V. L. P. (2017). *Designing and conducting mixed methods research* (3rd ed.). Sage.
- Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of ESL freshmen: A sequential explanatory mixed design. *TESOL International Journal*, 15(1), 20-30. https://www.tesol-international-journal.com/volume-15-issue-1-2020/
- Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Selfassessment through a standards-based appraisal process. *Reflective Practice*, 20(10), 125-141. https://doi.org/10.1080/14623943.2019.1569508
- de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive learning and the development of higher-order thinking skills. *Journal of University Teaching & Learning Practice*, *16*(3), 1-17. https://doi.org/10.53761/1.16.3.3
- Fakhomah, D. N., & Utami, M. S. (2019). Pre-service English teacher perception about higher order thinking skills (HOTS) in the 21st century learning. *International Journal of Indonesian Education and Teaching*, 3(1), 41-49. https://doi.org/10.24071/ijiet.v3i1.1676

Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school

on pedagogical formation program in Turkey. *European Journal of Educational Research*, 8(2), 395-407. https://doi.org/10.12973/eu-jer.8.2.395

- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitivedevelopmental inquiry. *American Psychologist*, 34(10), 906-911. https://doi.org/10.1037/0003-066X.34.10.906
- Fox, R. K., Dodman, S., & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: developing critical reflective capacity in teachers and teacher educators, *Reflective Practice*, 20(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124
- Gabrijelčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional competences: A study among student teachers and students in education science in Slovenia. *European Journal of Educational Research*, 10(4), 2033-2044. https://doi.org/10.12973/eu-jer.10.4.2033
- Gibson, W., & Brown, A. (2009). Working with qualitative data. Sage. https://doi.org/10.4135/9780857029041
- Gopinath, L. S. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. *IOSR Journal of Research & Method in Education*, 4(4), 33-35. https://doi.org/10.9790/7388-04453335
- Hamiddin, H., & Saukah, A. (2020). Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. *Indonesian Journal of Applied Linguistics*, 9(3), 608-615. https://doi.org/10.17509/ijal.v9i3.23211
- Hermagustiana, I., Hamra, A., Rahman, A. Q., & Salija, K. (2017). Reflection of teacher cognition in EFL vocabulary instructional practices. *International Journal of English Linguistics*, 7(5), 34-45. http://doi.org/10.5539/ijel.v7n5p34
- Holzberger, D., Praetorius, A. K., Seidel, T., & Kunter, M. (2019). Identifying effective teachers: The relation between teaching profiles and students' development in achievement and enjoyment. *European Journal of Psychology of Education*, 34(4), 801– 823. https://doi.org/10.1007/s10212-018-00410-8
- Kelle, U., Kühberger, C., & Bernhard, R. (2019). How to use mixed-methods and triangulation designs: An introduction to history education research. *History Education Research Journal*, 16(1), 5–23. https://doi.org/10.18546/HERJ.16.1.02.
- Külekçi, G. (2018). Identifying the perceptions of prospective English language teachers on characteristics of effective teachers: Who is the ideal teacher? *Novitas-ROYAL*, 12(1), 1-15. https://novitasroyal.org/volume-12-issue-1-april-2018/
- Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. Sage. https://doi.org/10.1016/0147-1767(85)90062-8
- Lupascu, A. R., Pânisoară, G., & Pânisoară, I. O. (2014). Characteristics of effective teacher. Procedia - Social and Behavioral Sciences, 127, 534 – 538. https://doi.org/10.1016/j.sbspro.2014.03.305
- Mattew, P., Mathew, P., & Peechattu, P. J. (2017). Reflective practices: A means to teacher development. Asia Pacific Journal of Contemporary Education and Communication Technology, 3(1), 126-131. https://doi.org/10.17509/ijal.v10i3.31752
- Mbato, C. L. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. *Humaniora*, 31(1), 92-101. http://doi.org/10.22146/jh.v31i1.37295
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. Jossey-Bass.
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book.* (2nd ed.). Sage.
- Mitana, J. M. V., Muwagga, A. M., & Ssempala, C. (2018). Assessment of higher order thinking skills: A case of Uganda primary leaving examinations. *African Educational Research*

Commented [A5]: Provide URL link (Novitas ROYAL link)

This one is from semantic scholar but I am not sure if it is the right URL (could not find others)

Commented [A6R5]: https://novitasroyal.org/volume-12-issue-1-april-2018/

Commented [A7]: Both incorrect alphabetical order. Move to line after Külekçi...

Commented [A8]: (2nd ed.)

Commented [A9R8]: Missing dot after ed (see above)

Journal, 6(4), 240-249. http://doi.org/10.30918/AERJ.64.18.083

- Nurhapsari, A., & Mbato, C. L. (2019). Motivation to learn English: Why Indonesian adult learners join a community of interest. *Anima Indonesian Psychological Journal*, 34(2), 65-75. https://doi.org/10.24123/aipj.v34i2.2202
- Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. Journal of Education and Practice, 8(5), 81-86.

https://www.iiste.org/Journals/index.php/JEP/article/view/35468/36485

- Ong, W. A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL pre-service teachers. *Indonesian Journal of Applied Linguistics*, 9(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222
- Oxford, R. L. (2017). Teaching and researching language learning strategies: Self-regulation in context. Routledge. https://doi.org/10.4324/9781315719146
- Palantis, N. J., Mohamed, A., Ibrahim, A. S. M., Ismail, S. H., Anuar, N. K., Marof, A. M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. https://doi.org/10.23917/varidika.v29i2.5629
- Poedjiastutie, D., Akhyar, F., Hidayati, D., & Gasmi, F. N. (2018). Does curriculum help students to develop their English competence? A case in Indonesia. Arab World English Journal, 9(2),175-185. https://doi.org/10.24093/awej/vol9no2.12
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475. https://doi.org/10.1006/ceps.1994.1033
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. *European Journal of Educational Research*, 10(2), 629-640. https://doi.org/10.12973/eu-jer.10.2.629
- Soodla, P., Jogi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education*, 32(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x.
- Subia, G. S., Marcos, M. C., Pascual, L. E., Tomas, A. V., & Liangco, M. M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of science, technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*, 62(3), 261-268. https://bit.ly/3Ra4DVO
- Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, 13(3), 1-14. http://doi.org/10.29333/iji.2020.13325a
- Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers' reflection as a pathway to develop teacher professionalism. *International Online Journal of Education and Teaching*, 5(4), 921-932. http://iojet.org/index.php/IOJET/article/view/467/302
- Utami, D. R. T., Pranoto, Y. K. S., Latiana, L., & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, 10(2), 537-551. https://doi.org/10.12973/eu-jer.10.2.537
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, 3(2), 254-262. https://doi.org/10.4304/tpls.3.2.254-262

Appendix 1

Metacognitive Awareness Inventory in Teaching

N	Statements			
No D 11	Statements			
Decl1	I am aware of the strengths and weaknesses in my teaching.			
Decl2	I know what skills are most important			
Decl3	I have control over how well I teach.			
Decl4	I know what I am expected to teach.			
Proc5	I try to use teaching techniques that worked in the past.			
Proc6	I have a specific reason for choosing each teaching technique in class.			
Proc7	I am aware of what teaching techniques I use while I am teaching.			
Proc8	I use helpful teaching techniques automatically.			
Con9	I use my strengths to compensate for my weaknesses in my teaching.			
Con10	I can motivate myself to teach when I really need to teach.			
Con11	I use different teaching techniques depending on the situation.			
Con12	I know when each teaching technique I use will be most effective.			
Plan13	I pace myself while I am teaching in order to have enough time.			
Plan14	I set my specific teaching goals before I start teaching.			
Plan15	I ask myself questions about the teaching materials I am going to use.			
Plan16	I organize my time to best accomplish my teaching goals.			
Mon17	I ask myself periodically if I meet my teaching goals while I am teaching.			
Mon18	I find myself assessing how useful my teaching techniques are while I am			
	teaching.			
Mon19	I check regularly to what extent my students comprehend the topic while I am			
	teaching.			
Mon20	I ask myself questions about how well I am doing while I am teaching.			
Eval21	I ask myself how well I have accomplished my teaching goals once I am finished.			
Eval22				
	experience.			
Eval23	After teaching a point, I ask myself if I'd teach it more effectively next time.			
Eval24	I ask myself if I have considered all possible techniques after teaching a point.			
Source: 1	Balcikanli, E. (2011).			

Source: Balcikanli, E. (2011).

I

Γ

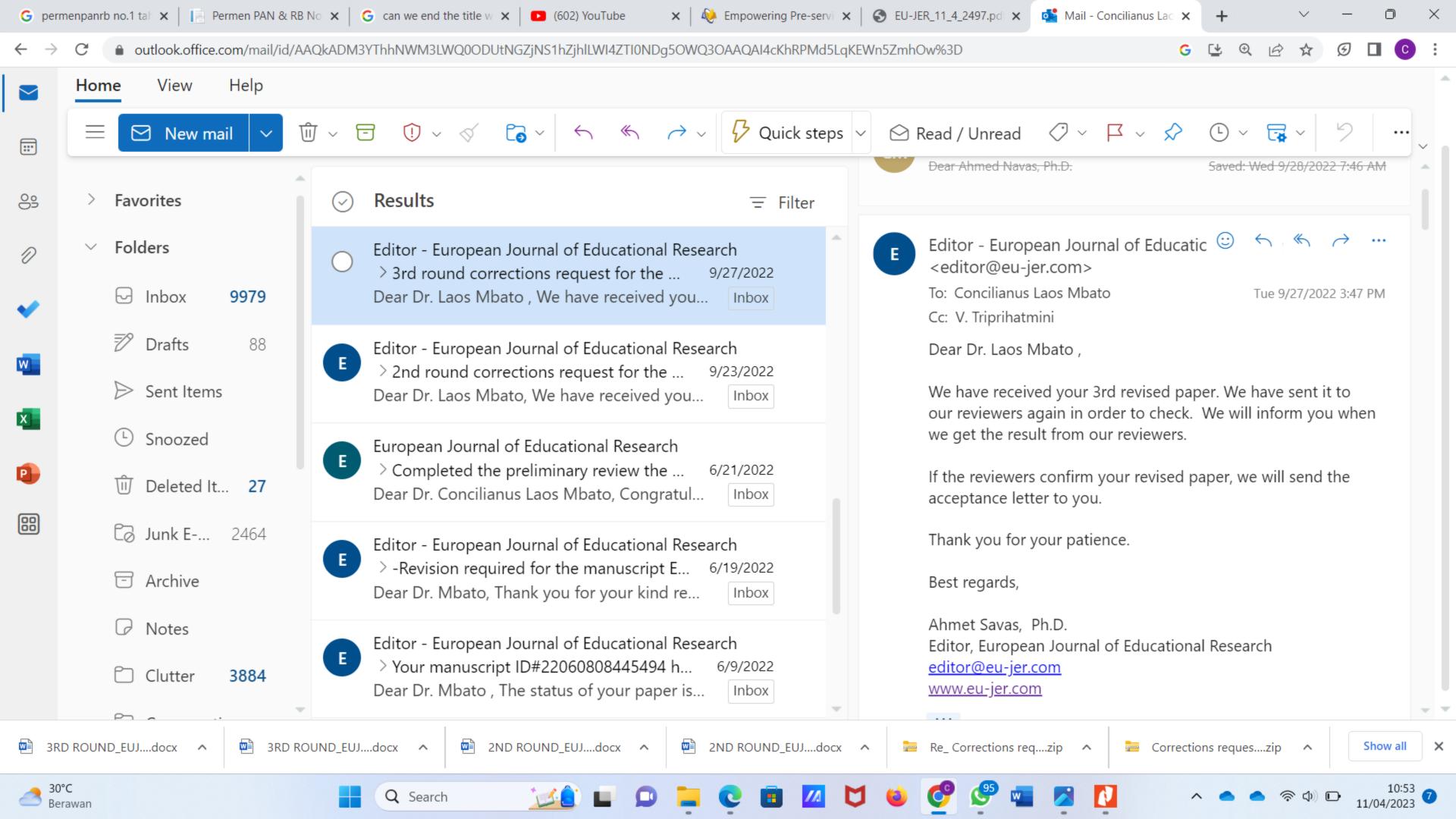
Appendix 2

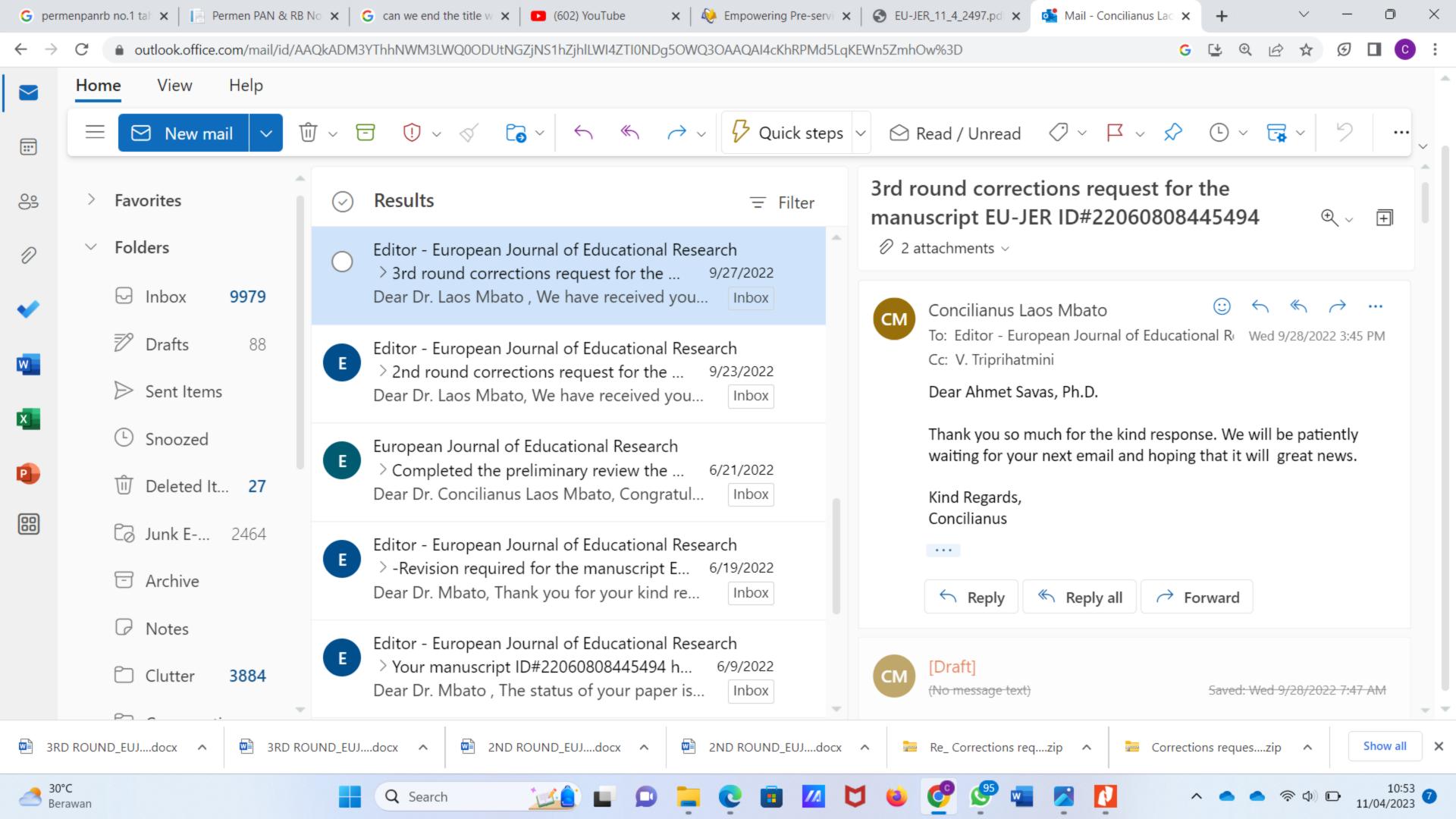
Content and Activities

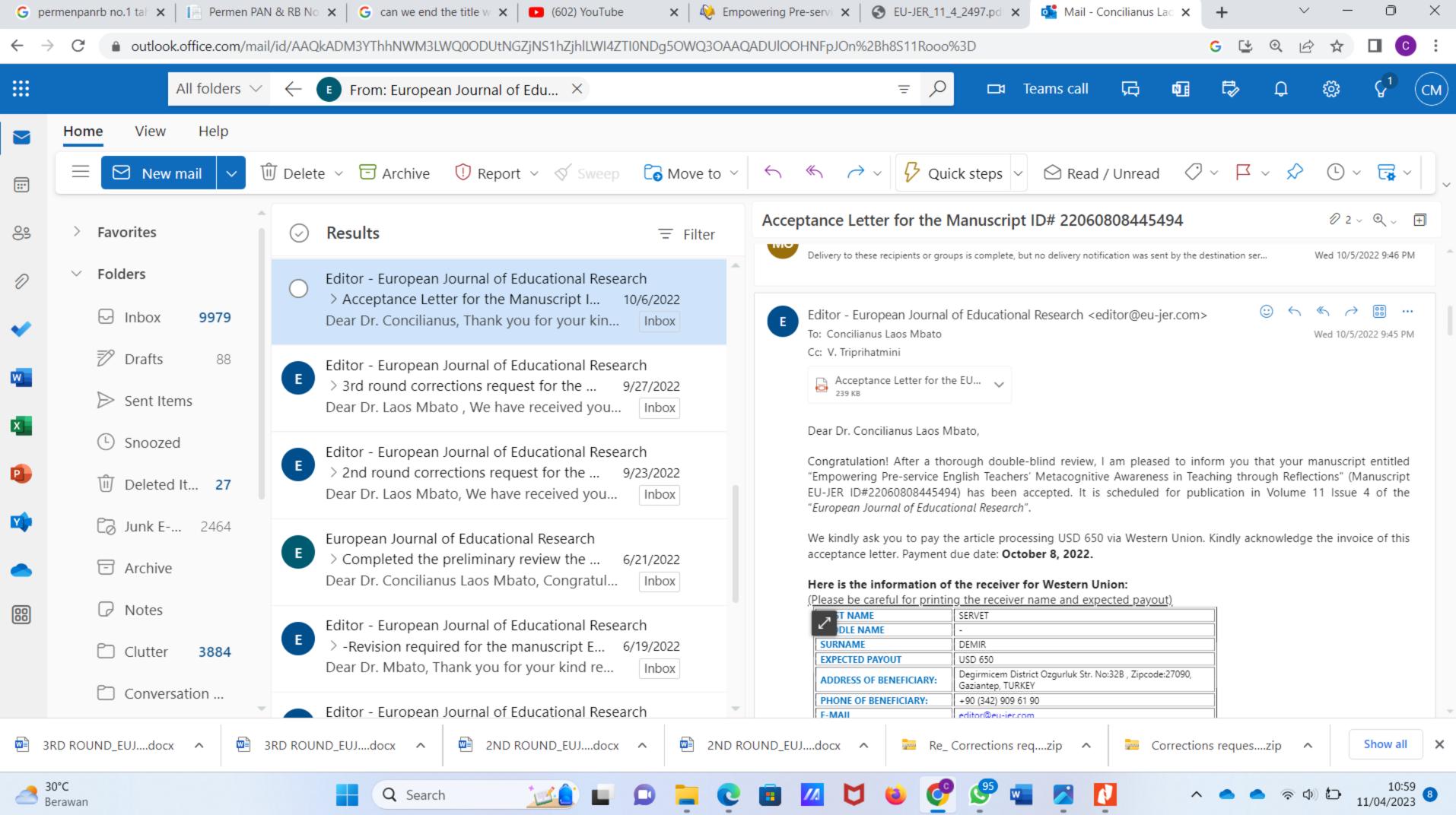
Wee	Content	Activitie
1	• Introduction: Overview of the course	• Lecture
1	• Competencies required for a	Discussion
	Classroom Management Activities	Student reflection Short Lecture
	for Creating	Presentation
2	 A Positive Learning Environment (Positive classroom management) 	DiscussionStudent written reflection
	activities)	- Student written reneemen
3	 Skill Practice 1: set induction, and set closure 	Peer teachingPeer evaluation based on the
	 Skill Practice 2: stimulus variation 	• Peer evaluation based on the observation sheet
4	Integrated teaching skill practice (1)	Teaching small groups using the most
		appropriate teaching methods and
5	Dissemination of Metacognitive	 strategies in their classes Teaching small groups
6	Integrated teaching skill practice (3)	Whole class teaching
7	Lesson Planning 1 using MAIT	Workshop
0	Mid Test 1 yeine MAIT	 Teacher feedback Individual teaching of the whole class
8	Mid-Test 1 using MAIT Mid-Test 2 using MAIT	 Individual teaching of the whole class Individual teaching the whole class @
1	Mid-Test 2 using MAIT Mid-Test 3 using MAIT	• Individual teaching the whole class @
1	_	25-30 minutes* • Peer feedback
		Teacher feedback
		 Student written reflection based on MAIT
1	Lesson Planning 2 using MAIT	Discussion
2		WorkshopPeer feedback
		 Feer feedback Teacher feedback
		• Student written reflection based on
1	Final Test 1 using MAIT	 MAIT Individual teaching the whole class @
3		 Individual teaching the whole class @ 25-30 minutes*
		 Whole class feedback Teacher feedback
		SUMMATIVE REFLECTION
1	Final Test 2 using MAIT	 BASED ON MAIT** Individual teaching the whole class @ 25-30 minutes**
4	i mar 1050 2 using MATI	25-30 minutes**
		 Whole class feedback Teacher feedback
		SUMMATIVE REFLECTION
		BASED ON MAIT**
1	Final Test 3 using MAIT	 Individual teaching the whole class @ 25-30 minutes*
5		 25-30 minutes* Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION BASED ON MAIT**
1	Final Test 4 using MAIT	
$1 \\ 6$	Final Test 4 using MAIT	 Individual teaching the whole class @ 25-30 minutes**

	 Whole class feedback Teacher feedback SUMMATIVE REFLECTION BASED ON MAIT**
--	--

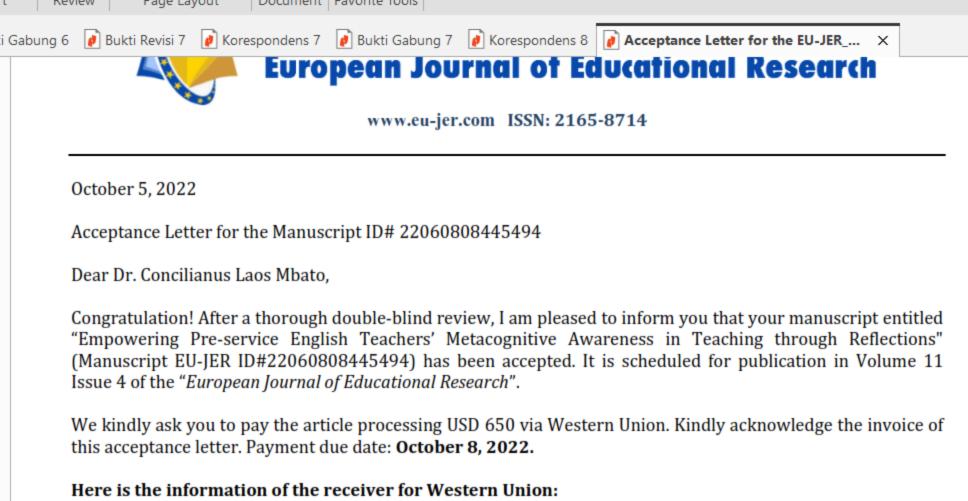
* depends on the number of students in the class ** Applies to the students who taught in that particular week







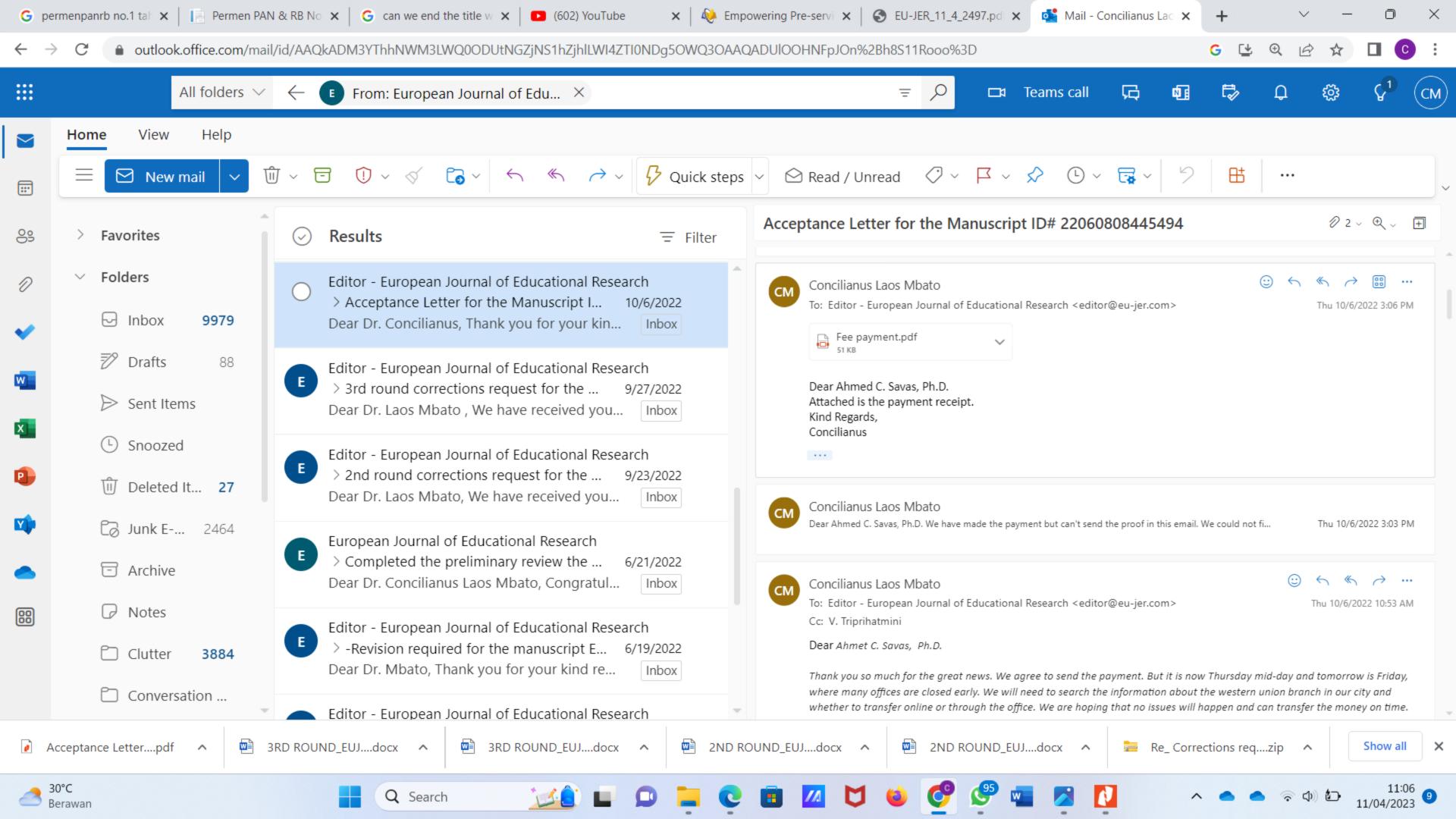
<u>for printin</u>	g the receiver name and expected payout)				
	SERVET				
	-				
	DEMIR				
	USD 650				
FICIARY:	Degirmicem District Ozgurluk Str. No:32B , Zipcode:27090, Gaziantep, TURKEY				
IARY:	+90 (342) 909 61 90				
	editor@eu-ier.com				V
Re_(Corrections reqzip 🔨 🔤 Corrections	requeszip	^	Show all	×
Ç	😍 💶 🔼 🚺 🔷	• • ?	ф)) (Ф	10:59 11/04/2023	8



(Please be careful for printing the receiver name and expected payout)

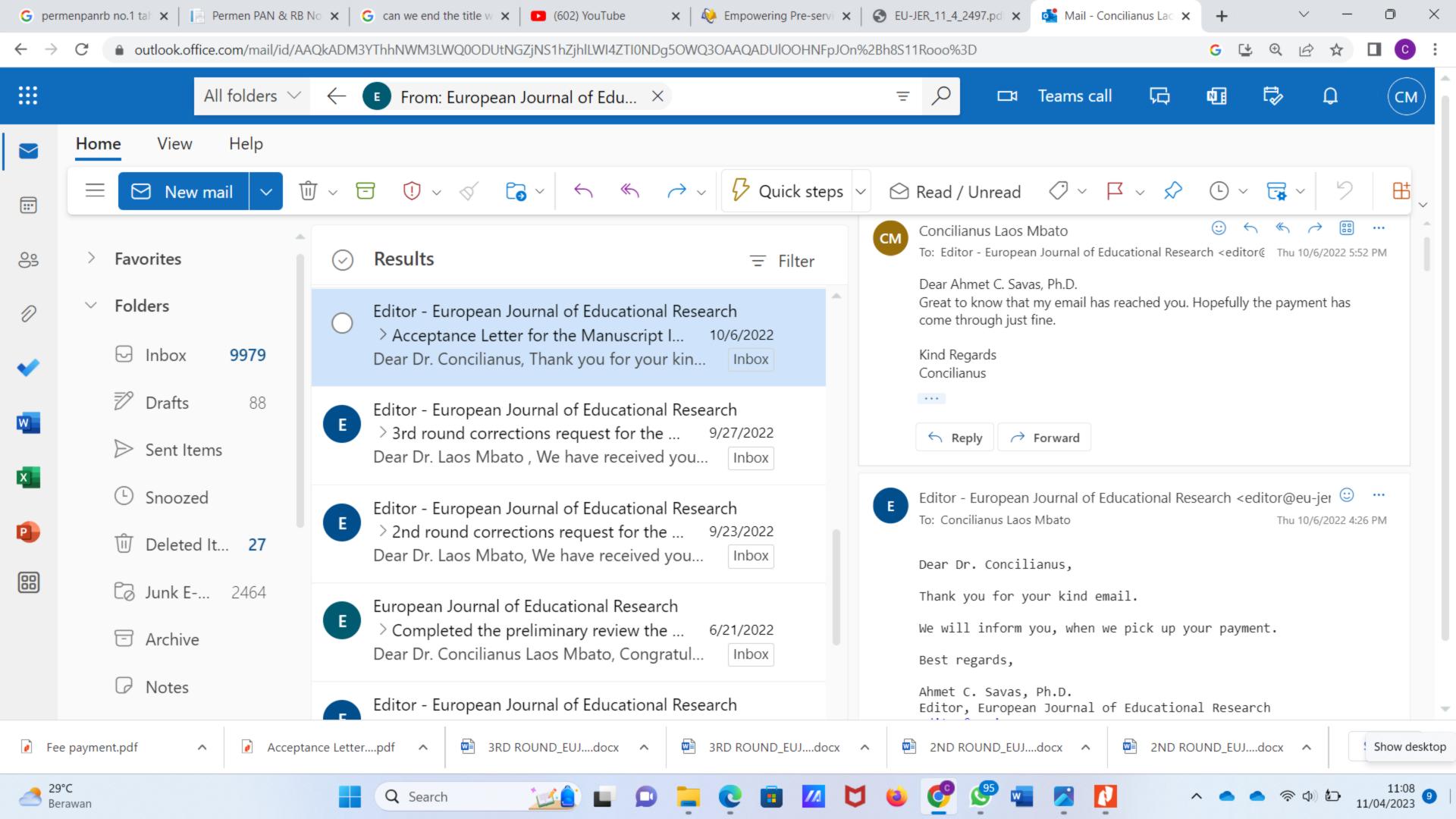
FIRST NAME	SERVET
MIDDLE NAME	-
SURNAME	DEMIR
EXPECTED PAYOUT	USD 650
ADDRESS OF BENEFICIARY:	Degirmicem District Ozgurluk Str. No:32B , Zipcode:27090, Gaziantep, TURKEY
PHONE OF BENEFICIARY:	+90 (342) 909 61 90
E-MAIL	editor@eu-jer.com

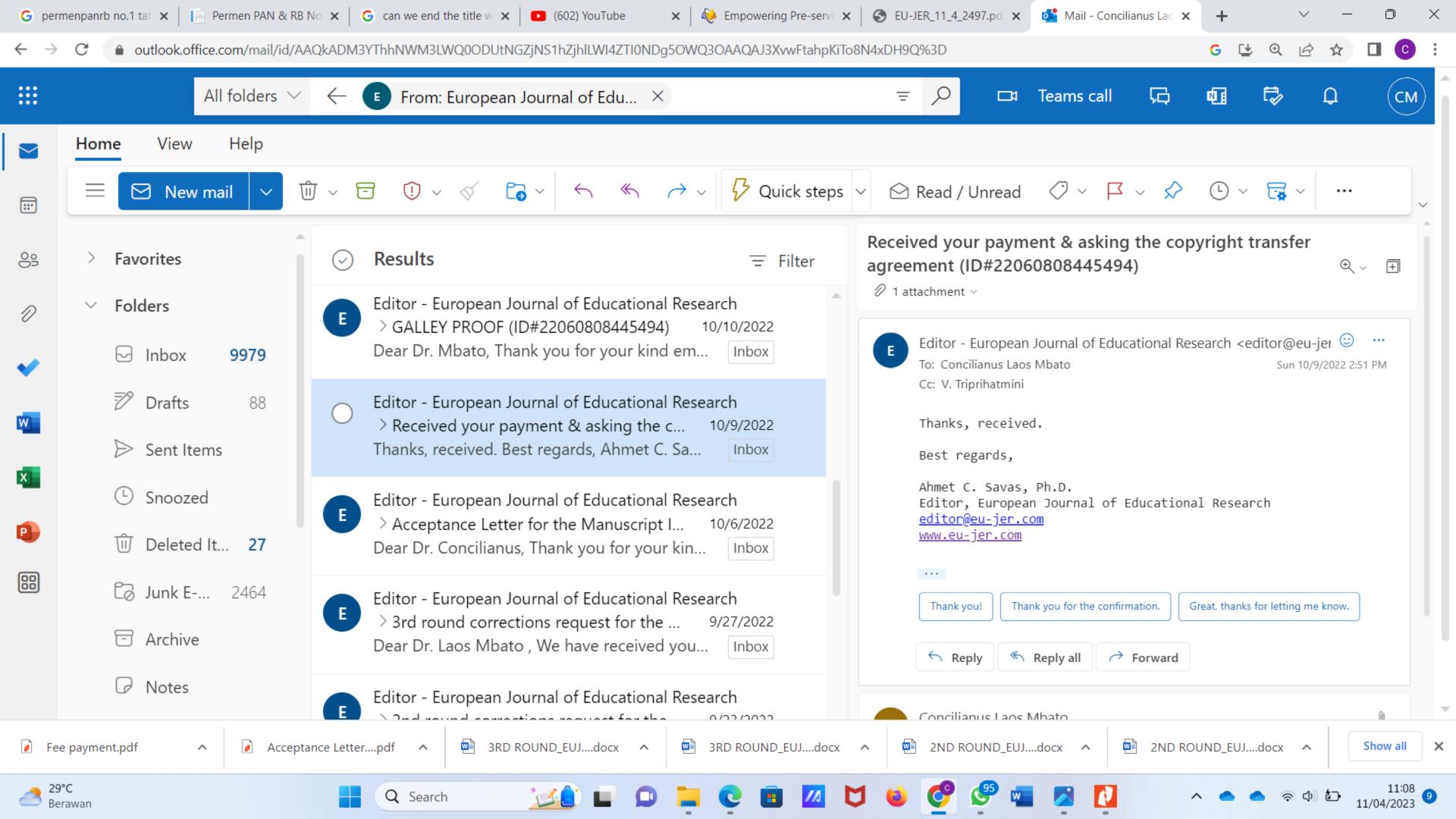
After payment, we will send the galley proof of your paper. The galley proofs must be returned to us within 2 calendar days. Furthermore, you are responsible for any error in the published paper due to your oversight.

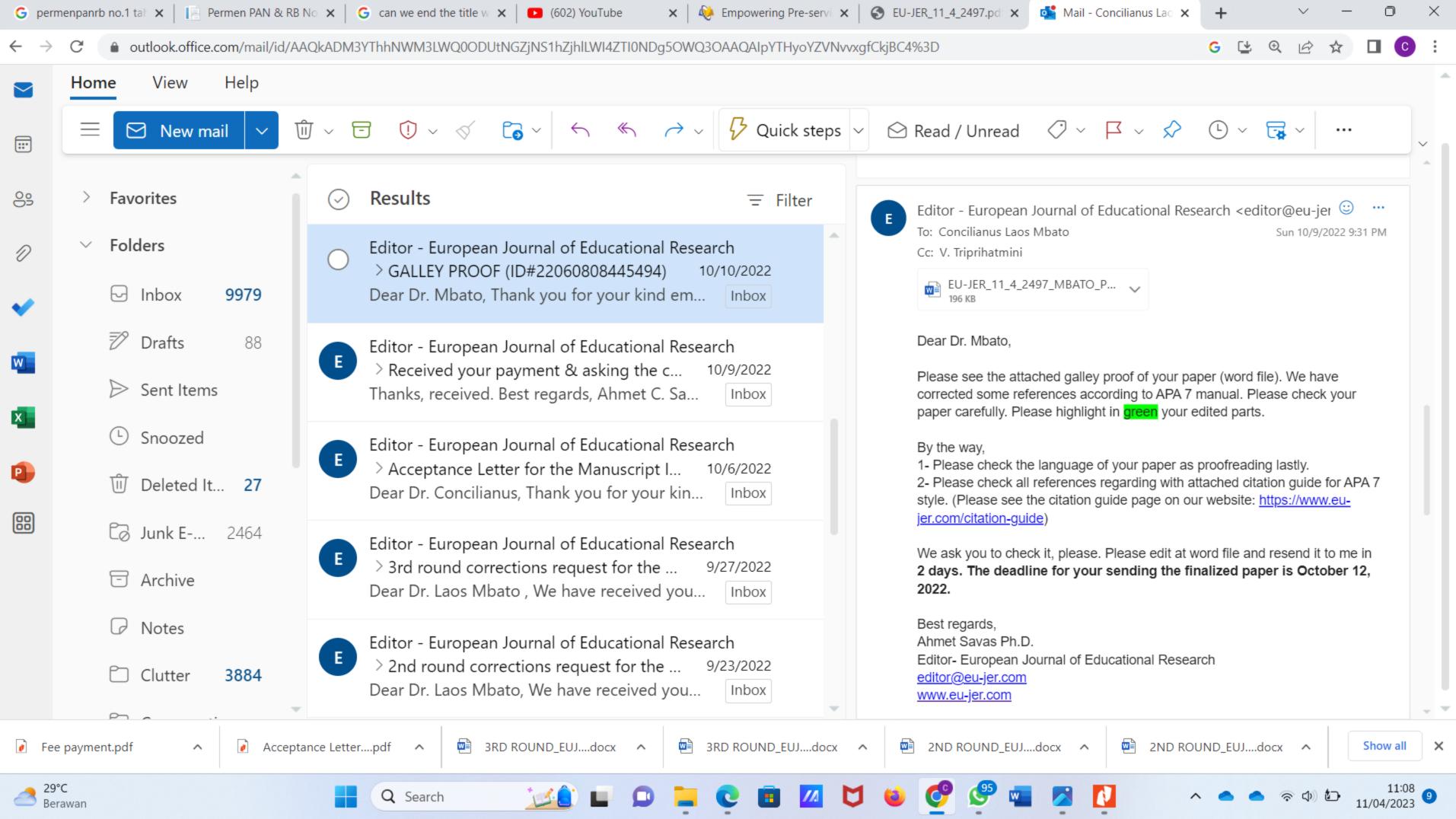


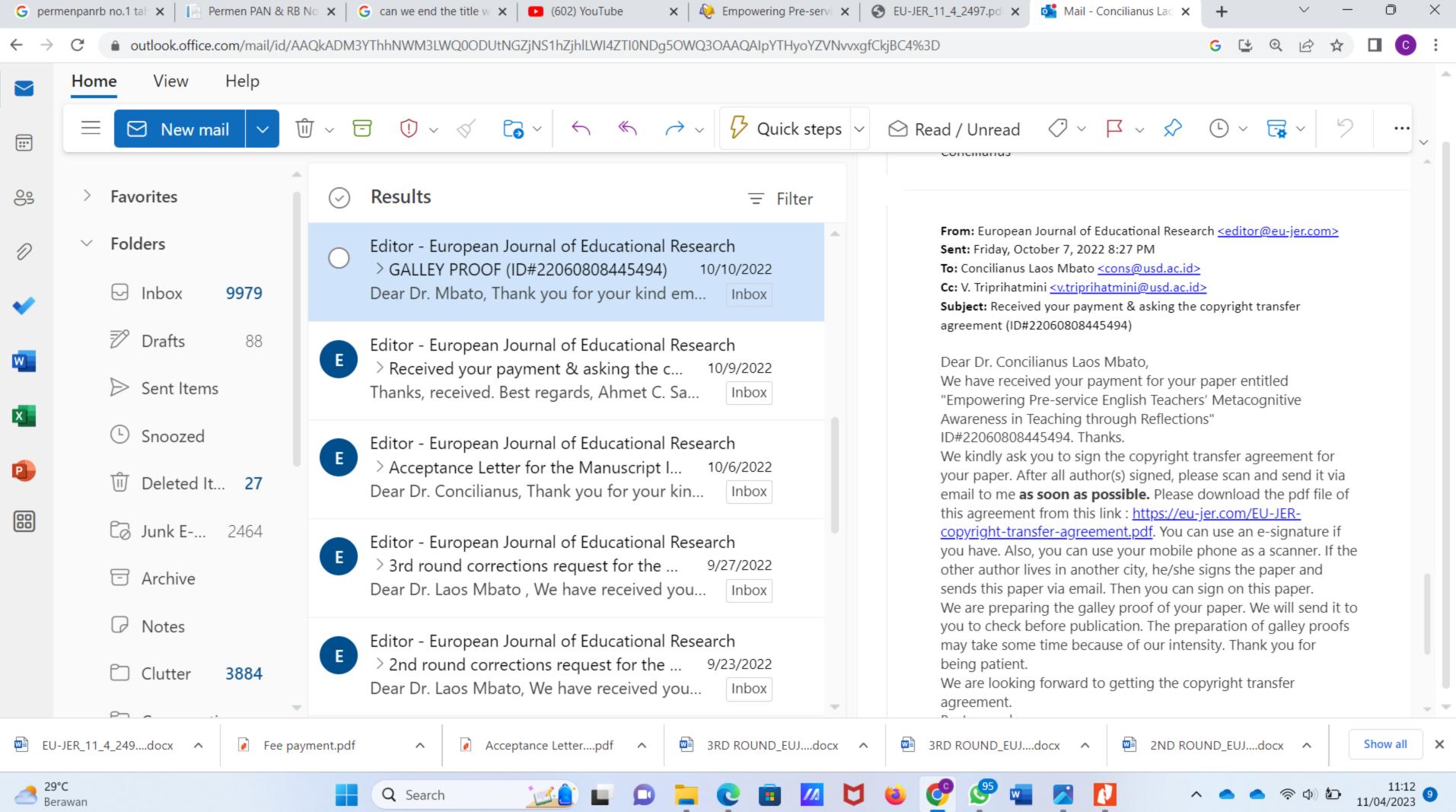
WESTERN UNION SENDING RECEIPT FOUR 45852020

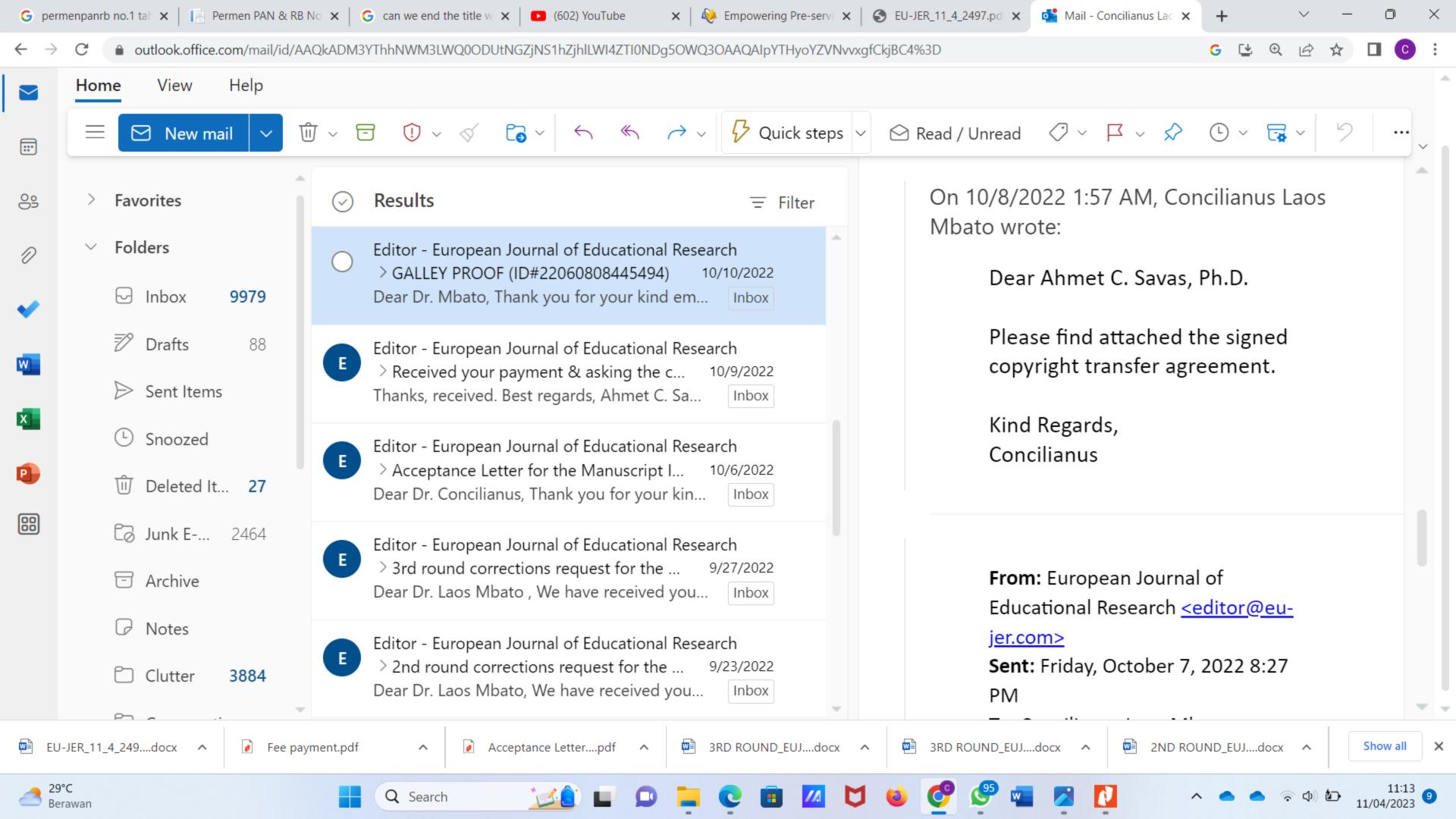
MICH	: 76	5-96	9-4154	-	
Counter	: Kantos	Pos TU	CYAKARTAKARANGTALA	HG 552818	
Date	: 06-10	-2022	Time : 14:01:21		
Trx ID	: 55281	90-01/22	/000312		
Sender 1D	: 552810	30220003	31	Customer No	: 3404070907670008
Sender Name	: Mr. C	HETI TAN	us lads meato	Phone	: 081390630631
	JL RA	JAWALI J	NO 23 C FRINGMAL	MG RT 008	
	CONDO	CATUR	DEFOK		
Receiv ID	: 552911	0220003	31	Distaner No	
Receiv Name	: SERVE	DEMIR		Phone	
	TEGIR	MICEN DI	STRICTOZOURLUK STR	GAZIANTEP	
	OZGLEL	UK / T	URNEY		
Source Fund	: Datta F	'OSTUN/	PENERINTAH/KESEJAH	TERANDuestion	1 Alexandre Con
			AS BARANG & JASA/T		ALL NO
					SIALANSWE WAR AND TO BE
Principal		: Rp.	10.621.000.00	The second second second	21 21
			10.001.000.00	Eaployee D	
Exchange Rate		:	0.0000612	Esployee	
		: : USD	Proceeding of the second second	Esployee	
Expected Pay		: : USD : Rp.	0.0000612	Esployee	
Expected Pay Total Charge		: Rp.	0.0000612 650.00	Esployee D ENI PURMIDYA	нинен с
Expected Pay Total Charge		Constant State	0.0000612 650.00 500.000,00	6	
Exchange Rate Expected Pay Total Charge Discount Total Collec	out	: Rp. : Rp.	0.0000612 650.00 500.000,00	6	POS POS INDONENA













European Journal of Educational Research

Volume 11, Issue 4, 2497 - 2512.

ISSN: 2165-8714 https://www.eu-jer.com/

Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections

Concilianus Laos Mbato* Sanata Dharma University, INDONESIA Veronica Triprihatmini 💼 Sanata Dharma University, INDONESIA

Received: June 8, 2022 • Revised: August 25, 2022 • Accepted: October 8, 2022

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, few studies have investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study aimed to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching, Mixed-methods research was conducted to collect quantitative and qualitative data from 45 pre-service English teachers (PSETs) in two micro-teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD) focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

To cite this article: Mbato, C. L., & Triprihatmini, V. (2022). Empowering pre-service English teachers' metacognitive awareness in teaching through reflections. *European Journal of Educational Research*, *11*(4), 2497-2512. https://doi.org/10.12973/eujer.11.4.2497

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Intensive preparation and rigorous teaching practice in college are required in order to be able to teach effectively since teachers cannot give what they do not have (Okogbaa, 2017). The professional development of pre-service English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper aimed to examine the perceived impacts of reflections on pre-service teachers' metacognitive awareness in teaching, It begins by discussing the challenges facing teachers' professional development. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. In addition, reflections were reviewed as one of the tools to empower teachers' metacognitive awareness in teaching, followed by the method, result, discussion, conclusion, recommendation, and limitations. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness. It was expected that this research would enrich, extend and partly fill the gap in the current literature about reflections and their impacts on pre-service English teachers' metacognitive awareness in teaching.

Teachers face complex challenges in actual classroom teaching, ranging from the teaching workload, big class sizes, and time limitations (Al-Shaboul et al., 2020). Other challenges include who assesses teachers' competence and performance (Utami et al., 2021). Accordingly, they need strong guidance from their mentors to face challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2010; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (Bakar et al., 2019; Filiz & Durnali, 2019; Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have examined pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-

* Corresponding author:

© 2022 The Author(s). Open Access - This article is under the CC BY license (<u>https://creativecommons.org/licenses/by/4.0/</u>).

Concilianus Laos Mbato, Sanata Dharma University, Indonesia. 🖂 cons@usd.ac.id

development. Another study (Holzberger et al., 2019) involving 3,483 high school students and their 155 mathematics teachers revealed that high-quality teaching corresponds with students' achievement but does not predict their excitement. A recent study (Senel, 2021) of four Turkish English language teaching (ELT) students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good quality teaching. The demand for teachers at different school levels to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS). Since pre-service teachers could teach at primary and secondary schools, reviewing what happened at these schools concerning the implementation of HOTS was beneficial in preparing them for future teaching. Integrating HOTS into the teaching practice was also a requirement in our university's micro-teaching Syllabus (see the method section on learning contents and activities). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana et al. (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% related to HOTS.

Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020) revealed a low level of HOTS in mathematics subjects. A similar result was found in a study of student science teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities. This study urges lecturers to promote independent learning to students. However, training students to become independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah & Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (Flavell, 1979). Several recent studies have acknowledged the impacts of metacognition on students' learning and success (Bećirovic et al., 2017; Cao & Lin, 2020; Oxford, 2017).

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interest in teachers' metacognitive awareness in teaching (Abdellah, 2015; Aktag et al., 2017; Alkam & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkam and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on their strategies to increase their metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness training for pre-service and in-service teachers. Similarly, research on primary school teachers in Puchong, Selangor (Palantis et al., 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practised regularly and intentionally for the teachers' teaching to impact students' learning positively.

Considering its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011) Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of 'the why and when to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011) argued that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching.

Reflection

Reflections are the self-conscious activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019). Similarly, Davis and McDonald (2019) found that teachers' reflections focusing on self-evaluation could positively impact their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & McDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers. Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge (declarative knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in English as a EFL vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive awareness in teaching: lesson planning. They demonstrated the positive impact of reflective practice on the student teachers' lesson planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practise reflections during teaching. However, they should be coached on strategies to effectively and successfully engage in these reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in teaching (Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centered teaching. However, many teachers experience difficulty in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st century skills learning in many classes in primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers could not teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (Beziat et al., 2018; Mattew et al., 2017) and student learning (Mbato, 2019; Soodla et al., 2017).

Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

How can reflections empower pre-service English teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Research Design

This research adopted a mixed-methods approach, collecting quantitative and qualitative data (Creswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (Zohrabi, 2013).

Researcher Roles, Learning Contents and Activities

Since this was a practicum class, PSETs learned about teaching and practised peer, small groups, and the whole class teaching, with teacher researchers acting as facilitators rather than instructors. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. The class met once a week for 200 minutes. The class contents and activities can be seen in Appendix 2.

Sample and Data Collection

Using purposive sampling, thirty-six PSETs enrolled in two micro teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. As mentors for the class for more than ten years, we decided to introduce the Metacognitive Awareness Inventory in Teaching (MAIT) from Balcikanli (2011). This inventory covered all teachers' metacognitive elements and had good validity and reliability (Balcikanli, 2011). The KMO validity was 0.794, the value for Barlett TKest was 2513.474, and the reliability ranged from 0.79 to 0.85.

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to complete them. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition, and the second on the regulation of cognition. Statements on the knowledge of cognitional Knowledge (Decl1-Decl4), four items on procedural Knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted by the current researchers from Balcikanli's MAIT (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching.

Qualitative data were gathered from students' answers to the questions about the dissemination of MAIT, summative reflections, and focus group discussions (FGDs) on the elements of metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they practiced teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination were gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. The FGDs involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e., (a) the benefits of metacognitive awareness in teaching; (b) the difficulties in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyze the participants' responses about their metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Mbato (2019) mean category was used to interpret the mean for the expression motivation replaced with perception.

Table 1. Mean	Range for	Perception
---------------	-----------	------------

_		
	Mean Range	Interpretation
	3.68 -5.00	A high degree of perception
	2.34 - 3.67	A moderate degree of perception
	1.00 -2 .33	A low degree of perception

A paired-samples t-test was performed using IBM SPSS Statistics (Version 17) to determine whether there was a significant difference in students' perceptions about their metacognitive awareness in teaching in the post-semester.

Qualitative data analyses from reflections and FGD focused on finding key issues in students' answers (Gibson & Brown, 2009) about their metacognitive awareness in teaching, mainly on whether or not there were indications of improvements.

Validity and Reliability in Data Collection and Analysis

Validity and reliability of the data analyses were observed through triangulation, long-term observation, participatory research, and the handling of research bias (Lincoln & Guba, 1985; Merriam, 1998; Zohrabi, 2013). Two types of triangulation were undertaken, i.e., methods and data triangulation. The data from the questionnaires, dissemination, and summative reflections were triangulated in the analyses to corroborate the results. The researchers were involved in the research for four months (sixteen meetings), where they interacted with the research participants as facilitators in the micro-teaching class, designed the class contents and activities, repeatedly collected data on PSETs' metacognitive awareness in teaching through questionnaires, and students' reflections to arrive at data saturation. There was a collaboration with the participants in the data collection, so all the needed data in data analyses to answer the research questions were met. Research bias was addressed using Miles and Huberman's (1994) advice, namely: a) being in the micro-teaching class for four months (sixteen meetings); b) being less intrusive when students were doing practice teaching and conducting reflections based on MAIT; c) gaining rich data from pre-and post-semester questionnaires, a post semester questionnaire, students' reflections on the benefits of the dissemination of MAIT, and summative reflections; and d) preventing leading PSETs to expected answers. Through comparing and contrasting different data to the elements of MAIT, the findings of this research attained credibility and consistency. Through thematic analyses, different codes and themes were recorded and compared with the elements of MAIT to reveal the perceived impacts of reflections in empowering PSETs metacognitive awareness in teaching.

Results

Quantitative Data

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses.

No.	Statement	Mean	SD
ReDecl1	Reflections increased my awareness of the strengths and weaknesses in teaching.	4.31	0.62
ReDecl2	Reflections helped me to know the most important skills	4.31	0.55
ReDecl3	Reflections helped me to have control over teaching	4.04	0.53
ReDecl4	Reflections helped me to know the teaching expectations	4.31	0.47
ReProc5	Reflections helped me to use proven teaching techniques	4.19	0.69
ReProc6	Reflections helped me to have a specific reason for using a teaching technique	4.04	0.77
ReProc7	Reflections helped me to have an awareness of the teaching techniques	4.15	0.78
ReProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63
ReCon9	Reflections helped me to compensate strengths for weaknesses	4.19	0.63
ReCon10	Reflections helped me to motivate myself when having to teach	4.23	0.59
ReCon11	Reflections helped me to use different teaching techniques as required by the situation.	4.00	0.75
ReCon12	Reflections helped me to know when each teaching technique was most effective.	3.96	0.82
RePlan13	Reflections helped me to pace myself in teaching	4.31	0.62
RePlan14	Reflections helped me to set specific teaching goals before teaching	4.42	0.50
RePlan15	Reflections helped me to ask questions about the teaching materials	4.27	0.60
RePlan16	Reflections helped me to organize a time to accomplish teaching goals.	4.19	0.69
ReMon17	Reflections helped me to ask periodically if teaching goals were being met	4.12	0.52
ReMon18	Reflections helped me to assess how useful the teaching techniques were	4.12	0.59
ReMon19	Reflections helped my regular checking of students' comprehension	3.85	0.61
ReMon20	Reflections helped my self-questioning while teaching	4.19	0.49
ReEval21	Reflections helped me to ask myself about teaching goal accomplishment	4.19	0.57
ReEval22	Reflections helped me to ask myself if different techniques could have been used.	3.85	0.73
ReEval23	Reflections helped me to ask myself for more effective subsequent teaching	4.35	0.63
ReEval24	Reflections helped me to ask myself if all possible techniques had been considered	4.15	0.54
	Average	4.14	0.62

Table 2. Students' Perceptions of the Role of Reflections in their Metacognitive Awareness

Adapted from Balcikanli (2011).

As indicated in Table 2, students generally admitted reflections' positive contributions in helping them develop their metacognitive awareness in teaching. The first four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of

reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with a mean range between 3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (Nurhapsari & Mbato, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

No	Statements	Pre-s	emester 🖌	Post-s	semester	Mean Increase	
		Mean	Std. Dev	Mean	Std. Dev		
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	0.77	
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	0.75	
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	1.33	
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	0.48	
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	0.54	
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	0.59	
Proc7	Awareness of the teaching techniques while teaching.	3.1	0.91	3.67	0.73	0.57	
Proc8	Using teaching techniques automatically.	2.79	0.92	4.1	0.55	1.31	
Con9	Compensating strengths for weaknesses	3.26	0.91	3.77	0.77	0.51	
Con10	Being able to motivate oneself when having to teach	3.15	0.96	3.82	0.68	0.67	
Con11	Using different teaching techniques as required by the situation.	3.33	0.95	3.67	0.66	0.34	
Con12	Knowing when each teaching technique is most effective.	2.77	1.01	3.77	0.62	1.00	
Plan13	Pacing oneself in teaching to have enough time.	3.31	0.92	3.67	0.57	0.36	
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67	
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59	
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26	
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56	
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31	
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95	
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23	
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43	
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82	
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52	
Eval24	Asking oneself if all possible techniques have been considered	3.15	0.70	3.74	0.54	0.59	
	Average	3.19	0.89	3.90	0.62	0.71	
CD. stan	dard deviation				-		

Table 3. Mean Comparison of Students' Responses to Metacognitive Awareness Statements in Teaching

SD: standard deviation.

The questionnaire in Table 3 above was adopted from Balcikanli (2011), and its complete version can be seen in Appendix 1. It shows PSETs' responses to their metacognitive awareness in teaching pre- and post-semester teaching. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase (1.33). The second highest response was the PSETs' awareness of their strengths and weaknesses in teaching (Decl1/

0.77 mean increase) and their knowledge of the most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by PSETs' response to statement Pro6, which asked whether they had a particular reason for adopting a teaching technique in the classroom (Pro6/0.59 mean increase), and statement Pro7, which asked about their awareness of what teaching methods they used while teaching (Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase).

Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

Parallel with their increased knowledge of cognition was their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, including time organization to accomplish their teaching goals (Plan16/with the highest mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

Similarly, students agreed with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that they found themselves assessing how useful their teaching techniques were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

Additionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted to slightly improving their evaluation ability, as indicated in statements Eval23 and Eval21. Statement Eval23 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean increase for this statement was 0.52. Statement Eval21, which focused on whether they asked themselves if they had accomplished their teaching goals after teaching, demonstrated a mean increase of 0.43.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.

C1 1. 1.

Table 4. Paired Samples Statistics	
------------------------------------	--

Mean	N	SD	Std. Error Mean
3.19	24	0.22	0.045
3.91	24	0.24	0.049

Table 5. Pairea	l Samples C	Correlations	
	Ν	Correlation	Sig.
Pre-semester & Post-semester	24	0.031	0.887

	Pre-sei	mester	Post-se	mester	- t(23)	df	n
	Mean	SD	Mean	SD	- ((23)	ui	þ
Students' perceptions	3.19	0.22	3.91	0.24	-10.88	23	.000

Table 6. Paired Samples T-Test

A paired sample t-test was performed to determine students' perceptions of metacognitive awareness in teaching as the dependent variable measured pre-and post-semester. The results indicated a significant perceived increase between the pre-semester level, 3.19, standard deviation (SD) = 0.22, and post-semester level, 3.91, SD = 0.24, t(23) = 10.88, p<.05. As a result, the null hypothesis was rejected, while the alternative hypothesis was accepted. It can be inferred that PSETs' perceived metacognitive awareness in teaching improved after participating in the research.

Qualitative Data

Qualitative data were collected through students' summative reflections and FGDs of the elements of metacognitive awareness in teaching. These activities were conducted after students had experienced teaching in the micro-teaching class for one month. Students practiced teaching their peers in small groups and the whole class in class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

1. Reflections on the Dissemination of MAIT

The researchers disseminated the ideas of the metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise students' awareness of metacognition in teaching. For example, SO8 wrote:

I learn something new from metacognition which is very beneficial for me as a prospective teacher in the future. Teacher should be able to aware that every student is unique with their own intelligence. Even identical twins are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plan that includes students' various cognition.

The second benefit was that it assisted them in understanding their strengths and weaknesses in teaching. S01 reported:

After understanding the metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher; how to open a class that makes the students full of spirit, how to deliver the materials that make the students can apply it in their lives, how to manage the class that makes the condition of the class is full of excitement, and how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me in order to understand whether the teaching goals are reached or not and understand what has to be improved.

Students also described four other benefits of MAIT, i.e., (a) being more aware of the importance of teaching techniques; (b) being more aware of possessing teaching skills; (c) being more aware of knowing what to teach (planning); and (d) being more aware of planning, monitoring and evaluating their teaching.

2. Summative Reflections

Reflections were a significant force in our efforts to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections based on MAIT throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching. The

researchers summed up key ideas and, when relevant, cited a small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT:

I am really excited because finally I did well in this course. I am proud of myself because, at the beginning of this semester, I felt uncomfortable and not sure I can do the teaching. But, now I become more confident in teaching and feel more challenged. The fact is that being a teacher is not as easy as I think before. There are lots of requirements that should be complemented as a teacher. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware of anything about teaching before, while and after teaching.

Another student (S20) emphasized that MAIT helped her to compensate for her weak grammar with her cheerful personality in teaching. Understanding their strengths and weaknesses in teaching seemed to be one of the most important contributions of MAIT to many students. Similarly, S11 admitted, "*In the final test teaching practice, my friends and I have improved so much because we have applied MAIT, Higher Order Thinking, and Bloom's Taxonomy.*" S28, in her long reflection constituting all aspects of MAIT, wrote:

I understand the materials that I am going to teach. I also remind myself that when I am teaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even the small things such as appearance and eye contact. I want to inspire my students to learn English and motivate them as well.

S17 described that the class had helped him understand teaching better. He reflected:

This class has given me a whole new world of college life. I got many experiences in this class, especially how to teach something. Teaching is not easy but it is kind of challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparations that the teacher should prepare before they teach.

Most PSETs admitted that they had improved their declarative, procedural, and conditional knowledge in teaching. They also acknowledged regulating their teaching better through planning, monitoring, and evaluating. Their improvements are strengthened by the data gained in the FGDs.

3. Focus Group Discussions

FGD was conducted in small groups in class at the end of the semester. Individual students were given more than a week to write their reflections about the implementation of MAIT before the implementation of the FGDs. These FGDs discussed three main questions, i.e.: (a) benefits of metacognitive awareness in teaching; (b) challenges in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before, while, and after teaching. Before teaching, Group 1 asserted, *"We can understand what points that we have to prepare before teaching in the class."* Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4 acknowledged:

When we are teaching we learn how to manage the time allocation in order to have enough time. We try to implement and organize the material well. The teacher knows and explains the learning objectives and tries to implement the teaching technique chosen in class. Then, we know how to monitor our students by asking them questions to make sure they understand the materials. In teaching learning activities we try to evaluate ourselves by asking ourselves about how well we are doing while we are teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that MAIT helped them to know the best teaching strategies for their students, the lack of their teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during, and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses at the beginning of our teaching. To be reflective on what we have to improve and what we have improved. To be used to classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the student's needs, understanding students' character, and handling the nervous feeling (Group 1). Group 4 mentioned the

challenge in terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching challenged them to (a) *"revise our lesson plan and the whole teaching; (b) find different techniques that will work better for the next teaching, and (c) ask ourselves how well we have accomplished our teaching goals once we are finished".* Group 4 realized that metacognitive awareness used after teaching helped them *"always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance".*

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: (*a*) "Focus on each point of MAIT; and (*b*) Try to implement each point of MAIT in the learning activities". Group 3 came up with three suggestions, i.e.:

(1) The teachers should have a list of teaching goals to be achieved; (2) The teachers should be aware of their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching improved, consisting of declarative, procedural, and conditional knowledge, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept about teaching (Balcikanli, 2011; Mbato, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Mbato, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledge and skills (Balcikanli, 2011; Mbato, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: (a) knowing their strengths to compensate for their weaknesses in teaching; (b) being able to motivate themselves to teach when they needed to teach; (c) being able to employ various teaching techniques as required by the situation; and (d) knowing when a teaching technique they used would be most productive.

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after participating in the research. An instance of this improvement was shown in PSETs' response to statement 22. PSETs mentioned they asked themselves if they might have utilised other techniques after teaching (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the pre-semester level, 3.19, SD = 0.22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, p<.05).

The results from these quantitative data had much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGDs highlighted the considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in helping her to become more prepared and aware before, while, and after teaching. Another example was from Group1: "We can understand what points *we have to prepare before teaching in the class.*" PSETs also appreciated the benefits of becoming aware of their metacognition while teaching. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage their time well while

teaching.

Findings in this study corroborated previous studies (e.g., Aktag et al., 2017; Gopinath, 2014; Palantis et al., 2017), which asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere. Additionally, the results indicate the importance of teachers learning strategies to effectively and successfully engage in reflective practices (Ong et al., 2020). While acknowledging that metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and explicit training of metacognitive awareness for teachers need to be implemented (Aktag et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire post-semester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and supported by the qualitative data. The findings in this study enrich the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & McDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections about pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (Balcikanli, 2011). Another recent study by Davis and McDonald (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study focused on one element of regulation of cognition, i.e., evaluation (Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-service teachers to possess metacognition in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in teaching performance. This study indicated that increased metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (Alkam & Erdem, 2014).

The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktag et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017) in that it used a more comprehensive metacognitive awareness inventory (Balcikanli, 2011). The MAIT implemented in this research also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (Amalia et al., 2020; Arslan, 2019; Davis & McDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusion

This study provides significant evidence of the PSETs' positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them to prepare strategies and materials to cope with 'the unexpected' in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. Facilitated through explicit reflections, possessing and displaying heightened metacognitive awareness in teaching could empower teachers, their teaching, and student learning. It was evident in this research that reflections could be utilized to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students.

Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and inservice teachers.

Limitations

This research was conducted for a short period of only four months. This study did not collect data about the impacts of teachers' and peers' feedback on students' reflections and metacognitive awareness in teaching. In addition, the validity of the second questionnaire had not been tested before its administration. Future researchers may need to test its validity before using it.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the Centre for Research and Community Service (*LPPM*), Sanata Dharma University, Indonesia.

Authorship Contribution Statement

Mbato: Conceptualization, design, data acquisition, data analysis/interpretation, drafting manuscript, critical revision of manuscript, statistical analysis, securing funding, admin, technical or material support, supervision, final approval. Triprihatmini: Data acquisition, securing funding, admin, technical or material support, supervision, and final approval.

References

- Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of pre-service female teachers in Ajman University in UAE. *Procedia Social and Behavioral Sciences, 174,* 560 567. https://doi.org/10.1016/j.sbspro.2015.01.707
- Aktag, I., Semsek, O., & Tuzcuoglu, S. (2017). Determination metacognitive awareness of physical education teachers. *Journal of Education and Training Studies*, 5(9), 63-69. <u>http://doi.org/10.11114/jets.v5i9.2511</u>
- Alkam, F., & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. *Procedia Social and Behavioral Sciences*, *143*, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475
- Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. *European Journal of Educational Research*, 10(1), 127-143. <u>https://doi.org/10.12973/eu-jer.10.1.127</u>
- Amalia, L. L., Widiati, U., Basthomi, Y., & Cahyono, B. Y. (2020). Reflective practice on lesson planning among EFL teacher educators. *Indonesian Journal of Applied Linguistics*, 10(1), 53-160. <u>https://doi.org/10.17509/ijal.v10i1.25025</u>
- Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*, *35*(6), 117-132. https://doi.org/10.14221/ajte.2010v35n6.3
- Arslan, F. Y. (2019). Reflection in pre-service teacher education: Exploring the nature of four EFL pre-service teachers' reflections. *Reflective Practice*, 20(1), 111-124. <u>https://doi.org/10.1080/14623943.2018.1564652</u>
- Bakar, A. Y. A., Amat, S., & Mahmud, M. I. (2019). Issues and challenges of 21st century teaching and learning: The Malaysian experience. *International Journal of Management and Applied Science*,5(12), 6-11. https://bit.ly/3r5ov1Q
- Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). *Electronic Journal of Research in Educational Psychology*, 9(3), 1309-1332. <u>http://doi.org/10.25115/ejrep.v9i25.1620</u>
- Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading strategies among students at International Burch University: A case study. *European Journal of Contemporary Education, 6*(4), 645-655. <u>https://doi.org/10.13187/ejced.2017.4.645</u>
- Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in current and future principals. *School Leadership Review*, *12*(2) 23-31. <u>https://bit.ly/3T1gsPi</u>
- Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed method-theory and practice. Sequential, explanatory approach. *International Journal of Quantitative and Qualitative Research Methods*, 5(2), 10–27. <u>https://bit.ly/3qZsehi</u>
- Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension by vocational college students. *English Language Teaching*, *13*(4), 127-139. https://doi.org/10.5539/elt.v13n4p127
- Chang, B. (2019). Reflection in learning. Online Learning, 23(1), 95-110. http://doi.org/10.24059/olj.v23i1.1447
- Creswell, J. W., & Clark, V. L. P. (2017). Designing and conducting mixed methods research (3rd ed.). Sage.

Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of ESL freshmen: A sequential

explanatory mixed design. *TESOL International Journal*, 15(1), 20-30. <u>https://bit.ly/3rYIDmR</u>

- Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Self-assessment through a standards-based appraisal process. *Reflective Practice*, 20(10), 125-141. <u>https://doi.org/10.1080/14623943.2019.1569508</u>
- de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive learning and the development of higher-order thinking skills. *Journal of University Teaching & Learning Practice, 16*(3), 1-17. https://doi.org/10.53761/1.16.3.3
- Fakhomah, D. N., & Utami, M. S. (2019). Pre-service English teacher perception about higher order thinking skills (HOTS) in the 21st century learning. *International Journal of Indonesian Education and Teaching*, *3*(1), 41-49. https://doi.org/10.24071/ijiet.v3i1.1676
- Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school on pedagogical formation program in Turkey. *European Journal of Educational Research*, 8(2), 395-407. <u>https://doi.org/10.12973/eu-jer.8.2.395</u>
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist*, *34*(10), 906-911. <u>https://doi.org/10.1037/0003-066X.34.10.906</u>
- Fox, R. K., Dodman, S., & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: Developing critical reflective capacity in teachers and teacher educators, *Reflective Practice*, 20(3), 367-382. https://doi.org/10.1080/14623943.2019.1617124
- Gabrijelčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional competences: A study among student teachers and students in education science in Slovenia. *European Journal of Educational Research*, *10*(4), 2033-2044. <u>https://doi.org/10.12973/eu-jer.10.4.2033</u>
- Gibson, W., & Brown, A. (2009). Working with qualitative data. Sage. https://doi.org/10.4135/9780857029041
- Gopinath, L. S. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. *IOSR Journal of Research & Method in Education*, *4*(4), 33-35. <u>https://doi.org/10.9790/7388-04453335</u>
- Hamiddin, H., & Saukah, A. (2020). Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. *Indonesian Journal of Applied Linguistics*, 9(3), 608-615. <u>https://doi.org/10.17509/ijal.v9i3.23211</u>
- Hermagustiana, I., Hamra, A., Rahman, A. Q., & Salija, K. (2017). Reflection of teacher cognition in EFL vocabulary instructional practices. *International Journal of English Linguistics*, 7(5), 34-45. <u>http://doi.org/10.5539/ijel.v7n5p34</u>
- Holzberger, D., Praetorius, A. K., Seidel, T., & Kunter, M. (2019). Identifying effective teachers: The relation between teaching profiles and students' development in achievement and enjoyment. *European Journal of Psychology of Education*, 34(4), 801–823. <u>https://doi.org/10.1007/s10212-018-00410-8</u>
- Kelle, U., Kühberger, C., & Bernhard, R. (2019). How to use mixed-methods and triangulation designs: An introduction to history education research. *History Education Research Journal*, 16(1), 5–23. <u>https://doi.org/10.18546/HERJ.16.1.02</u>
- Külekçi, G. (2018). Identifying the perceptions of prospective English language teachers on characteristics of effective teachers: Who is the ideal teacher? *Novitas-ROYAL*, *12*(1), 1-15. <u>https://bit.ly/3ysiU9X</u>
- Lincoln, Y. S., & Guba, E. G. (1985). Naturalistic inquiry. Sage. https://doi.org/10.1016/0147-1767(85)90062-8
- Lupascu, A. R., Pânisoară, G., & Pânisoară, I. O. (2014). Characteristics of effective teacher. *Procedia Social and Behavioral Sciences*, *127*, 534 538. <u>https://doi.org/10.1016/j.sbspro.2014.03.305</u>
- Mattew, P., Mathew, P., & Peechattu, P. J. (2017). Reflective practices: A means to teacher development. *Asia Pacific Journal of Contemporary Education and Communication Technology*, *3*(1), 126-131. https://doi.org/10.17509/ijal.v10i3.31752
- Mbato, C. L. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. *Humaniora*, *31*(1), 92-101. <u>http://doi.org/10.22146/jh.v31i1.37295</u>
- Merriam, S. B. (1998). Qualitative research and case study applications in education. Jossey-Bass.
- Miles, M. B., & Huberman, A. M. (1994). Qualitative data analysis: An expanded source book. (2nd ed.). Sage.
- Mitana, J. M. V., Muwagga, A. M., & Ssempala, C. (2018). Assessment of higher order thinking skills: A case of Uganda primary leaving examinations. *African Educational Research Journal*, 6(4), 240-249.

http://doi.org/10.30918/AERJ.64.18.083

- Nurhapsari, A., & Mbato, C. L. (2019). Motivation to learn English: Why Indonesian adult learners join a community of interest. *Anima Indonesian Psychological Journal*, *34*(2), 65-75. <u>https://doi.org/10.24123/aipj.v34i2.2202</u>
- Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. *Journal of Education and Practice, 8*(5), 81-86. <u>https://bit.ly/3CKpOKh</u>
- Ong, W. A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL preservice teachers. *Indonesian Journal of Applied Linguistics*, *9*(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222
- Oxford, R. L. (2017). *Teaching and researching language learning strategies: Self-regulation in context*. Routledge. https://doi.org/10.4324/9781315719146
- Palantis, N. J., Mohamed, A., Ibrahim, A. S. M., Ismail, S. H., Anuar, N. K., Marof, A. M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. <u>https://doi.org/10.23917/varidika.v29i2.5629</u>
- Poedjiastutie, D., Akhyar, F., Hidayati, D., & Gasmi, F. N. (2018). Does curriculum help students to develop their English competence? A case in Indonesia. *Arab World English Journal, 9*(2),175-185. https://doi.org/10.24093/awei/vol9no2.12
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology*, 19(4), 460–475. <u>https://doi.org/10.1006/ceps.1994.1033</u>
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. *European Journal of Educational Research*, *10*(2), 629-640. <u>https://doi.org/10.12973/eu-jer.10.2.629</u>
- Soodla, P., Jõgi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education, 32*(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x
- Subia, G. S., Marcos, M. C., Pascual, L. E., Tomas, A. V., & Liangco, M. M. (2020). Cognitive levels as measure of higherorder thinking skills in senior high school mathematics of science, technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*, 62(3), 261-268. <u>https://bit.ly/3Ra4DVO</u>
- Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction, 13*(3), 1-14. http://doi.org/10.29333/iji.2020.13325a
- Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers' reflection as a pathway to develop teacher professionalism. *International Online Journal of Education and Teaching*, *5*(4), 921-932. <u>https://bit.ly/3T1A2Lo</u>
- Utami, D. R. T., Pranoto, Y. K. S., Latiana, L., & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, *10*(2), 537-551. <u>https://doi.org/10.12973/eu-jer.10.2.537</u>
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. *Theory and Practice in Language Studies*, 3(2), 254-262. <u>https://doi.org/10.4304/tpls.3.2.254-262</u>

Appendix 1

Metacognitive Awareness Inventory in Teaching

No	Statements
Decl1	I am aware of the strengths and weaknesses in my teaching.
Decl2	I know what skills are most important
Decl3	I have control over how well I teach.
Decl4	I know what I am expected to teach.
Proc5	I try to use teaching techniques that worked in the past.
Proc6	I have a specific reason for choosing each teaching technique in class.
Proc7	I am aware of what teaching techniques I use while I am teaching.
Proc8	I use helpful teaching techniques automatically.
Con9	I use my strengths to compensate for my weaknesses in my teaching.
Con10	I can motivate myself to teach when I really need to teach.
Con11	I use different teaching techniques depending on the situation.
Con12	I know when each teaching technique I use will be most effective.
Plan13	I pace myself while I am teaching in order to have enough time.
Plan14	I set my specific teaching goals before I start teaching.
Plan15	I ask myself questions about the teaching materials I am going to use.
Plan16	I organize my time to best accomplish my teaching goals.
Mon17	I ask myself periodically if I meet my teaching goals while I am teaching.
Mon18	I find myself assessing how useful my teaching techniques are while I am teaching.
Mon19	I check regularly to what extent my students comprehend the topic while I am teaching.
Mon20	I ask myself questions about how well I am doing while I am teaching.
Eval21	I ask myself how well I have accomplished my teaching goals once I am finished.
Eval22	I ask myself if I could have used different techniques after each teaching experience.
Eval23	After teaching a point, I ask myself if I'd teach it more effectively next time.
Eval24	I ask myself if I have considered all possible techniques after teaching a point.

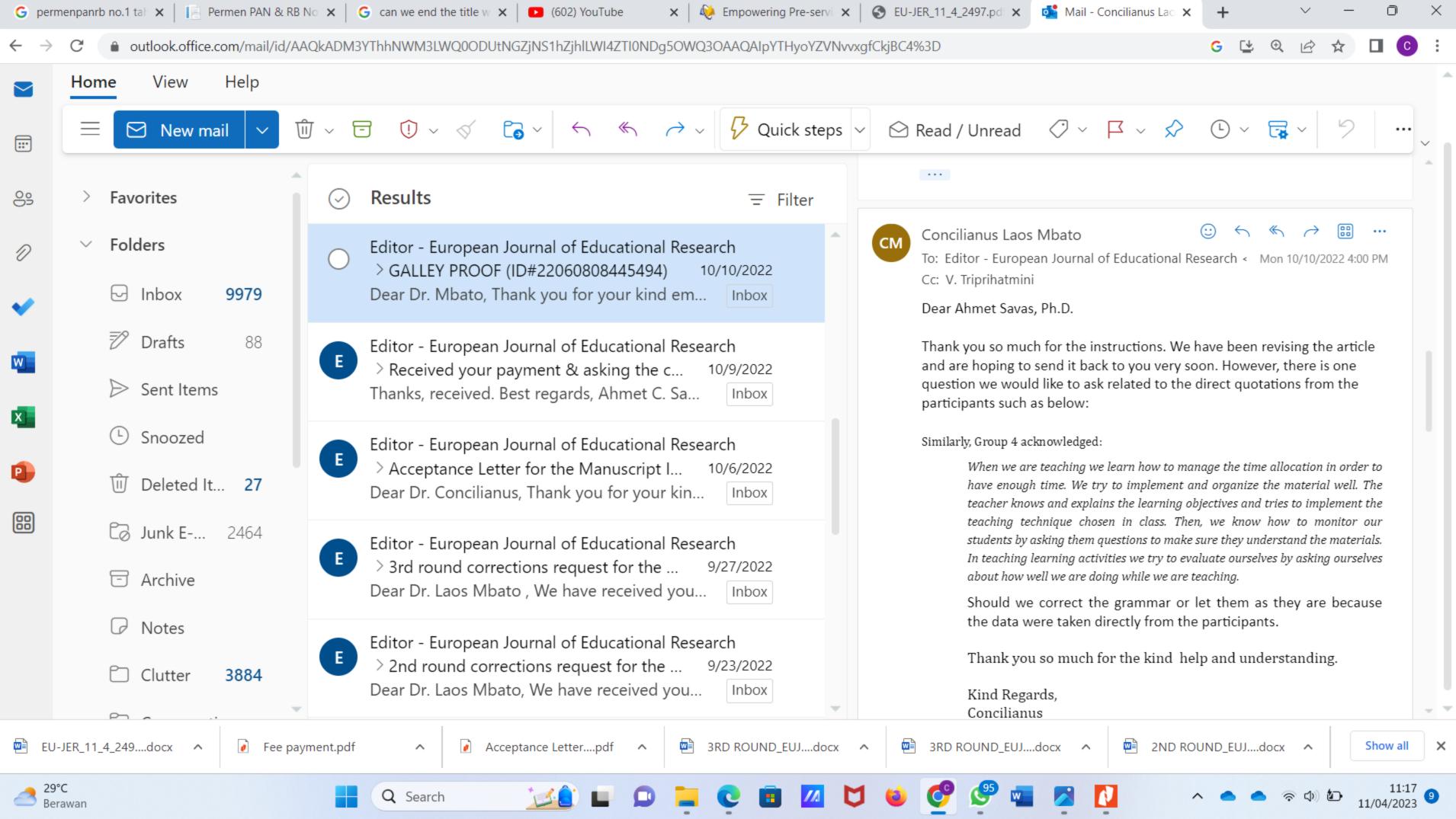
Source: Balcikanli, E. (2011).

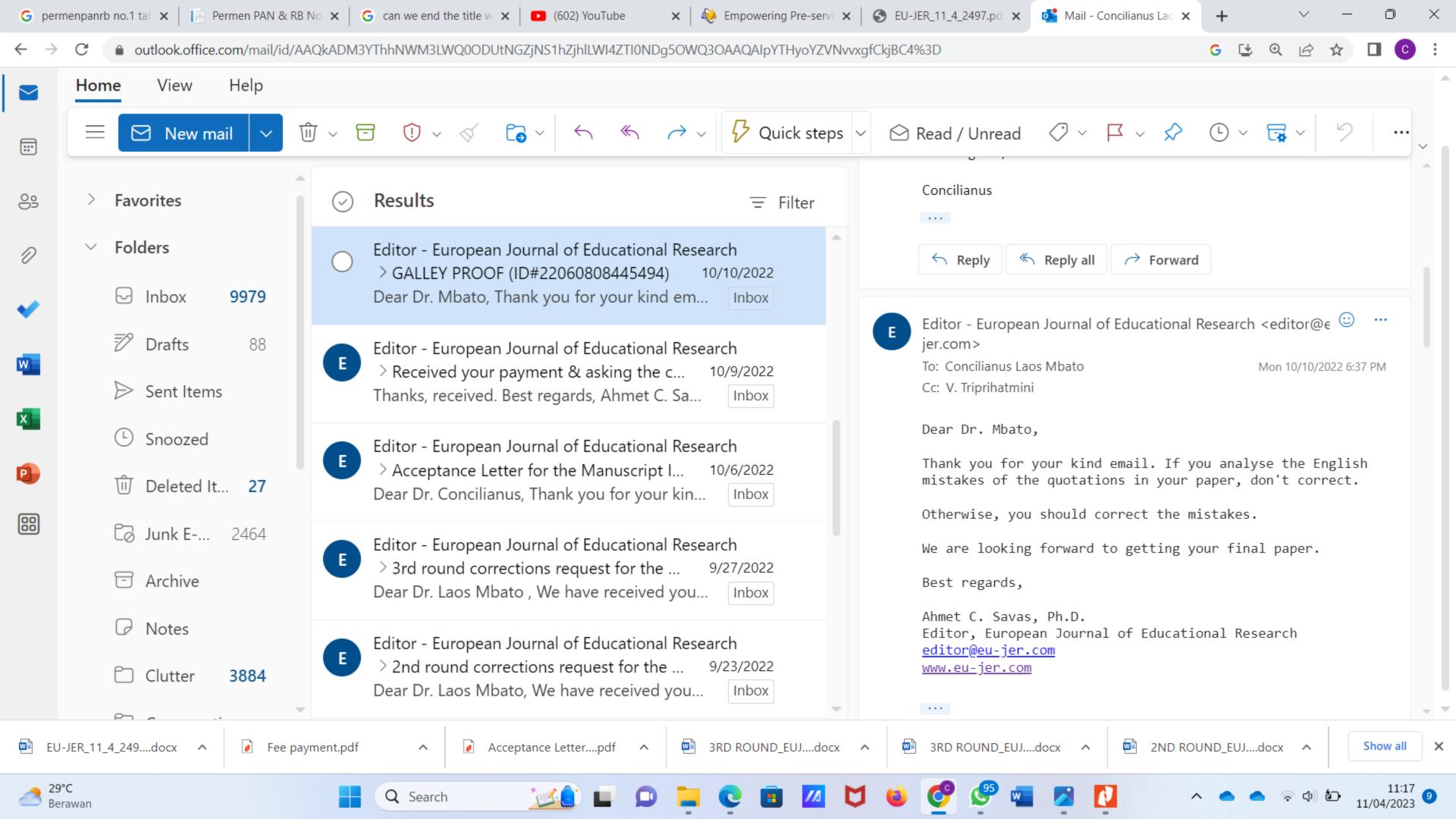
Appendix 2

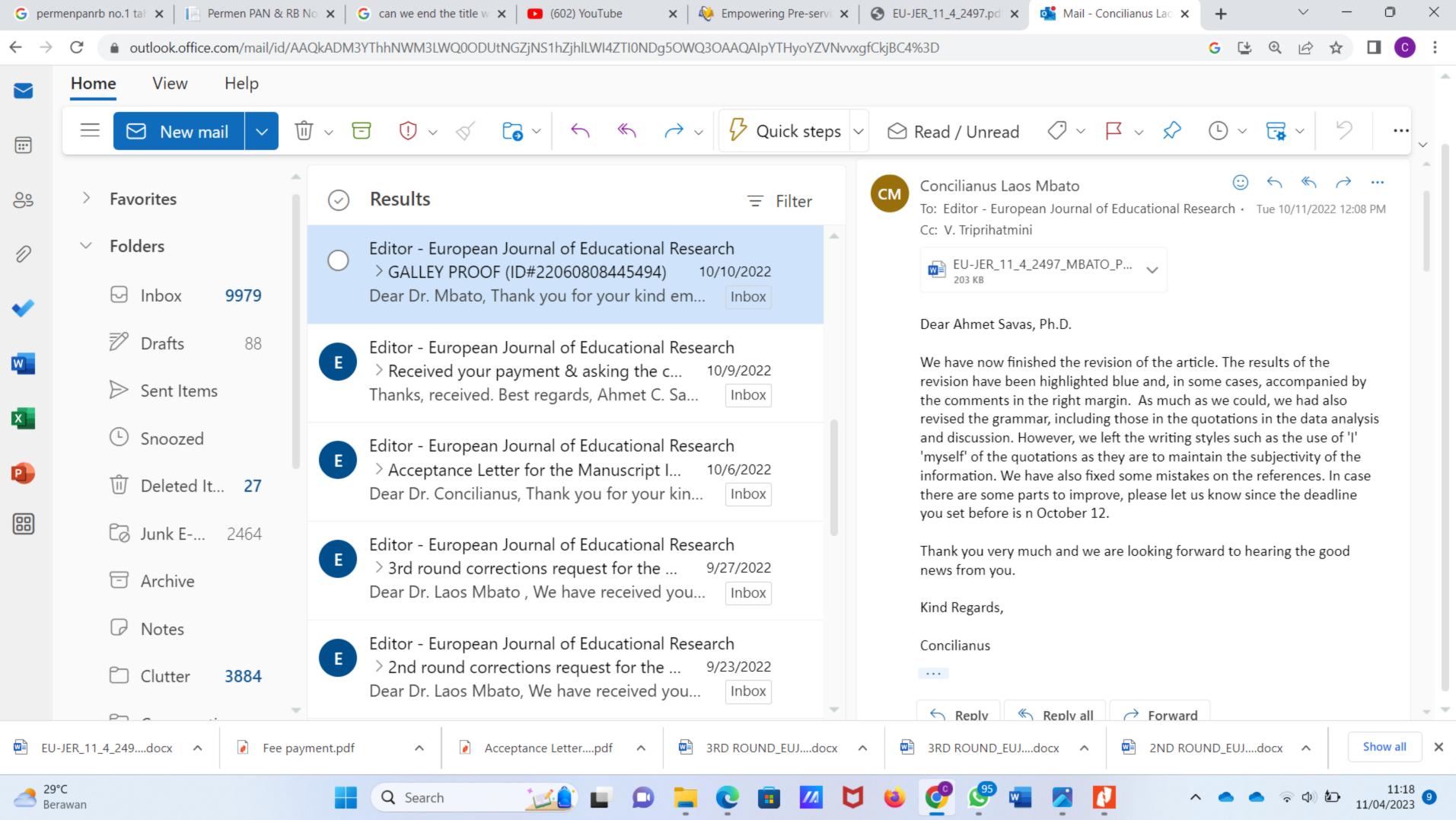
Contents and Activities

Week	Contents	Activities
	• Introduction: Overview of the	• Lecture
1	course	Discussion
	Competencies required	Student reflection
	for a teaching profession	
	Classroom Management	• Short Lecture
	Activities for Creating	Presentation
2	A Positive Learning	Discussion
	Environment (Positive	Student written reflection
	classroom management	
	activities)Class Interaction	
3	Skill Practice 1: set induction, and	Peer teaching
3	• Skill Plactice 1: Set induction, and set closure	 Peer evaluation based on the observation sheet
	 Skill Practice 2: stimulus 	 Teacher feedback
	variation skills	Student written reflection
	Skill Practice 3: questioning skills	
4	Integrated teaching skill practice (1)	Teaching small groups using the most
		appropriate teaching methods and strategies in their classes
		Teacher oral feedback
		Student written reflection
5	Dissemination of Metacognitive	Teaching small groups
6	Integrated teaching skill practice (3)	Whole class teaching
7	Lesson Planning 1 using MAIT	• Workshop
		Teacher feedback
8	Mid-Test 1 using MAIT	Individual teaching of the whole class @ 25-30 minutes**
10	Mid-Test 2 using MAIT	 Individual teaching the whole class @ 25-30 minutes*
11	Mid-Test 3 using MAIT	Individual teaching the whole class @ 25-30 minutes*
		Peer feedback Track a foodback
		 Teacher feedback Student written reflection based on MAIT
12	Lesson Planning 2 using MAIT	Discussion
12	Lesson Finning 2 using Mini	Workshop
		Peer feedback
		Teacher feedback
		Student written reflection based on MAIT
13	Final Test 1 using MAIT	Individual teaching the whole class @ 25-30 minutes*
.4		Whole class feedback
		• Teacher feedback
		SUMMATIVE REFLECTION BASED ON MAIT**
14	Final Test 2 using MAIT	 Individual teaching the whole class @ 25-30 minutes**
		Whole class feedback The days feedback
		Teacher feedback
1 Г	Final Test 2 using MAIT	SUMMATIVE REFLECTION BASED ON MAIT**
15	Final Test 3 using MAIT	 Individual teaching the whole class @ 25-30 minutes* Whole class feedback
		 Whole class feedback Teacher feedback
		 SUMMATIVE REFLECTION BASED ON MAIT**
16	Final Test 4 using MAIT	 Individual teaching the whole class @ 25-30 minutes**
_ 2		 Whole class feedback
		Teacher feedback
		SUMMATIVE REFLECTION BASED ON MAIT**

* depends on the number of students in the class ** Applies to the students who taught in that particular week







Research Article

https://doi.org/10.12973/eu-jer.11.4.2497



European Journal of Educational Research

Volume 11, Issue 4, 2497 - 2512. ISSN: 2165-8714

https://www.eu-jer.com/

Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching Through Reflections

Concilianus Laos Mbato*[©] Sanata Dharma University, INDONESIA Veronica Triprihatmini 🤤 Sanata Dharma University, INDONESIA

Received: June 8, 2022 • Revised: August 25, 2022 • Accepted: October 8, 2022

Abstract: Successful teaching requires teachers' reflections and metacognitive awareness. However, few studies have investigated the impacts of reflections on teachers' metacognitive awareness in teaching. This study aimed to examine whether or not reflections can empower Indonesian pre-service English teachers' metacognitive awareness in teaching. Mixed-methods research was conducted to collect quantitative and qualitative data from 36 pre-service English teachers (PSETs) in two micro-teaching classes at the Undergraduate Program, Sanata Dharma University, Yogyakarta, Indonesia. Quantitative data from the pre-semester and post-semester were analyzed descriptively and statistically. Qualitative data from reflections and focus group discussions (FGD) focused on determining key issues related to PSETs' metacognitive awareness in teaching. Data analyses revealed that Indonesian PSETs' perceived metacognitive awareness in teaching. The increase was primarily attributable to the implementation of explicit reflections of the elements of metacognitive awareness in teaching. This research provides recommendations for teachers, lecturers, and future researchers.

Keywords: Knowledge of cognition, metacognitive awareness, pre-service English teachers, reflection, regulation of cognition.

To cite this article: Mbato, C. L., & Triprihatmini, V. (2022). Empowering pre-service English teachers' metacognitive awareness in teaching through reflections. *European Journal of Educational Research*, 11(4), 2497-2512. https://doi.org/10.12973/eu-jer.11.4.2497

Introduction

Successful teaching and learning processes cannot be separated from effective teachers (Bakar et al., 2019; Holzberger et al., 2019; Lupascu et al., 2014). Intensive preparation and rigorous teaching practice in college are required in order to be able to teach effectively since teachers cannot give what they do not have (Okogbaa, 2017). The professional development of pre-service English teachers (PSETs) in college is crucial in preparing them for actual classroom teaching. This paper aimed to examine the perceived impacts of reflections on pre-service teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. It then addresses teachers' metacognitive awareness in teaching, demonstrating that it could lead to teacher professional development. In addition, reflections were reviewed as one of the tools to empower teachers' metacognitive awareness in teaching, followed by the method, result, discussion, conclusion, recommendation, and limitations. This paper argues that PSETs' professional development in teaching could be enhanced through direct reflections of the elements of metacognitive awareness. It was expected that this research would enrich, extend and partly fill the gap in the current literature about reflections and their impacts on pre-service English teachers' metacognitive awareness.

Teachers face complex challenges in actual classroom teaching, ranging from the teaching workload, big class sizes, and time limitations (Al-Shaboul et al., 2020). Other challenges include who assesses teachers' competence and performance (Utami et al., 2021). Accordingly, they need strong guidance from their mentors to face challenges and develop professionalism in teaching (Ambrosetti & Dekkers, 2010; Filiz & Durnali, 2019). The training may encompass content knowledge, pedagogical skills, attitudes, social and emotional intelligence, and technological skills (Bakar et al., 2019; Filiz & Durnali, 2019; Gabrijelčič et al., 2021; Utami et al., 2021).

Several studies have examined pre-service teachers' professional development with positive and negative results. A study by Külekçi (2018) of 165 PSETs at a Turkish University revealed three elements that they believed future English teachers should possess, i.e., providing examples from real-life contexts, well-prepared lessons, and continual self-development. Another study (Holzberger et al., 2019) involving 3,483 high school students and their 155 mathematics

© 2022 The Author(s). Open Access - This article is under the CC BY license (https://creativecommons.org/licenses/by/4.0/).

^{*} Corresponding author:

Concilianus Laos Mbato, Sanata Dharma University, Indonesia. 🖂 cons@usd.ac.id

2498 MBATO & TRIPRIHATMINI / Pre-service English Teachers' Metacognitive Awareness in Teaching through Reflections

teachers revealed that high-quality teaching corresponds with students' achievement but does not predict their excitement. A recent study (**Senel**, 2021) of four Turkish English language teaching (ELT) students performing practice teaching at school found that their professional identity changed from positive to negative.

The studies above suggest that becoming an effective teacher is as complex as producing good-quality teaching. The demand for teachers at different school levels to deliver good quality teaching is even greater in classroom learning involving higher-order thinking skills (HOTS). Since pre-service teachers could teach at primary and secondary schools, reviewing what happened at these schools concerning the implementation of HOTS was beneficial in preparing them for future teaching. Integrating HOTS into the teaching practice was also a requirement in our university's micro-teaching Syllabus (see the method section on learning contents and activities). Studies concerning these important topics have found mixed results across the globe. Exploring primary school examination questions in Uganda, Mitana et al. (2018) discovered that more than 85% of the questions were related to lower-order thinking skills (LOTS), and only 13% were related to HOTS.

Similarly, in research examining HOTS of senior high school students in the Philippines, Subia et al. (2020) revealed a low level of HOTS in mathematics subjects. A similar result was found in a study of student science teachers in Australia (de Jager, 2019). The study revealed students' reluctance to engage in reflective learning and higher-order thinking activities. This study urges lecturers to promote independent learning to students. However, training students to become independent and good critical thinkers requires teachers' ability to design, implement and assess thinking-oriented classrooms continually since knowing the importance of HOTS does not necessarily lead to teachers' successful implementation of HOTS in the classroom (Fakhomah & Utami, 2019).

Possessing metacognitive awareness in teaching will help teachers become better planners, implementers, and assessors of their teaching and student learning. The term metacognitive, which derives from the word metacognition, means thinking about thinking or understanding one's thinking processes while engaging in cognitive activities such as teaching (Flavell, 1979). Several recent studies have acknowledged the impacts of metacognition on students' learning and success (Bećirovic et al., 2017; Cao & Lin, 2020; Oxford, 2017).

Metacognitive Awareness in Teaching

Recent years have witnessed researchers' interest in teachers' metacognitive awareness in teaching (Abdellah, 2015; Aktağ et al., 2017; Alkan & Erdem, 2014; Gopinath, 2014; Palantis et al., 2017). Although they generally stress the importance of teachers' metacognitive awareness in teaching, these researchers seem to offer little information about how teachers' metacognitive awareness could be harnessed for their professional development. For example, Alkan and Erdem (2014) suggested a close relationship between college pre-service teacher candidates' metacognitive awareness, self-efficacy, and perceived subject matter competence. Gopinath (2014) found that teachers' metacognitive awareness impacted their teaching positively and affected class learning, atmosphere, and students' engagement in learning. Another study (Abdellah, 2015) revealed the need for pre-service teachers to possess metacognition and more research on their strategies to increase their metacognitive awareness in teaching performance. Other researchers (Aktağ et al., 2017) argued that teachers' metacognitive awareness in teaching affected students' learning positively and urged explicit metacognitive awareness training for pre-service teachers. Similarly, research on primary school teachers in Puchong, Selangor (Palantis et al., 2017) revealed a positive relationship between students' academic achievements and teachers' high metacognitive awareness. Their findings suggested that metacognitive awareness should be trained and practised regularly and intentionally for the teachers' teaching to impact students' learning positively.

Considering its increasing popularity, the current researchers felt the need to use a more comprehensive inventory of teachers' metacognitive awareness in teaching. Balcikanli's (2011) Metacognitive Awareness Inventory for Teachers (MAIT) met our needs. Balcikanli (2011) created a detailed inventory for implementing metacognition in teaching by modifying the metacognitive awareness of adults (see Schraw & Dennison, 1994), comprising knowledge of cognition and regulation of cognition. Knowledge of cognition constitutes declarative, procedural, and conditional knowledge. Declarative knowledge details what teachers know about teaching (the what). Procedural knowledge encompasses teachers' knowledge about doing things (the how), and conditional knowledge explains teachers' knowledge of the why and when to use declarative and procedural knowledge in teaching. Regulation of cognition focuses on teachers' planning, monitoring, and evaluation of their teaching. Balcikanli (2011) argued that his inventory could help teachers to realize their thinking levels of teaching.

The studies reviewed earlier demonstrated the positive contributions of teachers' metacognitive awareness in teaching and students' learning. However, very few have examined strategies to empower it. Realizing the possible benefits of MAIT for PSETs led the researchers to pursue a tool to implement in the micro-teaching classes of pre-service teachers. Since the reflective practice had become an imperative for teachers in Indonesia, it was then adopted in this research as a strategy to empower PSETs' metacognitive awareness in teaching. Commented [M1]: Just added a single quotation mark at the end

European Journal of Educational Research 2499

Reflection

Reflections are the self-conscious activities that support teaching, learning, and comprehension (Mattew et al., 2017) and have been used to enhance teacher professional development (Amalia et al., 2020; Fox et al., 2019; Mattew et al., 2017). Reflections derive from experiences and compel teachers to learn from them. The reflected learning experiences aid them in building new knowledge and understanding to grow professionally (Amalia et al., 2020; Chang, 2019; Fox et al., 2019). When conducted over time, reflections could increase self-awareness about themselves as teachers and their teaching (Arslan, 2019). Similarly, Davis and McDonald (2019) found that teachers' reflections focusing on self-evaluation could positively impact their professional development. Through reflections, teachers could increase their capability to examine their teaching and its results (Fox et al., 2019).

Several studies have investigated reflections to increase the teachers' understanding of themselves and their professional development (e.g., Amalia et al., 2020; Davis & McDonald, 2019; Mattew et al., 2017). Likewise, studies about the relationship between teachers' reflections and their professional development have been conducted by Indonesian researchers. Tosriadi et al. (2018) discovered the positive impact of reflections on teachers' pedagogical content knowledge. Because of a small sample (two teachers), this study needs to be strengthened with a bigger sample. In addition, this study has focused on two aspects of teachers' metacognitive awareness in teaching, i.e., teachers' pedagogical content knowledge (declarative knowledge and procedural knowledge). Another study (Hermagustiana et al., 2017) investigated the teachers' cognition in English as an EFL vocabulary instruction through their written reflections. Their research revealed that teachers had excellent awareness of their cognition when teaching EFL vocabulary. However, this research did not explore how reflections could be used increase teachers' cognition in EFL vocabulary instruction. The third study (Amalia et al., 2020) addressed one aspect of metacognitive awareness in teaching: lesson planning. They demonstrated the positive impact of reflective practice on the student teachers' leason planning. The fourth study (Ong et al., 2020) revealed the pre-service teachers' tendency to practise reflections during teaching. However, they should be coached on strategies to effectively and successfully engage in these reflective practices.

The four studies above have partly revealed the contributions of reflections on several elements of teachers' metacognitive awareness in teaching. Though enlightening, a more comprehensive study examining the impacts of reflections on all elements of metacognitive awareness in teaching (Balcikanli, 2011) needed to be conducted, especially in the Indonesian educational context.

Schools in Indonesia have implemented the 2013 Curriculum for the past eight years. This curriculum emphasizes student-centered teaching. However, many teachers experience difficulty in implementing it. Poedjiastutie et al. (2018) mentioned a top-down policy, the absence of needs analysis, and curriculum evaluation as the inhibiting factors, while Sumardi et al. (2020) highlighted the lack of 21st century skills learning in many classes in primary school with the teacher as the primary source.

The lack of metacognitive awareness in teaching may be why teachers **cannot** teach effectively and empower students' metacognition in learning, resulting in the learners' lack of success in reading (Hamiddin & Saukah, 2020). On the other hand, teachers who possess and demonstrate metacognitive awareness can positively impact their teaching (Beziat et al., 2018; Mattew et al., 2017) and student learning (Mbato, 2019; Soodla et al., 2017).

Few studies have examined the impacts of reflections on teachers' metacognitive awareness in teaching. This current research aimed to enrich the existing literature by examining the perceived impacts of reflections on PSETs' metacognitive awareness in teaching at the undergraduate English education program at Sanata Dharma University, Yogyakarta, Indonesia. It addressed one overarching research question:

How can reflections empower pre-service English teachers' metacognitive awareness in teaching? The question was further elaborated into the following question, a null hypothesis and an alternative hypothesis:

Is there a difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the presemester and post-semester?

H0: There is no significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

H1: There is a significant difference in pre-service English teachers' perceptions of their metacognitive awareness in teaching at the pre-semester and post-semester.

Research Design

This research adopted a mixed-methods approach, collecting quantitative and qualitative data (Creswell & Clark, 2017; Daguay-James, & Bulusan, 2020). The approach aimed to gain a deeper understanding of the PSETs' implementation of reflections in empowering their metacognitive awareness in teaching and triangulate the findings from quantitative data with those from qualitative data (see Bowen et al., 2017; Kelle et al., 2019). These two data types were used to gain valid and reliable inferences and trustworthiness (Zohrabi, 2013).

Commented [M2]: However was put in the front rather than after 'this research'

2500 MBATO & TRIPRIHATMINI / Pre-service English Teachers' Metacognitive Awareness in Teaching through Reflections

Researcher Roles, Learning Contents and Activities

Since this was a practicum class, PSETs learned about teaching and practised peer, small groups, and the whole class teaching, with teacher researchers acting as facilitators rather than instructors. Each meeting usually ended with PSETs reflecting on their learning and teaching experiences. The class met once a week for 200 minutes. The class contents and activities can be seen in Appendix 2.

Sample and Data Collection

Using purposive sampling, thirty-six PSETs enrolled in two micro-teaching classes at the Undergraduate Program of English Education, Sanata Dharma University, Yogyakarta, Indonesia, participated in the study, which lasted four months, with 24 of them volunteering to fill out the pre-and post-semester questionnaire. As mentors for the class for more than ten years, we decided to introduce the Metacognitive Awareness Inventory in Teaching (MAIT) from Balcikanli (2011). This inventory covered all teachers' metacognitive elements and had good validity and reliability (Balcikanli, 2011). The KMO validity was 0.794, the value for Barlett TKest was 2513.474, and the reliability ranged from 0.79 to 0.85.

Quantitative data were collected through two questionnaires. Both questionnaires used a 5-point Likert scale of 1 (strongly disagree), 2 (disagree), 3 (undecided), 4 (agree), and 5 (strongly agree). Twenty-four PSETs volunteered to complete them. The first questionnaire (MAIT) was derived from Balcikanli (2011) and distributed in the pre-and-post semester. The questionnaire asked PSETs to indicate their agreement with questions about their metacognitive awareness in teaching. The questionnaire consisted of 24 statements, which were divided into two parts. The first part focused on the knowledge of cognition, and the second on the regulation of cognition. Statements on the knowledge (Proc5-Proc8), and four items on conditional Knowledge (Con9-Con12). Statements on the regulation of cognition comprised four items on planning before teaching (Plan13-Plan16), four items on monitoring while teaching (Plan17-Plan20), and four items on evaluation after teaching (Eva21-Eva24). The second questionnaire (n=24) was adapted by the current researchers from Balcikanli's MAIT (2011) and distributed at the end of the semester. The questionnaire asked PSETs to indicate whether reflections could empower them to enhance their metacognitive awareness in teaching.

Qualitative data were gathered from students' answers to the questions about the dissemination of MAIT, summative reflections, and focus group discussions (FGDs) on the elements of metacognitive awareness in teaching. All thirty-six PSETs made seven reflections during the semester before the summative reflection. Before these activities, PSETs were introduced to the metacognitive awareness inventory through a two-hour class lecture. The inventory was disseminated one month after they practiced teaching in the micro-teaching class to have enough experience teaching without explicit implementation of MAIT. Data from the dissemination were gathered one month after the activity, while the other data sources were obtained at the end of the semester.

Summative reflections invited students to focus on how they might have developed their metacognitive awareness in teaching throughout the semester. The FGDs involved students' reflections and in-class small group discussions of these reflections. Students were given more than a week to write their reflections and then discuss three questions in small groups, i.e., (a) the benefits of metacognitive awareness in teaching; (b) the difficulties in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching.

Data Analysis

Descriptive statistics were used to analyze the participants' responses about their metacognitive awareness in teaching at the pre-and post-semester and their perceptions about the impacts of reflections on their metacognitive awareness post-semester. Hapsari and Mbato's (2019) mean category was used to interpret the mean, with the expression motivation replaced with perception.

	Table 1. Mean Range for Perception
Mean Range	Interpretation
3.68 -5.00	A high degree of perception
2.34 - 3.67	A moderate degree of perception
1.00 -2 .33	A low degree of perception

A paired-samples t-test was performed using IBM SPSS Statistics (Version 17) to determine whether there was a significant difference in students' perceptions about their metacognitive awareness in teaching in the post-semester.

Qualitative data analyses from reflections and FGD focused on finding key issues in students' answers (Gibson & Brown, 2009) about their metacognitive awareness in teaching, mainly on whether or not there were indications of improvements.

Validity and Reliability in Data Collection and Analysis

European Journal of Educational Research 2501

Validity and reliability of the data analyses were observed through triangulation, long-term observation, participatory research, and the handling of research bias (Merriam, 2009; Zohrabi, 2013). Two types of triangulation were undertaken, i.e., methods and data triangulation. The data from the questionnaires, dissemination and summative reflections were triangulated in the analyses to corroborate the results. The researchers were involved in the research for four months (sixteen meetings), where they interacted with the research participants as facilitators in the micro-teaching class, designed the class contents and activities, repeatedly collected data on PSETs' metacognitive awareness in teaching through questionnaires, and students' reflections to arrive at data saturation. There was a collaboration with the participants in the data collection, so all the needed data in data analyses to answer the research questions were met. Research bias was addressed using Miles and Huberman's (1994) advice, namely: a) being in the micro-teaching class for four months (sixteen meetings); b) being less intrusive when students were doing practice teaching and conducting reflections based on MAIT; c) gaining rich data from pre-and post-semester questionnaires, a post semester questionnaire, students' reflections on the benefits of the dissemination of MAIT, and summative reflections; and d) preventing leading PSETs to expected answers. By comparing and contrasting different data to the elements of MAIT, the findings of this research attained credibility and consistency. Through thematic analyses, different codes and themes were recorded and compared with the elements of MAIT to reveal the perceived impacts of reflections in empowering PSETs metacognitive awareness in teaching.

Results

Quantitative Data

Students were asked 24 questions regarding whether or not reflections helped them increase their metacognitive awareness, i.e., knowledge of cognition and regulation of cognition before, while, and after teaching. The following Table 2 shows their responses.

Table 2. Students' Perceptions o	

No.	Statement	Mean	SD
ReDecl1	Reflections increased my awareness of the strengths and weaknesses in teaching.	4.31	0.62
ReDecl2	Reflections helped me to know the most important skills	4.31	0.55
ReDecl3	Reflections helped me to have control over teaching	4.04	0.53
ReDecl4	Reflections helped me to know the teaching expectations	4.31	0.47
ReProc5	Reflections helped me to use proven teaching techniques	4.19	0.69
ReProc6	Reflections helped me to have a specific reason for using a teaching technique	4.04	0.77
ReProc7	Reflections helped me to have an awareness of the teaching techniques	4.15	0.78
ReProc8	Reflections helped my automatic use of teaching techniques	3.68	0.63
ReCon9	Reflections helped me to compensate strengths for weaknesses	4.19	0.63
ReCon10	Reflections helped me to motivate myself when having to teach	4.23	0.59
ReCon11	Reflections helped me to use different teaching techniques as required by the situation.	4.00	0.75
ReCon12	Reflections helped me to know when each teaching technique was most effective.	3.96	0.82
RePlan13	Reflections helped me to pace myself in teaching	4.31	0.62
RePlan14	Reflections helped me to set specific teaching goals before teaching	4.42	0.50
RePlan15	Reflections helped me to ask questions about the teaching materials	4.27	0.60
RePlan16	Reflections helped me to organize a time to accomplish teaching goals.	4.19	0.69
ReMon17	Reflections helped me to ask periodically if teaching goals were being met	4.12	0.52
ReMon18	Reflections helped me to assess how useful the teaching techniques were	4.12	0.59
ReMon19	Reflections helped my regular checking of students' comprehension	3.85	0.61
ReMon20	Reflections helped my self-questioning while teaching	4.19	0.49
ReEval21	Reflections helped me to ask myself about teaching goal accomplishment	4.19	0.57
ReEval22	Reflections helped me to ask myself if different techniques could have been used.	3.85	0.73
ReEval23	Reflections helped me to ask myself for more effective subsequent teaching	4.35	0.63
ReEval24	Reflections helped me to ask myself if all possible techniques had been considered	4.15	0.54
	Average	4.14	0.62

Adapted from Balcikanli (2011).

As indicated in Table 2, students generally admitted reflections' positive contributions in helping them develop their metacognitive awareness in teaching. The first four questions (ReDec1 to ReDec4) asked them whether or not reflections assisted them in enhancing their declarative knowledge in teaching. Their responses indicated a very high mean between 4.04 (ReDec3) and 4.31 (ReDec1, ReDec2, and ReDec4). The following four questions (RePro5 to RePro8) invited them to indicate their perceptions about the influence of reflections on their procedural knowledge. Their responses showed a very high agreement between 3.68 (ReProc8) and 4.19 (ReProc5). Four other questions prompted them to assess the impacts of reflections on their conditional knowledge in teaching (ReCon9 to ReCon12). Their responses demonstrated

Commented [M3]: Lincol and Guba have been deleted since we could not relocate the book). These remaining authors are sufficient for the discussion validity

Commented [M4]: Replacing 'through'

Commented [M5]: These paragraphs were italicised from the editor so unitalicised them.

2502 | MBATO & TRIPRIHATMINI / Pre-service English Teachers' Metacognitive Awareness in Teaching through Reflection

a high mean between 3.96 (ReCon9) and 4.23 (ReCon10). The PSETs also indicated a very high agreement with the statements about the impacts of reflections on planning before teaching (RePlan13 to RePlan16), with the mean range between 4.19 (RePlan16) and 4.42 (RePlan14). When asked whether or not they perceived reflections as influencing their monitoring strategies in teaching (ReMon17 to ReMon20), they indicated a very high agreement with the mean range between 3.85 (ReMon19) and 4.19 (ReMon20). The last four questions (ReEval21 to ReEval24) invited them to indicate their opinions about the impacts of reflections on their evaluation strategies in teaching. They perceived the contributions highly, with a mean range between 3.85 (ReEval22) and 4.35 (ReEval23).

Overall, pre-service teachers viewed the impacts of reflections on their metacognitive awareness very highly, with an overall response mean of 4.14 on a scale of 5 (Nurhapsari & Mbato, 2019). PSETs' pre- and post-semester responses to the statements about their metacognitive awareness in teaching are strengthened by the results.

Lable 2 Moan Comparison of Students' Pernenses to Metacoanitive Awareness Statements in Tec	
	china
Table 3. Mean Comparison of Students' Responses to Metacognitive Awareness Statements in Tec	Jung

	Table 3. Mean Comparison of Students' Responses to Metacognitive Awareness Statements in T						
No	Statements		emester	Post-semester		Mean Increase	
		Mean	Std. Dev	Mean	Std. Dev		
Decl1	Awareness of the strengths and weaknesses in teaching.	3.59	0.78	4.36	0.53	0.77	
Decl2	Knowing the most important skills	3.1	1.14	3.85	0.85	0.75	
Decl3	Having control over teaching	3.03	0.90	4.36	0.48	1.33	
Decl4	Knowing the expectations in teaching.	3.26	0.96	3.74	0.67	0.48	
Proc5	Trying to use proven teaching techniques	3.31	0.86	3.85	0.63	0.54	
Proc6	Having a specific reason for using a teaching technique	3.31	1.12	3.9	0.64	0.59	
Proc7	Awareness of the teaching techniques while teaching.	3.1	0.91	3.67	0.73	0.57	
Proc8	Using teaching techniques automatically.	2.79	0.92	4.1	0.55	1.31	
Con9	Compensating strengths for weaknesses	3.26	0.91	3.77	0.77	0.51	
Con10	Being able to motivate oneself when having to teach	3.15	0.96	3.82	0.68	0.67	
Con11	Using different teaching techniques as required by the situation.	3.33	0.95	3.67	0.66	0.34	
Con12	Knowing when each teaching technique is most effective.	2.77	1.01	3.77	0.62	1.00	
Plan13	Pacing oneself in teaching to have enough time.	3.31	0.92	3.67	0.57	0.36	
Plan14	Determining specific teaching goals before teaching.	3.1	0.85	3.77	0.53	0.67	
Plan15	Asking questions about the teaching materials	3.56	0.75	4.15	0.67	0.59	
Plan16	Organizing time to accomplish teaching goals	2.92	0.70	4.18	0.64	1.26	
Mon17	Asking periodically if teaching goals are being met	3.03	0.95	3.59	0.63	0.56	
Mon18	Assessing how useful the teaching techniques	2.92	0.83	4.23	0.58	1.31	
Mon19	Regular checking of students' comprehension	3.28	0.72	4.23	0.53	0.95	
Mon20	Self-questioning while teaching	3.33	0.89	3.56	0.55	0.23	
Eval21	Asking oneself about teaching goal accomplishment	3.44	0.88	3.87	0.73	0.43	
Eval22	Asking oneself if different techniques could have been used	3.1	0.94	3.92	0.62	0.82	
Eval23	Asking oneself for more effective subsequent teaching	3.51	0.88	4.03	0.62	0.52	
Eval24	Asking oneself if all possible techniques have been considered	3.15	0.70	3.74	0.54	0.59	
	Average	3.19	0.89	3.90	0.62	0.71	

SD: standard deviation.

The questionnaire in Table 3 above was adopted from Balcikanli (2011), and its complete version can be seen in Appendix 1. It shows PSETs' responses to their metacognitive awareness in teaching pre- and post-semester teaching. They indicated that they had improved their metacognitive awareness in teaching in the knowledge of cognition (Statements Decl1 to Con12) and regulation of cognition (Statements Plan13 to Eval24). PSETs demonstrated the highest responses to the declarative knowledge statements, with statement Decl3 gaining the highest mean increase (1.33). The second highest response was the PSETs' awareness of their strengths and weaknesses in teaching (Decl1/ 0.77 mean increase)

and their knowledge of the most important skills (Decl2/0.75 mean increase). The lowest increase in PSETs' response was shown by the statement Decl4 (Decl4/0.48 mean increase).

Students also acknowledged that they had improved their procedural knowledge in teaching (Pro5 to Pro8). The highest increase in PSETs' responses in this category was shown by statement Pro8, which is about whether or not they used helpful techniques in teaching automatically, with a mean increase of 1.31. The subsequent highest increase was indicated by PSETs' response to statement Pro6, which asked whether they had a particular reason for adopting a teaching technique in the classroom (Pro6/0.59 mean increase), and statement Pro7, which asked about their awareness of what teaching methods they used while teaching (Pro7/0.57 mean increase). The lowest response was given to statement Pro5, namely if they attempted to implement the previous successful teaching techniques (Pro5/0.54 mean increase).

Students further indicated that they possessed conditional knowledge in teaching, with the highest increase shown in statement Con12, i.e., whether or not they knew when each teaching technique they used would be most effective (Con12/1.00 mean increase). The second-highest increase in PSETs' response was indicated by statement Con10, that is, if they could motivate themselves when required to teach (Con10/0.67mean increase), and then Statement Con9, namely, whether they focused on what they could do rather than on what they could not in their teaching with the mean increase of 0.51 (Con9). The lowest mean was shown in PSETs' response to statement Con11, which is the ability to use various techniques demanded by the teaching contexts (Con11/0.34 mean increase).

Parallel with their increased knowledge of cognition was their regulation of cognition in teaching. In terms of planning before teaching, students showed that they did better in all four areas, including time organization to accomplish their teaching goals (Plan16/with the highest mean increase of 1.26) and determining specific teaching goals before starting teaching (Plan14/with the second-highest mean increase of 0.67). Students also indicated their agreement with statement Plan15 (Plan15/a mean increase of 0.59), viz., if they raised questions about the materials they would use. The lowest increase in the planning stage was indicated by PSETs' response to statement Plan13 (Plan13/a mean increase of 0.36), which is whether they could manage their teaching speed.

Similarly, students agreed with the four statements about monitoring strategies in teaching. The highest increase was indicated by PSETs' response to the statement Mon18. They agreed that they found themselves assessing how useful their teaching techniques were while they were teaching (Mon18/1.31 mean increase). The second-highest increase was indicated by PSETs' answer to the statement Mon19. They admitted having improved their comprehension of the material while teaching through regular checking (Mon19/0.95 mean increase). The last two statements (Mon17 and Mon20) also demonstrated improvements in students' responses, with statement Mon17 (i.e., asking themselves periodically if they had met their teaching goals while teaching) showing a slightly higher mean increase of 0.56 and statement Mon20 (i.e., asking themselves questions about how well they were doing while teaching) demonstrating the lowest mean increase (0.23).

Additionally, students agreed that they had improved their evaluation ability in teaching. The highest agreement for this category was shown by statements Eval22, i.e., whether students asked themselves if other techniques could have been used after each teaching topic (Eval22/0.82 mean increase). Statement Eval24 showed the second-highest response, viz., whether they asked themselves if all possible techniques had been considered after teaching a topic (Eval24/0.59 mean increase). Students also admitted to slightly improving their evaluation ability, as indicated in statements Eval23 and Eval21. Statement Eval23 focused on whether they asked themselves if they would teach it better in the future after teaching a topic. The mean increase for this statement was 0.52. Statement Eval21, which focused on whether they asked themselves if they had accomplished their teaching goals after teaching, demonstrated a mean increase 0.043.

A paired-samples t-test was performed to determine the significance of the perceived improvement of students' metacognitive awareness in teaching.

Mean		Table 4. P	aired Samp	les Statistics	
	Mean	Ν	SD	Std. Error Mean	
	3.19	24	0.22	0.045	
_	3.91	24	0.24	0.049	
		Table 5. Pai	red Sample.	s Correlations	
			Ν	Correlation	Sig.
		emester & emester	24	0.031	0.887

2504 MBATO & TRIPRIHATMINI / Pre-service English Teachers' Metacognitive Awareness in Teaching through Reflections

		Table 6. Pa	ired Sample.	s T-Test			
	Pre-semester		Post-semester		- t(23)	df	
	Mean	SD	Mean	SD	t(23)	ui	Р
Students' perceptions	3.19	0.22	3.91	0.24	-10.88	23	.000

A paired sample t-test was performed to determine students' perceptions of metacognitive awareness in teaching as the dependent variable measured pre-and post-semester. The results indicated a significant perceived increase between the pre-semester level, 3.19, standard deviation (SD) = 0.22, and post-semester level, 3.91, SD = 0.24, t(23) =-10.88, p<.05. As a result, the null hypothesis was rejected, while the alternative hypothesis was accepted. It can be inferred that PSETs' perceived metacognitive awareness in teaching improved after participating in the research.

Qualitative Data

Qualitative data were collected through students' summative reflections and FGDs of the elements of metacognitive awareness in teaching. These activities were conducted after students had experienced teaching in the micro-teaching class for one month. Students practiced teaching their peers in small groups and the whole class in class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

1. Reflections on the Dissemination of MAIT

The researchers disseminated the ideas of the metacognitive awareness inventory (MAIT) to pre-service teachers through a 2-hour-class lecture. This activity was conducted after students had experienced teaching in the micro-teaching class for one month, where they taught their peers in small groups and the whole class. The practice aimed to give them sufficient experience in teaching and what they had to do to be a successful professional teacher.

Upon completing the dissemination activity, PSETs were given about a week to reflect on their teaching in light of the metacognitive ideas explained in class and the pre-semester MAIT survey they had filled out. The survey was the starting point for them to learn and implement the metacognitive awareness principles. Students mentioned six benefits of the dissemination of the MAIT. The first benefit was that it helped them to raise their awareness of metacognition in teaching. For example, S08 wrote:

- I learn something new from metacognition which is very beneficial for me as a prospective teacher in the future. Teachers should be aware that every student is unique in their intelligence. Even identical twins are not the same. The various intelligence is called metacognitive intelligence. In the future, teachers should compile lesson plan that includes students' various cognition.
- The second benefit was that it assisted them in understanding their strengths and weaknesses in teaching. S01 reported:
 - After understanding the metacognitive awareness inventory for teachers, I realize that it is important for me to be aware of my strengths and weaknesses in my teaching. Why is it so? Because I can evaluate myself to reduce my weaknesses and develop myself to improve my strengths. As a future teacher, it is also important for me to understand that there are some important skills in order to be a good teacher (a) how to open a class to make the students full of spirit; (b) how to deliver the materials that make the students able to apply it in their lives; (c) how to manage the class that makes the condition of the class full of excitement; (d) how to close the class that can be the media for the teacher to make sure whether the students understand the materials or not. I also realize that doing reflection after the class is useful. It is helpful for me to understand whether the teaching goals are reached

Students also described four other benefits of MAIT, i.e., (a) being more aware of the importance of teaching techniques; (b) being more aware of possessing teaching skills; (c) being more aware of knowing what to teach (planning); and (d) being more aware of planning, monitoring and evaluating their teaching.

2. Summative Reflections

or not and what has to be improved.

Reflections were a significant force in our efforts to empower students' metacognitive awareness in teaching. After the dissemination of MAIT, students had 24 meetings to implement and reflect on their metacognitive awareness in teaching. Students made seven reflections based on MAIT throughout the semester, excluding the summative reflections. In this research, the researchers only reported the students' summative reflections conducted after they did their micro-teaching final exam. Most of PSETs wrote about one to two-page reflections. In general, students admitted the positive contributions of metacognitive awareness in teaching. They acknowledged improving their declarative, procedural, and conditional knowledge in teaching and their abilities to plan, monitor, and evaluate their teaching.

Commented [M6]: Replacing teachers'

Commented [M7]: Grammatical mistakes in the original quotation have beend rectified by the authors.

European Journal of Educational Research 2505

summed up key ideas and, when relevant, cited a small portion of their reflections.

S09 reported that she had changed for the better in teaching due to the application of MAIT:

I am really excited because I finally did well in this course. I am proud of myself because, at the beginning of this semester, I felt uncomfortable and not sure I could do the teaching. But, now, I have become more confident in teaching and feel more challenged. The fact is that being a teacher is not as easy as I thought before. There are lots of requirements that a teacher should meet. MAIT really helps me prepare all of the things that should be prepared. It helps me to be more aware of anything about teaching before, while, and after teaching.

Another student (S20) emphasized that MAIT helped her to compensate for her weak grammar with her cheerful personality in teaching. Understanding their strengths and weaknesses in teaching seemed to be one of the most important contributions of MAIT to many students. Similarly, S11 admitted, "In the final test teaching practice, my friends and I have improved so much because we have applied MAIT, Higher Order Thinking, and Bloom's Taxonomy." S28, in her long reflection constituting all aspects of MAIT, wrote:

I understand the materials that I am going to teach. <mark>I</mark> also remind myself that when I am teaching, I am supposed to be a good model for my students, so I try my best to pay attention to every aspect, such as material mastery, pronunciation, grammar, and even small things as appearance and eye contact. I want to inspire my students to learn English and motivate them.

S17 described that the class had helped him understand teaching better. He reflected:

This class has given me a whole new world of college life. I got many experiences in this class, especially how to teach something. Teaching is not easy, but it is quite challenging. In this class, I should challenge myself to do something that I never do before. This class makes me realize that being a teacher is not easy. Many preparations that the teacher should prepare before they teach.

Most PSETs admitted that they had improved their declarative, procedural, and conditional knowledge in teaching. They also acknowledged regulating their teaching better through planning, monitoring, and evaluating. Their improvements are strengthened by the data gained in the FGDs.

3. Focus Group Discussions

FGD was conducted in small groups in class at the end of the semester. Individual students were given more than a week to write their reflections about the implementation of MAIT before the implementation of the FGDs. These FGDs discussed three main questions, i.e.: (a) benefits of metacognitive awareness in teaching; (b) challenges in implementing metacognitive awareness in teaching; and (c) suggestions for the implementation of metacognitive awareness in teaching. The results are discussed below.

3.1 Benefits of metacognitive awareness in teaching

Students acknowledged that metacognitive awareness in teaching helped them before, while, and after teaching. Before teaching, Group 1 asserted, *"We can understand what points we have to prepare before teaching in the class."* Students also admitted gaining benefits from metacognitive awareness while teaching. For example, Group 3 expressed that they could control their classroom management strategies, change to another strategy if they felt bored, and manage their time while teaching well. Similarly, Group 4 acknowledged:

When we teach, we learn how to manage time allocation to have enough time. We try to implement and organize the material well. The teacher knows and explains the learning objectives and tries to implement the teaching technique chosen in class. Then, we know how to monitor our students by asking them questions to ensure they understand the materials. In teaching-learning activities, we try to evaluate ourselves by asking ourselves how well we are doing while teaching.

MAIT was also beneficial for students after teaching. For instance, Group 5 reflected that MAIT helped them to know the best teaching strategies for their students, the lack of their teaching, and the aspects to be improved.

3.2 Challenges in implementing metacognitive awareness in teaching

Students encountered challenges in implementing metacognitive awareness before, during, and after teaching. For example, before teaching, Group 2 admitted:

To be aware of our strengths and weaknesses at the beginning of our teaching. To reflect on what we have to improve and what we have improved. To be used to classroom situations that dynamically change. To be able to make a good lesson plan.

Similarly, Group 3 revealed the challenges in finding suitable strategies, creating suitable materials for the students' needs, understanding their character, and handling the nervous feeling (Group 1). Group 4 mentioned the challenge in

Commented [M8]: We just edited some grammatical mistakes but not the styles such as the use of I, myself.

2506 MBATO & TRIPRIHATMINI / Pre-service English Teachers' Metacognitive Awareness in Teaching through Reflections

terms of time management while teaching so they could help enhance students' understanding. After teaching, students found challenges in implementing metacognitive awareness in teaching and avoiding overthinking (Group 5). Group 2 mentioned that metacognitive awareness in teaching challenged them to (a) "revise our lesson plan and the whole teaching; (b) find different techniques that will work better for the next teaching, and (c) ask ourselves how well we have accomplished our teaching goals once we are finished". Group 4 realized that metacognitive awareness used after teaching helped them "always think about what we have done and what we should improve. If the teaching technique should be improved, we will improve it in the next teaching. Briefly, we just want to be better in the next chance".

3.3 Suggestions for implementing MAIT

Students gave suggestions mainly to the teachers who wanted to implement metacognitive awareness in teaching rather than to the lecturers who taught them MAIT. Group 1, for example, gave two suggestions, namely: (a) "focus on each point of MAIT; and (b) try to implement each point of MAIT in the learning activities". Group 3 came up with three suggestions, i.e.:

(1) The teachers should have a list of teaching goals to be achieved; (2) The teachers should be aware of their weaknesses and strengths; and (3) The teachers should have a self-reflection after they finish their teaching to know what should be improved for the next teaching.

As demonstrated in their reflections, students generally showed favourable perceptions toward implementing metacognitive awareness in teaching. They also acknowledged the positive contributions of the increased metacognitive awareness in their teaching.

Discussion

This research was conducted to answer one main question, i.e., how can reflections empower Indonesian PSETs' metacognitive awareness in teaching? Quantitative and qualitative data analyses indicated the power of reflections to raise and increase PSETs' metacognitive awareness in teaching.

Quantitative data analyses of their responses to the pre-and post-semester questionnaire indicated that they were more aware of the knowledge of cognition and regulation of cognition in teaching post-semester. The PSETs' knowledge of cognition in teaching improved, consisting of declarative, procedural, and conditional knowledge, which helped them in their teaching. For example, PSETs admitted to having control over how well they taught (i.e., declarative knowledge), as indicated by the mean increase (Decl3/mean increase of 1.33). Declarative knowledge in teaching, which constitutes their concept of teaching (Balcikanli, 2011; Mbato, 2019), aided PSETs in developing their knowledge base about teaching. They also admitted having improved their procedural knowledge, i.e., knowing the skills in teaching (see, e.g., Balcikanli, 2011; Mbato, 2019). Quantitative data showed, for example, that PSETs had increased their awareness of using helpful teaching techniques automatically (Pro8/Mean increase of 1.31). Similarly, they acknowledged that they had improved conditional knowledge in teaching, namely, knowing when, why, and with whom to use specific knowledge and skills (Balcikanli, 2011; Mbato, 2019). They also reported improvements in the four areas of conditional knowledge in teaching: (a) knowing their strengths to compensate for their weaknesses in teaching; (b) being able to motivate themselves to teach when they needed to teach. (c) being able to employ various teaching techniques as required by the situation; and (d) knowing when a teaching technique they used would be most productive.

Furthermore, they admitted that they had increased their ability to regulate their teaching in planning, monitoring, and evaluation. Before teaching, metacognitive awareness had helped PSETs better prepare for their teaching. For example, they admitted possessing the ability to organize their time to best accomplish their teaching goals (Plan16/mean increase of 1.26). In addition, PSETs stated that they could monitor their teaching more often. For instance, they acknowledged assessing how useful their teaching techniques were while they were teaching (Mon18/Mean increase of 1.31).

Similarly, PSETs mentioned being more capable of evaluating their teaching after participating in the research. An instance of this improvement was shown in PSETs' response to statement 22. PSETs mentioned they asked themselves if they might have utilised other techniques after teaching (the mean increase of 0.82). Paired samples t-test clearly indicated the significant increase of PSETs' perception about the implementation of metacognitive awareness in (the presemester level, 3.19, SD = 0.22, and post-semester level, 3.91, SD = .24, t(23) = -10.88, p<.05).

The results from these quantitative data had much support from the qualitative data analyses where PSETs acknowledge the increase in metacognitive awareness and its impact on teaching. Data from the dissemination of MAIT, summative reflections, and FGDs highlighted the considerable benefits of metacognitive awareness training for PSETs' teaching in preparation, implementation, and evaluation. For instance, S09 reported the positive contribution of MAIT in helping her to become more prepared and aware before, while, and after teaching. Another example was from Group1: "We can understand what points *we have to prepare before teaching in the class.*" PSETs also appreciated the benefits of becoming aware of their metacognition while teaching. Group 3 expressed that they could control their classroom management strategies, change to another strategy if students felt bored, and manage their time well while teaching.

Findings in this study corroborated previous studies (e.g., Aktağ et al., 2017; Gopinath, 2014; Palantis et al., 2017), which

Commented [M9]: From about

asserted that being metacognitively aware benefits not only the teachers but also PSETs' learning and the class atmosphere. Additionally, the results indicate the importance of teachers learning strategies to effectively and successfully engage in reflective practices (Ong et al., 2020). While acknowledging that metacognitive awareness in teaching benefits teachers and students, few studies have used strategies to train teachers to be metacognitively aware. Because of its importance in the teachers' profession and its impact on teaching and learning, intentional learning and explicit training of metacognitive awareness for teachers need to be implemented (Aktağ et al., 2017; Palantis et al., 2017).

This research has shown that reflections have the power to increase teachers' metacognitive awareness in teaching. The positive impacts were also evident in PSETs' increased responses to the metacognitive awareness questionnaire postsemester. Their responses to the questionnaire about the role of reflections in their metacognitive awareness (see Table 4 above) demonstrated that reflections helped them develop their metacognitive awareness in teaching before, while, and after teaching. They positively perceived the impacts of reflections on their metacognitive awareness, as indicated by the average mean of 4.14 out of 5 and supported by the qualitative data. The findings in this study enrich the views of many authors about the power of reflections in increasing teachers' professional learning and development (see, e.g., Arslan, 2019; Davis & McDonald, 2019).

However, as indicated in the introduction and literature sections of the article, few studies have been done to facilitate pre-service teachers' metacognitive awareness in teaching. Some studies have partially focused on several aspects of teachers' metacognition. For example, the research conducted by Tosriadi et al. (2018) focused on the teachers' reflections on pedagogical content knowledge, which, in the light of metacognitive awareness, was related to declarative knowledge and procedural knowledge (Balcikanli, 2011). Another recent study by Davis and McDonald (2019) discovered that reflections focused on self-evaluation could positively impact the teachers' professional development. This study focused on one element of regulation of cognition, i.e., evaluation (Balcikanli, 2011). The current study corroborated Abdellah's (2015) urge for pre-service teachers to possess metacognition in teaching and more research on pre-service teachers' strategies to increase their metacognitive awareness in teaching performance. This study indicated that increased metacognitive awareness in teaching could improve pre-service teachers' self-belief and perception of subject matter competence (Alkan & Erdem, 2014).

The current research partly fills the gap and enriches other studies about the importance of metacognitive awareness in teaching (Aktağ et al., 2017; Gopinath, 2014; Ong et al., 2020; Palantis et al., 2017) in that it used a more comprehensive metacognitive awareness inventory (Balcikanli, 2011). The MAIT implemented in this research also strengthened the use of reflections and their potential to enhance teachers' metacognitive awareness in teaching (Amalia et al., 2020; Arslan, 2019; Davis & McDonald, 2019; Tosriadi et al., 2018). Reflections, used in this research to train PSETs' metacognitive awareness in teaching, could increase their capability to examine their teaching and its results (Fox et al., 2019). The increased metacognitive awareness in teaching could profoundly impact teachers' teaching and student learning.

Conclusion

This study provides significant evidence of the PSETs' positive perceptions of implementing reflections in empowering their metacognitive awareness in teaching. The quantitative and qualitative data indicated that their metacognitive awareness in teaching was empowered. The increased metacognitive awareness enabled them to prepare their teaching well and anticipate what was likely to occur in the actual teaching. Such awareness before teaching prompted them to prepare strategies and materials to cope with 'the unexpected' in class. Being metacognitively aware while teaching empowered them to focus on students and their learning and the strategies to solve the problems encountered in the teaching-learning process; thus, they were more in control of their teaching. Being metacognitively aware after teaching assisted them in evaluating their teaching, the strategies, the learning materials, and PSETs' learning progress. Facilitated through explicit reflections, possessing and displaying heightened metacognitive awareness in teaching could empowere PSETs' metacognitive awareness in teaching. It was evident in this research that reflections could be utilised to increase PSETs' metacognitive awareness in teaching.

Recommendations

This research suggests that, while beneficial, enhancing metacognitive awareness in teaching takes time, patience, a strong commitment, and purposeful efforts from teachers and students.

Future researchers and university lecturers interested in investigating teachers' metacognitive awareness in teaching are advised to conduct their study over a more extended period. Teachers, lecturers, and future researchers may also need to focus on the impacts of teachers' and peers' feedback when training metacognition for pre-service and in-service teachers.

Limitations

This research was conducted for a short period of only four months. This study did not collect data about the impacts of teachers' and peers' feedback on students' reflections and metacognitive awareness in teaching. In addition, the validity

Commented [M10]: From 'about'

2508 | MBATO & TRIPRIHATMINI / Pre-service English Teachers' Metacognitive Awareness in Teaching through Reflections

of the second questionnaire had not been tested before its administration. Future researchers may need to test its validity before using it.

Funding

The research project (Data Collection and Analysis and Research Report) was funded by the Centre for Research and Community Service (*LPPM*), Sanata Dharma University, Indonesia.

Authorship Contribution Statement

Mbato: Conceptualization, design, data acquisition, data analysis/interpretation, drafting manuscript, critical revision of manuscript, statistical analysis, securing funding, admin, technical or material support, supervision, final approval. Triprihatmini: Data acquisition, securing funding, admin, technical or material support, supervision, and final approval.

References

- Abdellah, R. (2015). Metacognitive awareness and its relation to academic achievement and teaching performance of preservice female teachers in Ajman University in UAE. *Procedia - Social and Behavioral Sciences, 174,* 560 – 567. https://doi.org/10.1016/j.sbspro.2015.01.707
- Aktağ, I., Şemşek, O., & Tuzcuoğlu, S. (2017). Determination metacognitive awareness of physical education teachers. Journal of Education and Training Studies, 5(9), 63-69. <u>http://doi.org/10.11114/jets.v5i9.2511</u>
- Alkan, F., & Erdem, E. (2014). The relationship between metacognitive awareness, teacher self-efficacy and chemistry competency perceptions. Procedia - Social and Behavioral Sciences, 143, 778-783. https://doi.org/10.1016/j.sbspro.2014.07.475
- Al-Shaboul, Y., Al-Azaizeh, M., & Al-Dosari, N. (2020). Differentiated instruction between application and constraints: Teachers' perspective. *European Journal of Educational Research*, 10(1), 127-143. <u>https://doi.org/10.12973/eu-jer.10.1.127</u>
- Amalia, L. L., Widiati, U., Basthomi, Y., & Cahyono, B. Y. (2020). Reflective practice on lesson planning among EFL teacher educators. *Indonesian Journal of Applied Linguistics*, 10(1), 153-160. <u>https://doi.org/10.17509/ijal.v10i1.25025</u>
- Ambrosetti, A., & Dekkers, J. (2010). The interconnectedness of the roles of mentors and mentees in pre-service teacher education mentoring relationships. *Australian Journal of Teacher Education*, 35(6), 42-55. <u>https://doi.org/10.14221/aite.2010v35n6.3</u>
- Arslan, F. Y. (2019). Reflection in pre-service teacher education: Exploring the nature of four EFL pre-service teachers' reflections. *Reflective Practice*, 20(1), 111-124. <u>https://doi.org/10.1080/14623943.2018.1564652</u>
- Bakar, A. Y. A., Amat, S., & Mahmud, M. I. (2019). Issues and challenges of 21st century teaching and learning: The Malaysian experience. International Journal of Management and Applied Science, 5(12), 6-11. <u>https://bit.ly/3r5ov10</u>
- Balcikanli, E. (2011). Metacognitive awareness inventory for teachers (MAIT). Electronic Journal of Research in Educational Psychology, 9(3), 1309-1332. <u>http://doi.org/10.25115/eirep.v9i25.1620</u>
- Bećirovic, S., Brdarević-Čeljo, A., & Sinanović, J. (2017). The use of metacognitive reading strategies among students at International Burch University: A case study. *European Journal of Contemporary Education*, 6(4), 645-655. https://doi.org/10.13187/ejced.2017.4.645
- Beziat, T. L., Bynum, Y., & Klash, E. F. (2018). Metacognitive awareness and mindset in current and future principals. School Leadership Review, 12(2) 23-31. <u>https://bitly/3T1gsPi</u>
- Bowen, P., Rose, R., & Pilkington, A. (2017). Mixed methods-theory and practice. Sequential, explanatory approach. International Journal of Quantitative and Qualitative Research Methods, 5(2), 10–27. <u>https://bit.ly/3qZsehi</u>
- Cao, Z., & Lin, Y. (2020). A study on metacognitive strategy use in listening comprehension by vocational college students. English Language Teaching, 13(4), 127-139. <u>https://doi.org/10.5539/eltv13n4p127</u>
- Chang, B. (2019). Reflection in learning. Online Learning, 23(1), 95-110. http://doi.org/10.24059/olj.v23i1.1447
- Creswell, J. W., & Clark, V. L. P. (2017). Designing and conducting mixed methods research (3rd ed.). Sage.
- Daguay-James, H., & Bulusan, F. (2020). Metacognitive strategies on reading English texts of ESL freshmen: A sequential explanatory mixed design. *TESOL International Journal*, 15(1), 20-30. <u>https://bitly/3rYIDmR</u>
- Davis, A., & McDonald, D. (2019). Teachers' reflections of instructional effectiveness: Self-assessment through a standards-based appraisal process. *Reflective Practice*, 20(1), _ _ 125-141. _ _ Commented [M14]: İnitially 20(10) <u>https://doi.org/10.1080/14623943.2019.1569508</u>

Commented [M11]: İnitially Alkam. The correct one is Alkan

Commented [M13]: The DOI is correct but can't be opened.

Commented [M12]: Before: 117-132

European Journal of Educational Research 2509

- de Jager, T. (2019). Impact of ePortfolios on science student-teachers' reflective metacognitive learning and the development of higher-order thinking skills. *Journal of University Teaching & Learning Practice, 16*(3), <mark>1-15</mark>. https://doi.org/10.53761/1.16.3.3
- Fakhomah, D. N., & Utami, M. S. (2019). Pre-service English teacher perception about higher order thinking skills (HOTS) in the 21st century learning. International Journal of Indonesian Education and Teaching, 3(1), 41-49. https://doi.org/10.24071/ijiet.v3i1.1676
- Filiz, B., & Durnali, M. (2019). The views of pre-service teachers at an internship high school on pedagogical formation program in Turkey. European Journal of Educational Research, 8(2), 395-407. https://doi.org/10.12973/eujer.8.2.395
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. American Psychologist, 34(10), 906-911. https://doi.org/10.1037/0003-066X.34.10.906
- Fox, R. K., Dodman, S., & Holincheck, N. (2019). Moving beyond reflection in a hall of mirrors: Developing critical reflective capacity in teachers and teacher https://doi.org/10.1080/14623943.2019.1617124 educators, Reflective Practice, 20(3), 367-382.
- Gabrijelčič, M. K., Antolin, U., & Istenič, A. (2021). Teacher's social and emotional competences: A study among student teachers and students in education science in Slovenia. European Journal of Educational Research, 10(4), 2033-2044. https://doi.org/10.12973/eu-jer.10.4.2033

Gibson, W. J., & Brown, A. (2009). Working with qualitative data. Sage. https://doi.org/10.4135/9780857029041

- Gopinath, L. S. (2014). Metacognitive awareness in teaching and teaching competency: A survey on student teachers at secondary level. IOSR Journal of Research & Method in Education, 4(4), 33-35. https://doi.org/10.9790/7388-04453335
- Hamiddin, H., & Saukah, A. (2020). Investigating metacognitive knowledge in reading comprehension: The case of Indonesian undergraduate students. *Indonesian Journal of Applied Linguistics*, 9(3), 608-615. https://doi.org/10.17509/ijal.v9i3.23211
- Hermagustiana, I., Hamra, A., Rahman, A. Q., & Salija, K. (2017). Reflection of teacher cognition in EFL vocabulary instructional practices. International Journal English of Linguistics, 7(5), http://doi.org/10.5539/ijel.v7n5p34
- Holzberger, D., Praetorius, A. K., Seidel, T., & Kunter, M. (2019). Identifying effective teachers: The relation between teaching profiles and students' development in achievement and enjoyment. European Journal of Psychology of Education, 34(4), 801-823. https://doi.org/10.1007/s10212-018-00410-8
- Kelle, U., Kühberger, C., & Bernhard, R. (2019). How to use mixed-methods and triangulation designs: An introduction to https://doi.org/10.18546/HERJ.16.1.02 Education Research Journal, 16(1), 5-23.
- Külekçi, G. (2018). Identifying the perceptions of prospective English language teachers on characteristics of effective teachers: Who is the ideal teacher? Novitas-ROYAL, 12(1), 1-15. https://bit.ly/3ysiU9X
- Lupascu, A. R., Pânisoară, G., & Pânisoară, I. O. (2014). Characteristics of effective teacher. Procedia Social and Behavioral Sciences, 127, 534 - 538. https://doi.org/10.1016/j.sbspro.2014.03.305
- Mattew, P., Mathew, P., Prince, & Peechattu, P. J. (2017). Reflective practices: A means to teacher development. Asia Pacific Journal of Contemporary Education and Communication Technology, 3(1), 126-131. https://bit.ly/3EtPM5T
- Mbato, C. L. (2019). Indonesian EFL learners' critical thinking in reading: Bridging the gap between declarative, procedural and conditional knowledge. Humaniora, 31(1), 92-101. http://doi.org/10.22146/jh.v31i1.37295 Merriam, S. B. (2009). Qualitative research: A guide to design and implementation. Jossey-Bass.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded source book.* (2nd ed.). Sage.

Mitana, J. M. V., Muwagga, A. M., & Ssempala, C. (2018). Assessment of higher order thinking skills: A case of Uganda http://doi.org/10.30918/AERJ.64.18.083 Educational Research Journal, 6(4), 240-249.

Nurhapsari, A., & Mbato, C. L. (2019). Motivation to learn English: Why Indonesian adult learners join a community of interest. Anima Indonesian Psychological Journal, 34(2), 65-75. https://doi.org/10.24123/aipi.v34i2.2202

Okogbaa, V. (2017). Preparing the teacher to meet the challenges of a changing world. Journal of Education and Practice, 8(5), 81-86. https://bit.ly/3CKpOKh

Ong, W. A., Swanto, S., & Alsaqqaf, A. (2020). Engaging in reflective practice via vlogs: Experience of Malaysian ESL pre-

Commented [M15]: Previously: 1-17 (indeed the page numbers are not very clear in the artcile

Commented [M16]: Sorry, Prince was missing before. Will try to use Mendelay next time.

Commented [M17]: This is the original url: https://apiar.org.au/journal-paper/reflective-practices-ameans-to-teacher-development/

There is no DOI. I copied the wrong one before (below is wrong): https://doi.org/10.17509/ijal.v10i3.31752

2510 MBATO & TRIPRIHATMINI / Pre-service English Teachers' Metacognitive Awareness in Teaching through Reflections

service teachers. Indonesian Journal of Applied Linguistics, 9(3), 715-723. https://doi.org/10.17509/ijal.v9i3.23222

Oxford, R. L. (2016). Teaching and researching language learning strategies: Self-regulation in context (1st ed.). Routledge. https://doi.org/10.4324/9781315719146

- Palantis, N. J., Mohamed, A., Ibrahim, A. S. M., Ismail, S. H., Anuar, N. K., Marof, A. M., & Buang, N. (2017). Patterns of metacognitive awareness among primary school teachers. *Varia Pendidikan*, 29(2), 141-146. <u>https://doi.org/10.23917/varidika.v29i2.5629</u>
- Poedjiastutie, D., Akhyar, F., Hidayati, D., & Gasmi, F. N. (2018). Does curriculum help students to develop their English competence? A case in Indonesia. Arab World English Journal, 9(2),175-185. https://doi.org/10.24093/awej/vol9no2.12
- Schraw, G., & Dennison, R. S. (1994). Assessing metacognitive awareness. Contemporary Educational Psychology, 19(4), 460–475. <u>https://doi.org/10.1006/ceps.1994.1033</u>
- Senel, M. (2021). Exploring ELT students' professional identity formation through the perspectives of critical incidents. European Journal of Educational Research, 10(2), 629-640. <u>https://doi.org/10.12973/eu-jer.10.2.629</u>
- Soodla, P., Jögi, A. L., & Kikas, E. (2017). Relationships between teachers' metacognitive knowledge and students' metacognitive knowledge and reading achievement. *European Journal of Psychology of Education*, 32(2), 201–218. https://doi.org/10.1007/s10212-016-0293-x
- Subia, G. S., Marcos, M. C., Pascual, L. E., Tomas, A. V., & Liangco, M. M. (2020). Cognitive levels as measure of higher-order thinking skills in senior high school mathematics of science, technology, engineering and mathematics (STEM) graduates. *Technology Reports of Kansai University*, 62(3), 261-268. <u>https://bitly/3Ra4DVO</u>
- Sumardi, L., Rohman, A., & Wahyudiati, D. (2020). Does the teaching and learning process in primary schools correspond to the characteristics of the 21st century learning? *International Journal of Instruction*, 13(3), 357-370. http://doi.org/10.29333/iji.2020.13325a
- Tosriadi, T., Asib, A., Marmanto, S., & Azizah, U. A. (2018). In-service EFL teachers' reflection as a pathway to develop teacher professionalism. International Online Journal of Education and Teaching, 5(4), 921-932. https://bitly/3T1A2Lo
- Utami, D. R. T., Pranoto, Y. K. S., Latiana, L., & Sunawan. (2021). Agreement levels of kindergarten principals and teachers to determine teaching competencies and performance. *European Journal of Educational Research*, 10(2), 537-551. <u>https://doi.org/10.12973/eu-jer.10.2.537</u>
- Zohrabi, M. (2013). Mixed method research: Instruments, validity, reliability and reporting findings. Theory and Practice in Language Studies, 3(2), 254-262. https://doi.org/10.4304/tpls.3.2.254-262

Commented [M18]: These are diffrent from the "How to cite" which is 716-724. The ones cited are the actual pages in the article

Commented [M19]: İnitally 1-14

European Journal of Educational Research | 2511

Appendix 1

Metacognitive Awareness Inventory in Teaching

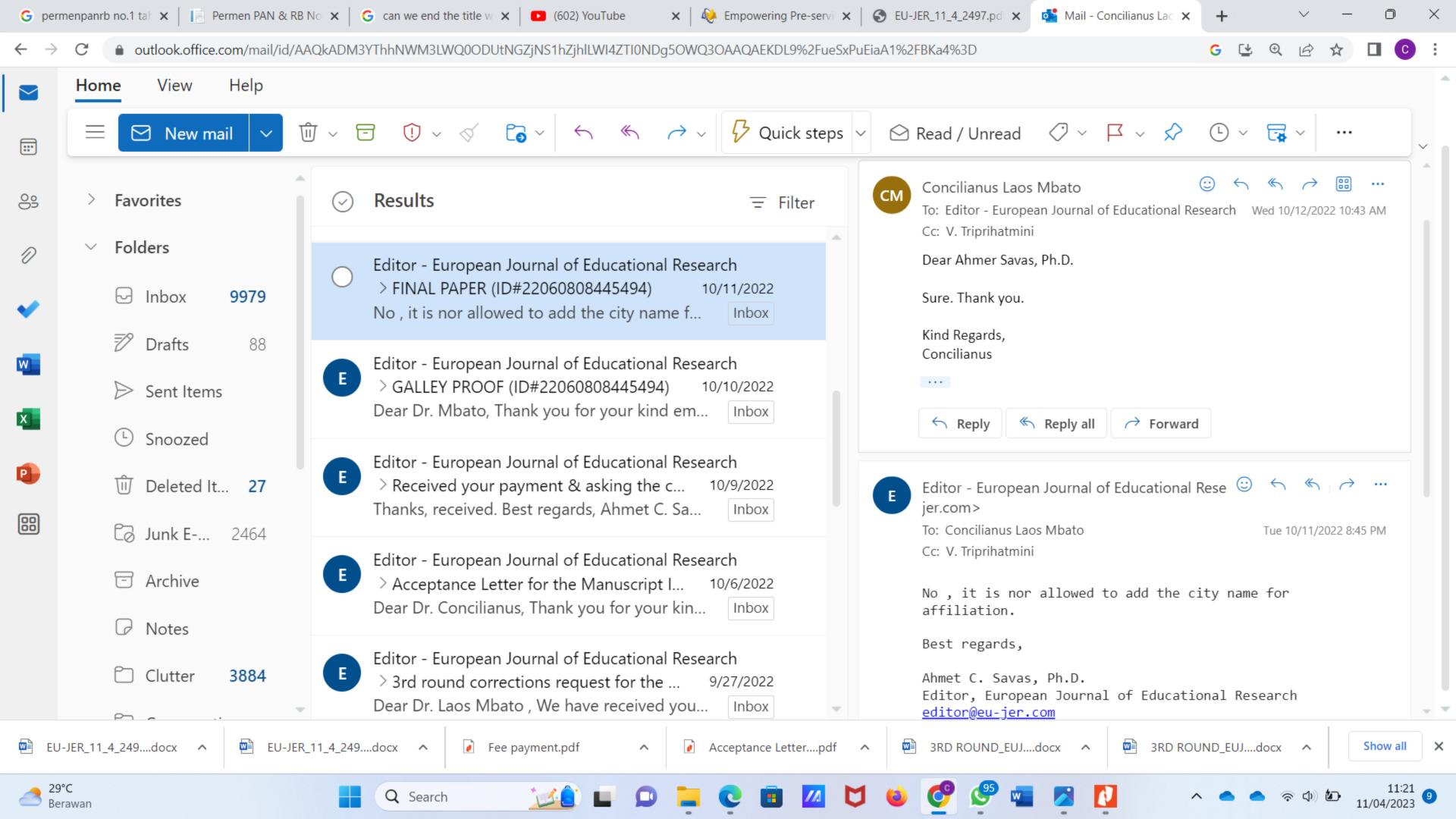
No	Statements
Decl1	I am aware of the strengths and weaknesses in my teaching.
Decl2	I know what skills are most important
Decl3	I have control over how well I teach.
Decl4	I know what I am expected to teach.
Proc5	I try to use teaching techniques that worked in the past.
Proc6	I have a specific reason for choosing each teaching technique in class.
Proc7	I am aware of what teaching techniques I use while I am teaching.
Proc8	I use helpful teaching techniques automatically.
Con9	I use my strengths to compensate for my weaknesses in my teaching.
Con10	I can motivate myself to teach when I really need to teach.
Con11	I use different teaching techniques depending on the situation.
Con12	I know when each teaching technique I use will be most effective.
Plan13	I pace myself while I am teaching in order to have enough time.
Plan14	I set my specific teaching goals before I start teaching.
Plan15	I ask myself questions about the teaching materials I am going to use.
Plan16	I organize my time to best accomplish my teaching goals.
Mon17	I ask myself periodically if I meet my teaching goals while I am teaching.
Mon18	I find myself assessing how useful my teaching techniques are while I am teaching.
Mon19	I check regularly to what extent my students comprehend the topic while I am teaching.
Mon20	I ask myself questions about how well I am doing while I am teaching.
Eval21	I ask myself how well I have accomplished my teaching goals once I am finished.
Eval22	I ask myself if I could have used different techniques after each teaching experience.
Eval23	After teaching a point, I ask myself if I'd teach it more effectively next time.
Eval24	I ask myself if I have considered all possible techniques after teaching a point.

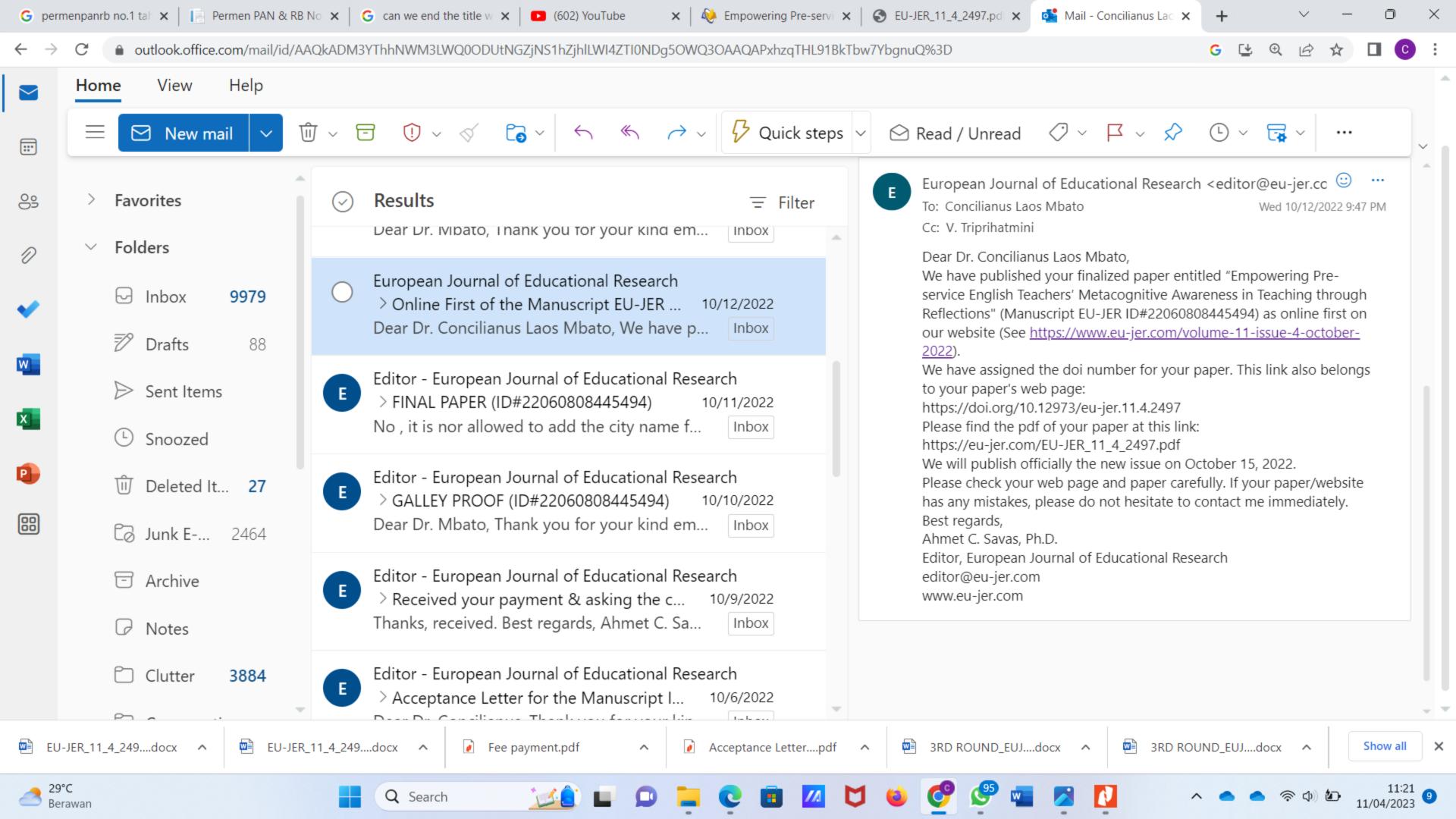
Source: Balcikanli, E. (2011).

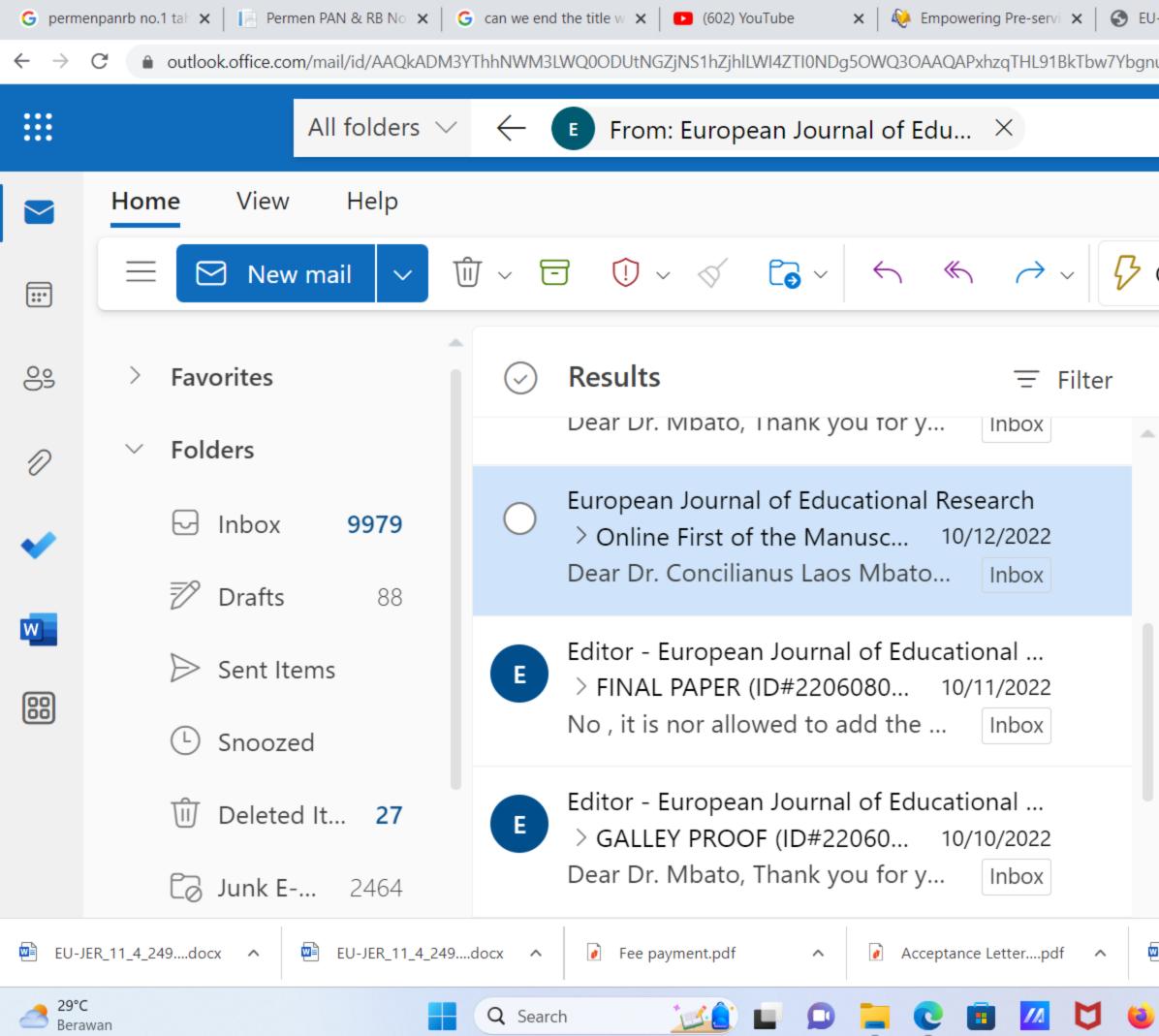
2512 | MBATO & TRIPRIHATMINI / Pre-service English Teachers' Metacognitive Awareness in Teaching through Reflections

		Appendix 2
Conte	ents and Activities	
Week	Contents	Activities
1	 Introduction: Overview of the course Competencies required for a teaching profession 	LectureDiscussionStudent reflection
2	 Classroom Management Activities for Creating A Positive Learning Environment (Positive classroom management activities) Class Interaction 	 Short Lecture Presentation Discussion Student written reflection
3	 Skill Practice 1: set induction, and set closure Skill Practice 2: stimulus variation skills Skill Practice 3: questioning skills 	 Peer teaching Peer evaluation based on the observation sheet Teacher feedback Student written reflection
4		 Teaching small groups using the most appropriate teaching methods and strategies in their classes Teacher oral feedback Student written reflection
5	Dissemination of Metacognitive	Teaching small groups
6	8 8 1 6	Whole class teaching
7	0 0	Workshop Teacher feedback
8	Mid-Test 1 using MAIT	 Individual teaching of the whole class @ 25-30 minutes**
10	Mid-Test 2 using MAIT	 Individual teaching the whole class @ 25-30 minutes*
11	Mid-Test 3 using MAIT	 Individual teaching the whole class @ 25-30 minutes* Peer feedback Teacher feedback Student written reflection based on MAIT
12	Lesson Planning 2 using MAIT	 Discussion Workshop Peer feedback Teacher feedback Student written reflection based on MAIT
13		 Individual teaching the whole class @ 25-30 minutes* Whole class feedback Teacher feedback SUMMATIVE REFLECTION BASED ON MAIT**
14		 Individual teaching the whole class @ 25-30 minutes** Whole class feedback Teacher feedback SUMMATIVE REFLECTION BASED ON MAIT**
15	Final Test 3 using MAIT	 Individual teaching the whole class @ 25-30 minutes* Whole class feedback Teacher feedback SUMMATIVE REFLECTION BASED ON MAIT**
16	Final Test 4 using MAIT	 Individual teaching the whole class @ 25-30 minutes** Whole class feedback Teacher feedback SUMMATIVE REFLECTION BASED ON MAIT**

* depends on the number of students in the class ** Applies to the students who taught in that particular week







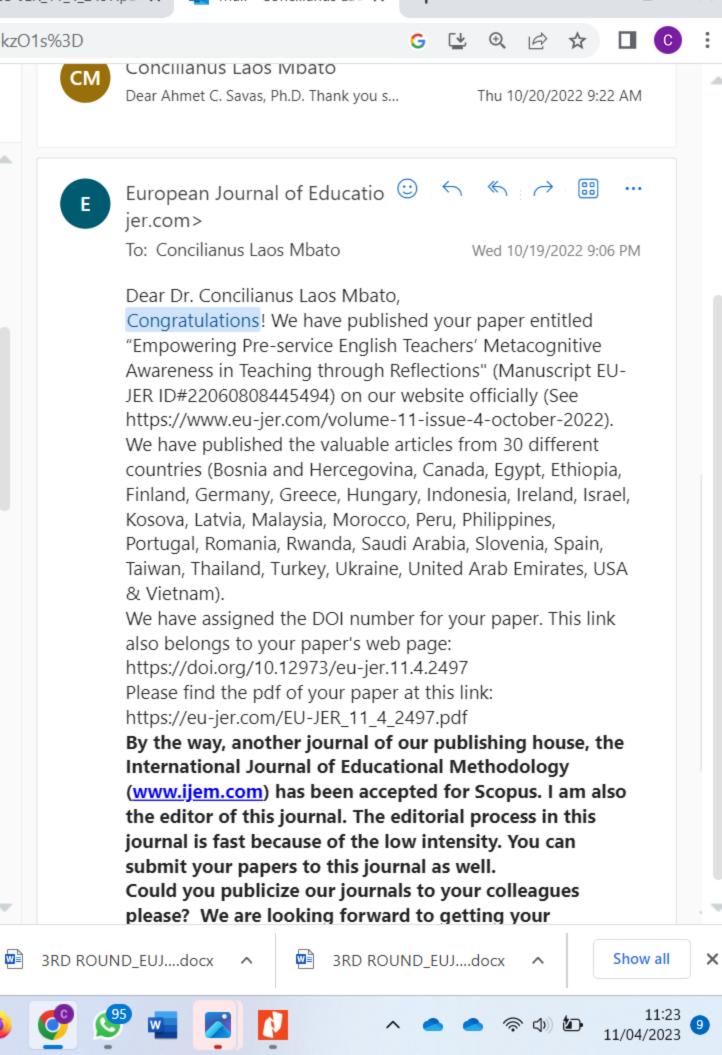
J-JER_11_4_2497.pd ×	💁 Mail - C	oncilianus Lao	× +	\sim	- 0	\times
uQ%3D			G 🗳		☆ 🛛 🖸	:
	Ξ	Q		Teams cal	I CM	
Quick steps Online Fi JER ID#2	irst of th	ne Man	uscript	✓ ✓ EU-	✓ ✓ ✓ ✓	
To: Cc: Dea Tha it of Kind Con	ut. d Regards, ncilianus	Journal of tmini . Savas, Ph	Educ Thu .D. ne great ne	• 10/13/2022 1 ews. We will	check	
B 3RD ROUND_EUJ	docx 🔨	🖻 3RD	ROUND_EUJ.	docx 🔨	Show all	×
🕐 🤩 🖷			^	🌰 🛜 ଦେ) 🌢	D 11:21 11/04/2023	9

🗙 🔌 Empowering Pre-servi 🗙 🌑 EU-JER_11_4_2497.pd 🗙 📑 Mail - Concilianus Lao 🗙 G permenpanrb no.1 tak 🗙 | 📔 Permen PAN & RB No 🗙 | G can we end the title w 🗙 | 💌 (602) YouTube • outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQALPaPj%2BEnVpEuMbo7JkzO1s%3D Results **Favorites** = Filter \checkmark Folders Editor - European Journal of Educational ... \mathcal{D} > Congratulations! Your pap... 10/20/2022 Inbox Dear Dr. Mbato, Thank you for y... 6J 9979 Inbox 79 Drafts 88 European Journal of Educational Research Е > Online First of the Manusc... 10/12/2022 Sent Items \rightarrow Dear Dr. Concilianus Laos Mbato... Inbox 88 (L)Snoozed Editor - European Journal of Educational ... Ε > FINAL PAPER (ID#2206080... 10/11/2022 Deleted It... 27 $\overline{\Pi}$ No, it is nor allowed to add the ... Inbox **Junk E-...** 2464 Editor - European Journal of Educational ... Е > GALLEY PROOF (ID#22060... 10/10/2022 -Archive Dear Dr. Mbato, Thank you for y... Inbox $\left[\right]$ Notes Editor - European Journal of Educational ... Ε > Received your payment & ... 10/9/2022 P Clutter 3884 Thanks, received. Best regards, A... Inbox \sim 🖻 EU-JER_11_4_249....docx 🔨 EU-JER_11_4_249....docx Fee payment.pdf 0 Acceptance Letter....pdf \sim \sim

Q

Search

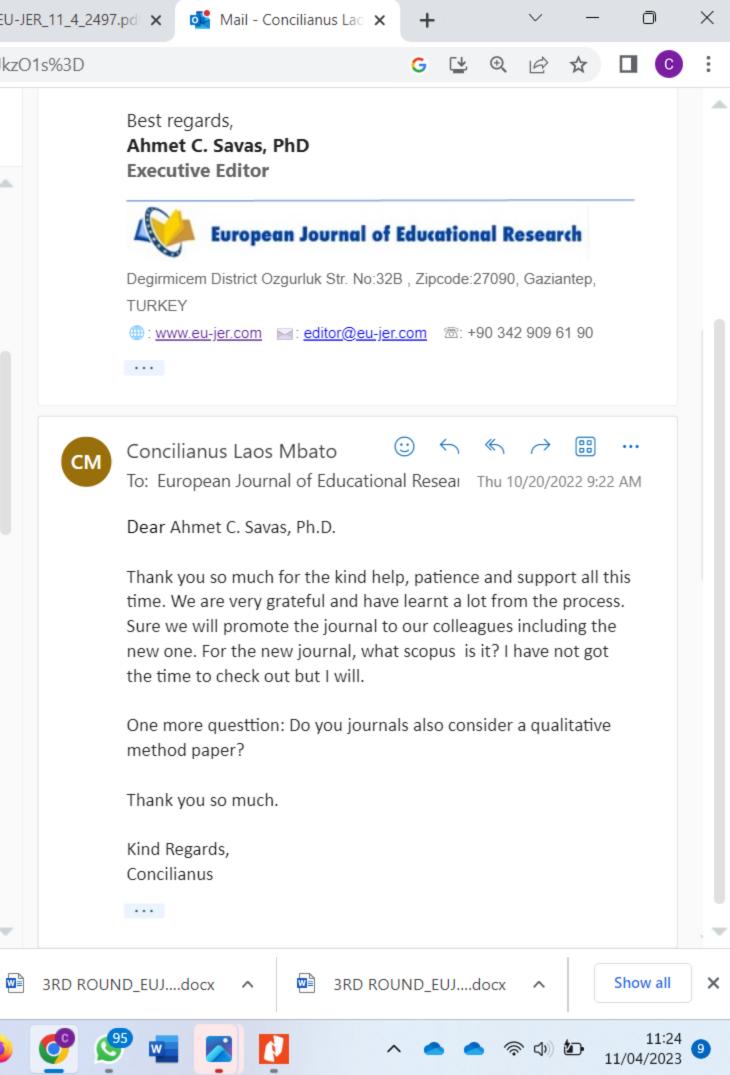




G permenpanrb no.1 tal 🗙 | 📔 Permen PAN & RB No 🗙 | G can we end the title w 🗙 | 💌 (602) YouTube 🗙 🛛 🖗 Empowering Pre-servi 🗙 🖌 🌍 EU-JER_11_4_2497.pdf 🗙 • outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQALPaPj%2BEnVpEuMbo7JkzO1s%3D Results **Favorites** = Filter \checkmark Folders Editor - European Journal of Educational ... \mathcal{D} > Congratulations! Your pap... 10/20/2022 Inbox Dear Dr. Mbato, Thank you for y... 6J 9979 Inbox 79 Drafts 88 European Journal of Educational Research Е > Online First of the Manusc... 10/12/2022 Sent Items \rightarrow Dear Dr. Concilianus Laos Mbato... Inbox 88 (L)Snoozed Editor - European Journal of Educational ... Ε > FINAL PAPER (ID#2206080... 10/11/2022 Deleted It... 27 $\overline{\Pi}$ No, it is nor allowed to add the ... Inbox Co Junk E-... 2464 Editor - European Journal of Educational ... Е > GALLEY PROOF (ID#22060... 10/10/2022 7 Archive Dear Dr. Mbato, Thank you for y... Inbox 2 Notes Editor - European Journal of Educational ... Ε > Received your payment & ... 10/9/2022 Clutter 3884 Thanks, received. Best regards, A... Inbox EU-JER_11_4_249....docx Fee payment.pdf Acceptance Letter....pdf EU-JER_11_4_249....docx ^ \sim \sim

Q Search

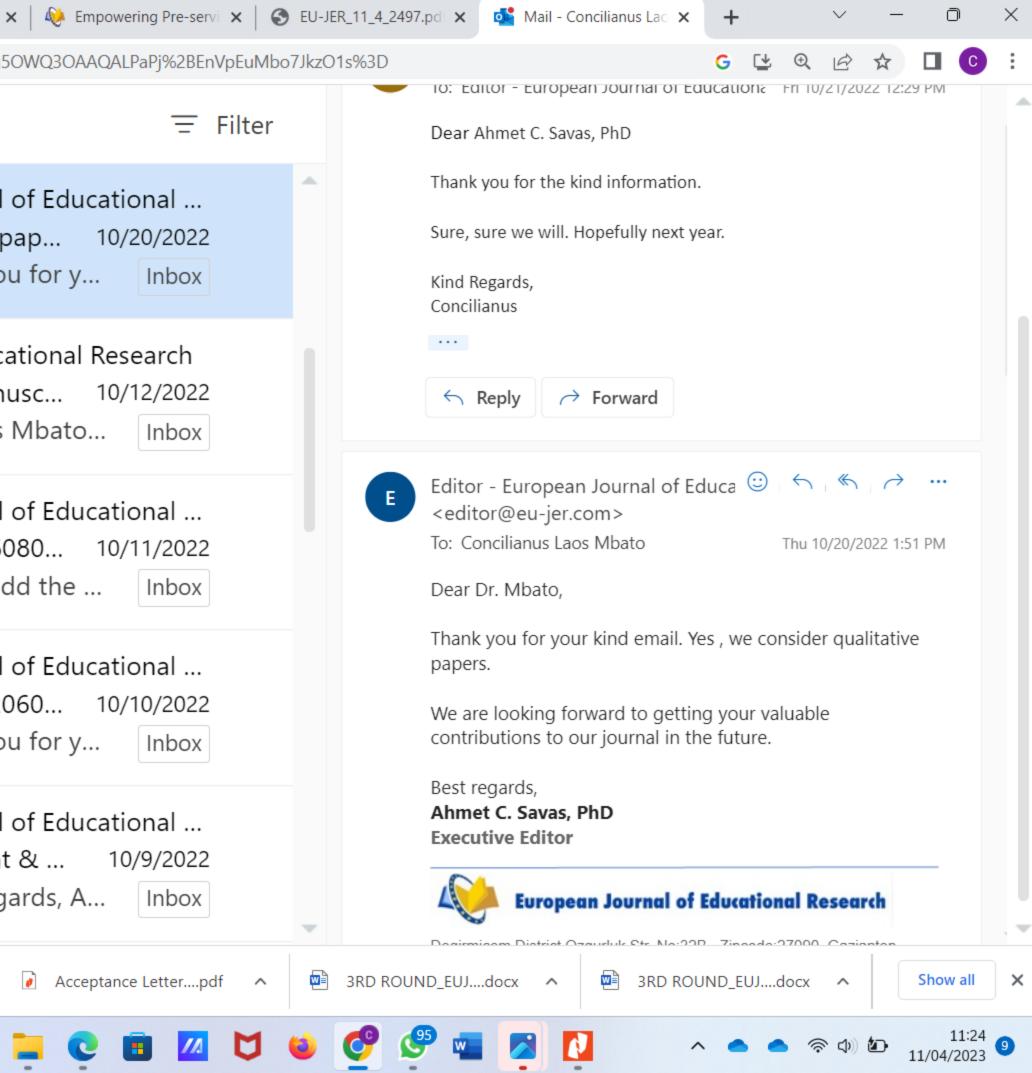


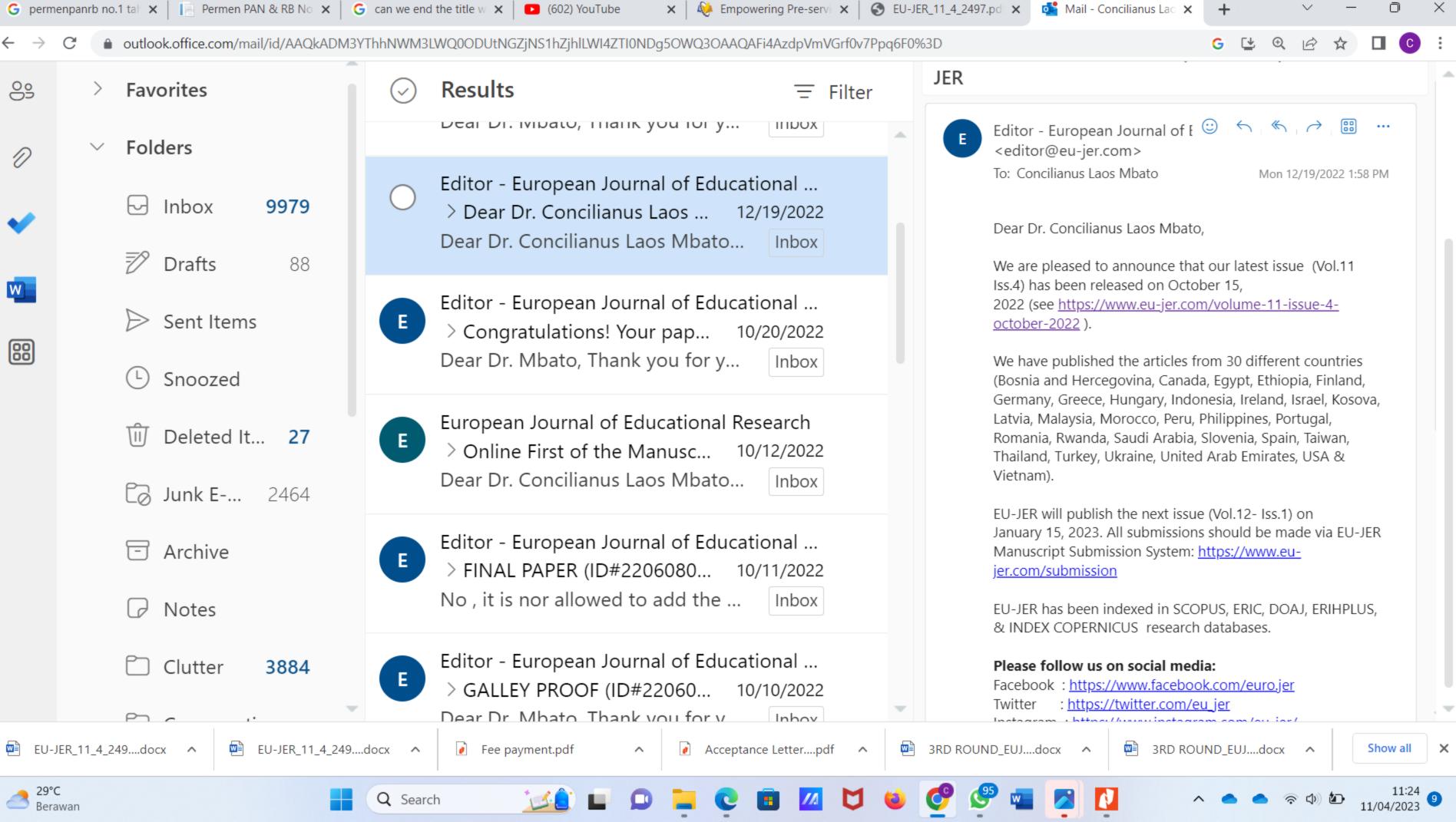


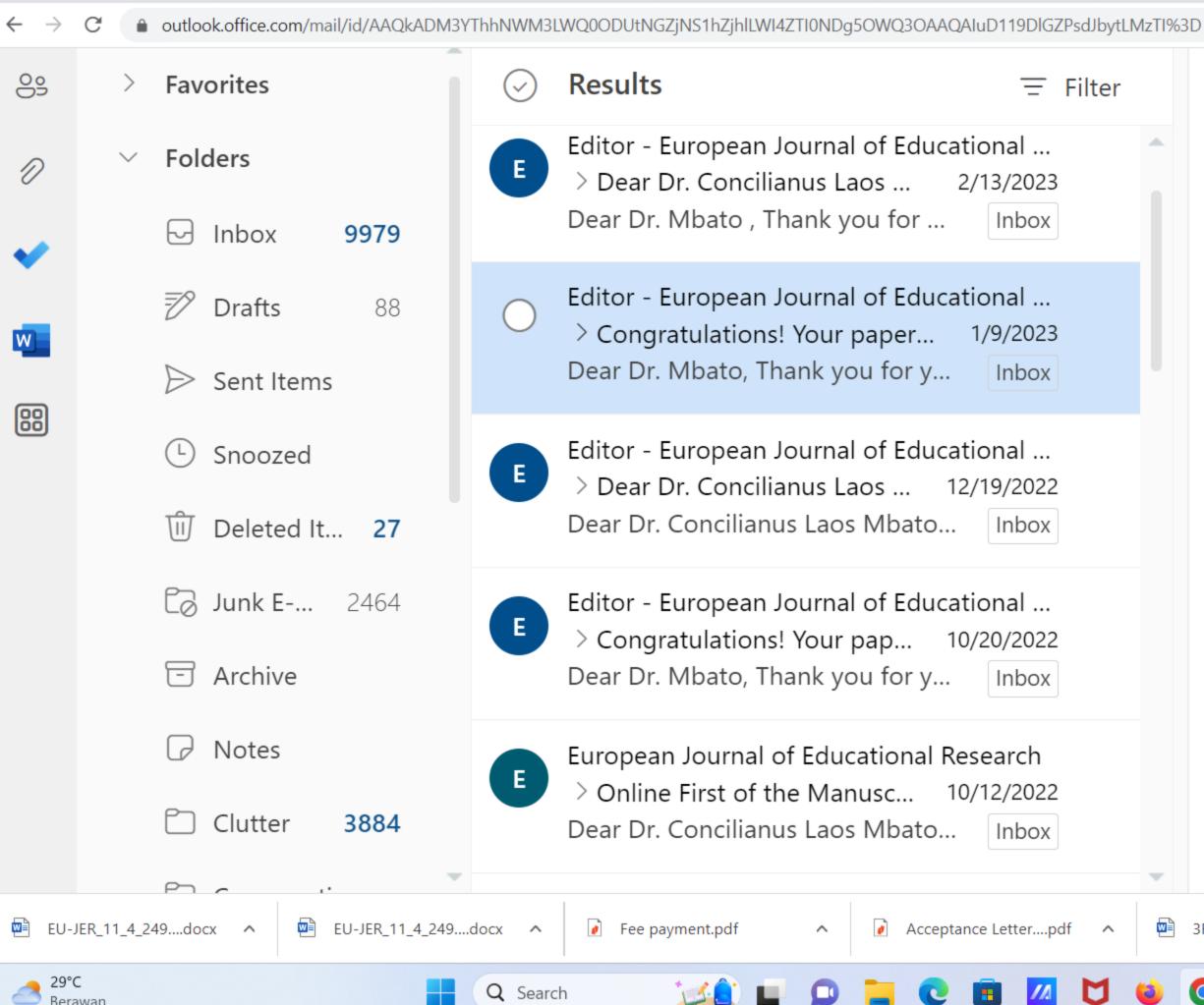
G permenpanrb no.1 tal 🗙 | 📔 Permen PAN & RB No 🗙 | G can we end the title w 🗙 | 🕒 (602) YouTube outlook.office.com/mail/id/AAQkADM3YThhNWM3LWQ0ODUtNGZjNS1hZjhlLWI4ZTI0NDg5OWQ3OAAQALPaPj%2BEnVpEuMbo7JkzO1s%3D Results **Favorites** = Filter \checkmark Folders Editor - European Journal of Educational ... \mathcal{D} > Congratulations! Your pap... 10/20/2022 Inbox Dear Dr. Mbato, Thank you for y... 6J 9979 Inbox Ð Drafts 88 European Journal of Educational Research Ε > Online First of the Manusc... 10/12/2022 Sent Items \geqslant Dear Dr. Concilianus Laos Mbato... Inbox 88 (L)Snoozed Editor - European Journal of Educational ... Е > FINAL PAPER (ID#2206080... 10/11/2022 Deleted It... 27 $\overline{\Pi}$ No, it is nor allowed to add the ... Inbox Co Junk E-... 2464 Editor - European Journal of Educational ... Е > GALLEY PROOF (ID#22060... 10/10/2022 -Archive Dear Dr. Mbato, Thank you for y... Inbox $\left[\right]$ Notes Editor - European Journal of Educational ... Ε > Received your payment & ... 10/9/2022 P Clutter 3884 Thanks, received. Best regards, A... Inbox EU-JER_11_4_249....docx Fee payment.pdf Acceptance Letter....pdf EU-JER_11_4_249....docx 🔨 \sim \sim

Q Search









Ε

European Journal of Educatio

jer.com>

To: Concilianus Laos Mbato

Cc: V. Triprihatmini

Mon 1/9/2023 12:13 AM

Dear Dr. Concilianus Laos Mbato,

As you remember, we have published your paper entitled "Empowering Pre-service English Teachers' Metacognitive Awareness in Teaching through Reflections" (Manuscript EU-JER ID#22060808445494) in our October 2022 issue (Vol.11-Iss.4 https://www.eu-jer.com/volume-11-issue-4-october-2022).

Congratulations! Your paper has been indexed by Scopus and ERIC.

Scopus link: https://www.scopus.com/inward/record.uri? partnerID=HzOxMe3b&scp=85142063218&origin=inward" r el="scopus

ERIC link: https://eric.ed.gov/?g=Triprihatmini&id=EJ1356449

By the way, we need citations, especially from different Scopus articles for increasing our CiteScore. Could you announce your article to your colleagues to cite, please?

Also, we will publish our new issue (Vol. 12-Iss. 1) on January 15, 2022. Please see our latest issue (October 2022) https://www.eu-jer.com/volume-11-issue-4-october-2022). PS. International Journal of Educational Methodology (www.ijem.com), the other journal of our publishing house, has just been indexed in Scopus (See

https://www.scopus.com/sourceid/21101079125). I am also the editor of this journal. You can submit your papers to this journal as well.

3RD ROUND_EUJ....docx 🔨

3RD ROUND_EUJ....docx ^

11/04/2023





