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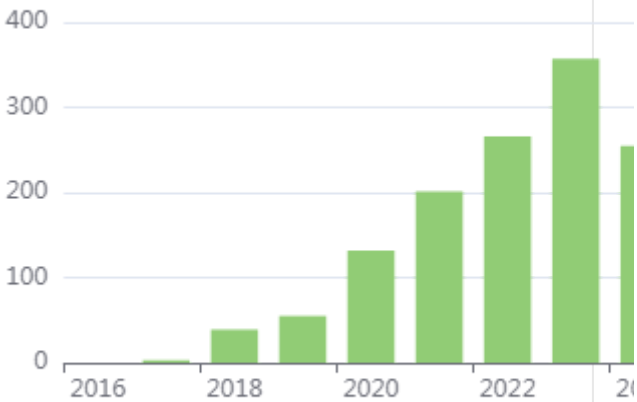📅 2022   DOI: 10.26486/jm.v6i2.2447   ⟳ Accred : Sinta 4

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Students' Perspectives and Experiences About the Elements of Quiziz Gamification in Mathematics Learning During The Covid-19 Pandemic

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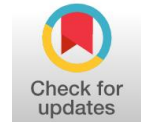
Abstrak

Tujuan penelitian ini adalah mendeskripsikan perspektif dan pengalaman siswa mengenai fitur-fitur Quizizz: papan peringkat, poin, power-ups, redemption questions, dan kunci jawaban dalam pembelajaran daring matematika saat pandemi covid-19. Subjek penelitian ini adalah 32 siswa kelas X MIPA pada salah satu SMA swasta di Yogyakarta. Subjek mengerjakan kuis dengan Quizizz dua kali, lalu mengisi kuesioner terbuka tentang perspektif dan pengalaman siswa mengenai kelima fitur Quizizz. Analisis data dilakukan dengan metode analisis jejaring, tetapi pengkonstruksian tema-tema dilakukan secara manual. Hasil penelitian adalah sebagai berikut. Papan peringkat memberi motivasi subjek untuk bermain lebih baik. Posisi peringkat yang turun mengakibatkan subjek tidak fokus dan tidak percaya diri dalam mengerjakan kuis. Poin mempengaruhi motivasi subjek. Jumlah poin yang dipengaruhi oleh kecepatan menjawab menyebabkan subjek terpancing untuk tergesa-gesa mengerjakan soal. Power-ups merupakan fitur yang didapatkan secara acak oleh subjek. Power-ups dianggap subjek sebagai penghargaan akan tetapi bisa juga dianggap hal aneh dan mengganggu permainan. Redemption Questions adalah fitur yang ditunggu-tunggu oleh subjek. Subjek mengingat-ingat kesalahan dan jawaban benarnya sebagai persiapan dalam menghadapi Redemption Questions. Kunci jawaban sebagai umpan balik digunakan subjek untuk bahan belajar dan evaluasi diri. Semua fitur ini kecuali papan peringkat dipandang subjek tidak cocok untuk diterapkan pada kuis dengan konteks ujian.

Keyword: Perspektif, Gamifikasi, Elemen Quizizz, Pembelajaran Matematika

Abstract

The purpose of this study was to describe students' perspectives and experiences regarding Quizizz's features: leaderboards, points, power-ups, redemption questions, and answer keys in online mathematics learning during the covid-19 pandemic. The subjects of this study were 32 students of class X MIPA at a private high school in Yogyakarta. Subjects took twice quizzes, then filled out an open questionnaire about students' perspectives and experiences regarding the five Quizizz features. Data analysis was carried out using the network analysis method, but the construction of the themes was done manually. The results of the study are as follows. Leaderboards motivate subjects to play better. Points affect the subject's motivation. The number of points causes the subject to be provoked to rush to work on the problem. Power-ups are considered a subject of appreciation but can also be considered strange and disruptive to the game. Redemption Questions is a feature that the subject has been waiting for. Subjects remember the correct answers in preparation for the Redemption Questions. The answer key as feedback is used to study material and self-evaluation. All of these features except the leaderboards were deemed the subject unsuitable for application to quizzes in the context of an exam.

Keyword: Perspective, Gamification, Elements of Quizizz, Mathematics Learning

INTRODUCTION

Covid-19 has now colonized the country of Indonesia, where the spread of the disease is very fast. Not only in Indonesia, even around the world is currently experiencing a health crisis. Initially, the spread of COVID-19 had an impact on economic activity which began to stagnate. Not only that, as reported by Kompas daily news (2020), the government in several regions has also made road closure policies to regional restrictions for residents who want to go in and out of an area which is also called a lockdown. However, currently the impact of the epidemic is also being felt by the world of education.

As an effort to prevent the spread of COVID-19, the World Health Organization (WHO) recommends temporarily stopping activities that would potentially cause crowds. Even during the outbreak of COVID-19 in Indonesia, the government took many ways to prevent its spread, one of which was the Letter of the Ministry of Education and Culture of the Directorate of Higher Education (Kemendikbud) No. 1 of 2020 regarding the prevention of the spread of COVID-19 in the world of education. In the circular, the Ministry of Education and Culture instructs to organize distance learning and advises students to study from their homes or online.

Online learning or virtual learning is considered a new paradigm in the learning process because it can be done in a very easy way without having to meet face to face in a classroom and only relying on an internet connection-based application so that the learning process can take place. Online learning is a type of learning process that relies on an internet connection to carry out the learning process. In online learning, it must be supported by the existence of information that supports online teaching and learning activities, without having to experience difficulties in getting information, students can access independently information about learning activities.

The rapid growth of information and communication technology (ICT) has dramatically affected various sectors around the world. The sophistication of ICT has also created various forms of technology that can help in everyday life, such as smartphones, tablets, or computers. Recently, gaming technology was introduced as an activity carried out by interacting with players who are required by a set of regulations to achieve their goals.

The online learning process needs to be packaged as good and attractive as possible to ensure students receive optimal learning with optimal and interesting learning media so that students do not feel bored with the situation of studying at home during a pandemic. Interactive learning media such as media in the form of gamification allow users to interact with all content and other user entities, both synchronously and asynchronously. Recently, gaming technology was introduced as an activity carried out by interacting with players who are required by a set of regulations to achieve their goals.

In recent years, the use of gamification has become a trend in many services because of the support for interactive user engagement. The concept is often applied to various designs for teaching and learning purposes. Therefore, this trend also began to invade in the educational environment. In the context of education, the teaching and learning process can be improved through technology-based learning methods to increase students' interest and focus in class. Thus, games have become the most popular technology-based learning method among students. The gamification approach in the teaching and learning process is often associated with motivational factors.

Nick Pelling in Jusuf (2016) first used the term gamification (gamification) in 2002 in a presentation at a TED (Technology, Entertainment, Design) event. Gamification in learning means a learning approach using elements in games or video games with the aim of motivating students in the learning process and maximizing feelings of comfort and interest in the learning process. In addition, this media can be used to capture things that interest students and inspire them to continue learning. Gamification is using game mechanics to provide practical solutions by building engagement with certain groups (Jusuf, 2016). In more detail define gamification as a concept that uses game-based mechanics, aesthetics, and game thinking to engage people, motivate action, promote learning, and solve problems. Glover in Jusuf (2016) concludes that gamification provides additional motivation to ensure that learners (learners) participate in complete learning activities. Engagement can be interpreted as a willingness to participate. Frederick defines student

engagement as a meta-construction action that includes the involvement of students' behavior, emotions, and cognitive in learning.

Gamification works by making technology more attractive, encouraging users to engage in desired behavior, showing the way to mastery and autonomy, helping to solve problems and not becoming a distraction, and taking advantage of the human psychological tendency to engage in games (Jusuf, 2016). . One of the learning media in the form of gamification and also licensed and can be implemented during the online learning process is Quizizz. Quizizz was chosen as the online learning medium under study because many studies have investigated Quizizz. This indicates that Quizizz is an online learning media that is popular, trending, and often used in learning.

Quizizz is an educational application that applies the concept of gamification (MacNamara & Murphy, 2017). This application is online based, meaning that it can be used if there is adequate internet support. This application can combine instruction, review, and evaluation. Learning media that can be created and utilized from the Quizizz application are interactive multimedia. This game-based learning can be done in 'live' mode or can be given as homework in 'homework' mode. Quizizz can be used as a learning evaluation tool (pre-test, quiz), learning media at home (in the form of homework), and others. Learning media with the Quizizz application is easy to make, first prepare questions and alternative answers in the Quizizz online application. Once you are ready with the content, go to the Quizizz web, namely www.quizizz.com .

Many studies have examined the effectiveness of Quizizz. Quizizz can increase students' enthusiasm in learning evaluation (Asria, Sari, Ngaini, Muyasaroh, & Rahmawati, 2021). Quizizz can improve student activity and learning outcomes (Dityaningsih, Astriyani, & Eminita, 2020). Quizizz can increase student participation in reflecting on mathematics learning (Hidayat, Muthmainnah, & Ismah, 2020). Mulyati & Evendi (2020) used Quizizz in learning mathematics and found that Quizizz was effective for improving student learning outcomes. The average student learning outcomes with Quizizz media are higher than Google Form (Wulandari, Syafi'i, & Suwardana, 2020). All these studies did not focus on examining the effects of gamification elements contained in Quizizz. There are studies that examine Quizizz per element, but quantitatively. Razali, et al. (2020) examined Quizizz based on each element of gamification to evaluate its effect on student motivation using quantitative methods.

From previous studies, there has been no research that focuses on examining the gamification elements in Quizizz qualitatively. Therefore, researchers are interested in examining the elements of gamification in Quizizz with a qualitative method. The focus of this research is to get a detailed picture of students' perspectives and experiences regarding leaderboards, points, power-ups, redemption questions, and answer keys in Quizizz. After knowing the perspectives and experiences of students regarding Quizizz features, it is hoped that the teacher will get a basis or a more detailed picture to design Quizizz in the future. This research also contributes to producing empirical data regarding the implementation of gamification elements in learning. Other researchers can use the results of this study as a basis for developing gamification-based learning media other than Quizizz.

In this study, the Quizizz features studied were leaderboards, points, power-ups, redemption questions, and answer keys. Leaderboards in Quizizz are dynamic. Students can see changes in their rankings after each completion of one question. Student ranking is determined based on the points obtained after answering each question. The maximum points for each question are 1000, with details: 600 points if the answer is correct; 0 points if the answer is wrong; and points for the speed of answering questions are 0-400 (Siddharth, 2021b). Power-ups are a single-use ability (Shamil, 2021b) that benefits the student who acquires them, but there is one type of power-up that harms all fellow students who acquire them. There are nine types of power-ups (Shamil, 2021a) and students get them randomly. During a quiz, students can only get power-ups a few times after answering certain questions correctly (Gupta, 2021). Redemption questions provide an opportunity for students to re-answer one of the questions randomly which he previously answered with the wrong answer. Redemption questions appear at the end of the quiz. If the number of questions is more than fourteen, redemption questions will also appear in the middle of the quiz. The quiz maker can set the answer key so that every student has finished answering one question and the answer keys for all questions appear again after the quiz is finished (Siddharth, 2021a). The answer key during the quiz is only shown briefly, while the entire answer key can be seen indefinitely.

There are many studies that examine the elements of gamification. In this section, the author will present the results of studies on leaderboards, points, feedback, and awards. Kapp, Blair, & Mesch (2014) argue that leaderboards are a means for players to share or inform their progress and success. In his research on the taxonomy of gamification, Toda, Klock, Oliveira, Palomino, Rodrigues, Shi, Bittencourt, Gasparini, Isotani, & Cristea (2019) revealed that the leaderboard is a manifestation of the element of competition. The element of competition is included in the social dimension. The social dimension relates to the interaction between players in a gamified environment. The competition generated by leaderboards can create social pressure to increase player engagement. This has a positive effect on the participation and learning of players (Burguillo in Sailer, Hense, Mayr, & Mandl, 2017). Leaderboards can be a powerful motivator for a player when the player knows that he only needs a few more points to move up the rankings or even a few more points towards the first position. On the other hand, leaderboards can demotivate players a lot if they know that their position is very far from the top rankings (Werbach & Hunter, 2012). Leaderboards generate motivation and positive effects from competition usually when the players are of equal ability (Werbach & Hunter, 2012; Landers in Sailer, et al., 207; Slavin in Sailer, et al., 2017).

Points quantify player behavior in the game. Points tell players how well they behave in the game (Werbach & Hunter, 2012). In the context of Quizizz, the behavior that is measured is the correctness of the answers and the speed in answering. Therefore, one of the functions of points is to provide feedback (Sailer, et al., 2017; Toda, et al., 2019) and also as a reward (Sailer, Hense, Mandl, & Klevers in Sailer, et al., 2017). Points are direct and continuous feedback (Sailer, Hense, Mandl, & Klevers in Sailer, et al., 2017). Direct feedback like this can arouse students' positive perceptions of the learning they are experiencing (Alexander in Permata & Kristanto, 2020). Without feedback, players will feel disoriented in their activities (Toda, et al., 2019).

Feedback provides information to players about what is happening in the game, what to do next, and information about what the player has just done as well as everything the player has done from start to finish (Robinson & Belotti, 2013). The answer key in Quizizz is a form of feedback, it can even be called direct feedback. Rahayu & Purnawarman (2018) uses Quizizz by disabling the answer key display, but students can still see a list of their correct and incorrect answers. By looking at the list, students identify where their strengths and weaknesses lie in mastering several materials. After that, students look for the correct answer and repeat the quiz so that they get better results. Pitoyo, Sumardi, & Asip (2019) also found something similar about this list, namely that students can learn from their mistakes. Even the list of right and wrong answers (test report) was ranked the two most interesting elements (engaging) for students. This could be due to students' need for immediate feedback on how well they are performing on quizzes (Göksün & Gürsoy, 2019).

Power-ups can be classified as a reward element in gamification because they are obtained after correctly answering a question. However, the provisions on the number of questions that must be answered correctly in order to get power-ups are not clearly stated. Power-ups are also a manifestation of the element of chance in the ecological dimension. The chance element relates to random events in a game. The lack of elements in the ecological dimension makes the game less interesting and less interactive (Toda, et al., 2019). The power-ups feature was created to add entertainment and increase player (student) involvement without compromising the quality of student learning (Quizizz, 2020).

Based on the problems and theoretical basis that have been described, the researcher is interested in conducting research to answer the question, "What are the perspectives and experiences of students regarding Quizizz features: leaderboards, points, power-ups, redemption questions, and answer keys in online mathematics learning when the covid-19 pandemic?".

METHOD

This qualitative research method uses an open questionnaire data collection technique. An open-ended questionnaire was distributed using a google form and used to collect data about students' experiences and perspectives on the five Quizizz features. The things that are asked for each feature are 1) experience (actions, thoughts, and feelings) when meeting or using the feature;

2) usefulness, positive and negative impacts on the Quizizz process and learning process; and 3) other opinions. These three questions are not answered separately. Question number 2) is based on other research that examines students' perspectives on the elements of gamification. The topic of the statement in the questionnaire used by Alabbasi (2017) is about the positive and negative impacts of gamification elements. Another study conducted by Cheong, Filippou, & Cheong (2014) asked the use of each gamification element. The things that are validated from the questionnaire are the suitability of the questions with the research variables, grammar, completeness of the instructions for filling out, and appearance. Suggestions from validators who have been accommodated are to vary the command sentences to tell stories and opinions on each feature, and add feature images to the questionnaire.

This research was conducted online with the subject of 32 students of class X MIPA 3 at a private high school in DIY. Prior to data collection, subjects took quizzes on Quizizz once in two meetings each. Each quiz consists of 15 questions. The first quiz will be held on Friday, 7 May 2021 with the aim of reviewing the concept material and properties of logarithms and logarithmic functions. The second quiz will be held on Tuesday, May 11, 2021 with the aim of reviewing the logarithmic equations and inequalities material. The things that are validated from the quiz tool are the suitability of the questions with the question indicators, time allocation, grammar, and appearance. Questionnaires and quizzes were validated using the focus group discussion (FGD) method with colleagues and lecturers in the course of Qualitative Research in Mathematics Learning. Quiz questions have also been checked for conformity with the material that has been taught in class by the class mathematics teacher.

The process of analyzing qualitative data in this study uses network analysis (Kristanto & Padmi, 2020). The research data consisted of five groups, namely the subject's answers regarding each feature. Network analysis was carried out on each group of data, so the researchers conducted five times network analysis. The analysis of each feature was carried out by two researchers. Network analysis is used because of its accessibility and flexibility. The foundation of network analysis is graph theory. Network analysis is carried out through six stages, namely 1) familiarizing with the data; 2) create initial codes; 3) constructing themes; 4) check the generated themes; 5) define the themes; and 6) make a report.

In the first stage, the data is read repeatedly to get context from the data. In the second stage, data coding with an inductive approach is carried out using the Atlas.ti application. When coding using the Atlas.ti application, one must choose a unit of analysis that is neither too broad nor too narrow. After familiarizing with the data, the researcher decided that the unit of analysis used was the answer of each subject divided into two: positive statements and negative statements. So, there are at most two units of analysis in each subject's answer.

After coding, the researcher found that there was a code that appeared in positive statements and also appeared in negative statements. It is certain that this code is incorporated in more than one theme. Therefore, the researcher decided to construct the themes manually instead of constructing them using the Gephi application. The second reason is the amount of code generated is not much. Researchers construct themes manually based on occurrence tables with code automatically generated with Atlas.ti. Codes that often appear together are grouped into one theme. This manual construction of the theme is also more accurate because the researcher himself knows the meaning of each code. Each theme obtained in this study consisted of only a few codes, so that the theme was not given a name and was immediately described.

RESULTS AND DISCUSSION

Before the questionnaires were distributed, the subjects took two quizzes. The first quiz was attended by 36 students. The percentage of correct answers (including answers to redemption questions) has an average of 60.37% and a standard deviation of 20.78%. The average points obtained by the subjects were 7,324.72 (maximum 15,000 without additional points from streaks and power ups) with a standard deviation of 3,018.45.

The second quiz was attended by 36 students, but the average and standard deviation shown were only from 35 students because one student had a connection disorder. However, this student participated in filling out the questionnaire. The percentage of correct answers (including answers

to redemption questions) has an average of 50.09% and a standard deviation of 20.68%. The average points obtained by the subjects were 5,898.29 (maximum 15,000 without additional points from streaks and power ups) with a standard deviation of 2,610.79.

The data analyzed in this study were the answers to a questionnaire from 32 students. The following will present the results of the study along with a discussion of each of its features.

Leader Board

The leaderboard feature has a negative impact on the subject's focus when working on the problem. The subject becomes unfocused when he finishes working on one question, the leaderboard is displayed. Moreover, if it is found that the ranking has dropped, the focus of the player on doing the next question will be disturbed. "For the negative impact, in my opinion, when it turns out that the ranking we get is decreasing, it will indirectly feel like attacking the psyche, and become unfocused on the next problem." Related to this, the subject must have a good answer speed so that the ranking does not drop, and this factor is the negative impact of the leaderboard for the subject when doing the quiz. Despite this, many subjects said the result of their ranking was down was unfair because of the leaderboards that were shown. Another negative impact of showing a leaderboard is that it makes the subject feel insecure if his ranking is below. The subject believes that if the lower rank is also displayed, it will make the person concerned to be bullied by other players. "But of course this feature has a negative side too, namely when someone finds out that their ranking is bad, they can feel ashamed and envious of other friends and can even be bullied for having a bad rating or below".

Leaderboards are seen as a subject as a tool to determine their position from other players and create competitiveness. Leaderboards can be a strong motivator for a player when a player knows that he only needs a few more points to move up the rankings or even a few more points towards the first position (Werbach & Hunter, 2012). In line with the study, the subject argued that the leaderboard provided motivation to achieve high rankings. The opinion of the subject is in accordance with the research results of Asria, et al. (2021) which shows that the use of Quizizz for learning evaluation is enough to arouse students' motivation in working on the questions being tested, due to the existence of a leaderboard that shows each student's score and the order of student ranking, arouses students' enthusiasm to continue to compete, and work on questions quickly and thoroughly. . Then the subject thinks that this feature is very useful to know his position when playing quizzes. From the position information on this element, players are challenged to compete to achieve the best results during quizzes.

Points

The existence of a point element causes the subject to be eager to answer the next questions correctly. The positive impact of this point element was also found by Razali, et al. (2020). Points are positively associated with extrinsic motivation of students taking Engineering Mathematics courses. Another subject said that his feelings while taking the quiz were influenced by the number of points he got. If you get a lot of points on a question, after that the subject will feel happy and excited. If you get a few points, the feelings that arise are annoyed, sad, or anxious. The point element also spurs the subject to compete with his friends. Subjects who think that Quizizz is a game think that the point element gives it more sense, is fun, and interesting.

The number of points that the subject gets is influenced by the speed of answering. This causes the subject to be provoked to rush in working on the problem. This condition is also experienced by class XI students of SMA 1 Tahunan who are the subject of research conducted by Asria, et al. (2021). Students are less able to concentrate if the work on each question is given a time limit. In a study conducted by Amany (2020), the mathematics teacher of SMPIT AR Rahmah Pacitan said the same thing, namely that students sometimes panicked and rushed when working on questions. Thus, the processing time needs to be considered by the subject. "That (points) will be at stake so you want to answer correctly quickly with big points or you want to choose to answer long with smaller points." Another subject thought that the work should not be rushed because wrong answers do not get points at all. On the other hand, there are subjects who say that the points become feedback to measure the speed of answering so that the subject can practice to answer quickly. Points as feedback also show the transparency of the assessment of the subject's

performance in taking the quiz. This is in accordance with the basic theory which states that points are a form of feedback.

Regarding the assessment, the speed of answering as one of the factors was viewed negatively by some subjects. Because the speed of answering is also assessed, the points of subjects who answered more correctly could be less than the points of subjects who answered fewer correctly. This is considered unfair by the subject. The difference in answering speed is caused by the diversity of the subject's abilities and it does not need to be assessed. The assessment of the speed of answering is also seen as negative because the subject gives an example of the case of the origin of answering, quickly, but correctly. Subjects who answered like this would get higher points than subjects who answered correctly because it took a long time to count.

Power-ups

Power-ups are single-use abilities designed to increase engagement and participation on Quizizz. Power-ups are turned on by default for Live, Team, and Homework Games, but can be turned off by game hosts when they build games (Quizizz, 2019). If done correctly and quickly, the subject will receive one of the random power-ups as well as an award. Then these power-ups can also be used as a strategy to use in doing quizzes. Once the subject has obtained the power-ups, they will see the power-ups icon at the bottom of their screen and can click on the icon to activate it on a particular question and this is one of their strategies while playing on Quizizz. In most cases, power-ups can only be applied once, so when a subject plays Quizizz and gets one of the random power-ups, such as getting type "x2" it will be used if their score drops in rank. After use, the power-ups icon disappears. Power-ups make the game immersive and give players a sense of autonomy. Immersive by adding a bit of uncertainty. Autonomy by empowering players to shape the narrative of the game. The player tries the question. They moved on to the next question. Then they move on to the next one. This cycle repeats itself. Their focus tends to fade doing the same thing over and over again. On the new system the player tries several questions. They receive power-ups when they answer a question correctly. This ensures that positive behavior (getting questions right) is rewarded.

Different types of power-ups allow the subject to have a variety of experiences and affective aspects. Many subjects feel annoyed when they get a "double jeopardy" which means that even if the subject answers correctly and then gets double points, in the next quiz, they will lose all their points if they answer the question with the wrong answer. On the other hand, there are the types of power-ups that calm the subjects down, namely the "time freeze" to freeze the timer and give the player full points for a question, and there is the "immunity" type which is useful for the player to get a second chance after an incorrect answer. In addition, there are also types of power-ups that add enthusiasm to working on Quizizz. In terms of adding to the spirit of the subject, this type of "x2" gives double the points per question. Not only that, the type of "streak saver" also adds to the spirit where this type of power-up serves to ensure our answer line against wrong answers. From the subject's experience, the type of power-ups that increase their enthusiasm also makes them stigmatize that doing questions on the Quizizz platform feels like entertainment in itself and doesn't feel boring.

On the other hand, there are also several types of power-ups that make the subject strange when doing quizzes where there are types of power-ups that are useful and completely useless. Strange in this context, it means, the subject said that there were types of power-ups such as double jeopardy which was a trap in the sense that even though the subject answered correctly at the beginning and got double the points, if he was wrong in the next question, he would lose all his points. Apart from this, the strangeness of the power-ups feature in Quizizz is related to the context of use. The context of usage here can have both positive and negative meanings. As the subject said, some are useful because power-ups are a special right for players and some say they are not useful because they are considered cheating and injustice. The negative thing according to the subject is also "It feels like it interferes with the game in doing the quiz" and the arena is also a race against time, the subject also feels that this feature is a waste of time. There are also subjects who don't really know what the power-ups function is and don't even use them because of the time pressure on the subject to do all the quiz questions. This element also causes the assessment to be

inauthentic. "We recommend that this feature be removed because the value of the results of operations becomes impure."

Redemption Questions

If the subject answered incorrectly, Redemption Questions (RQ) did not appear immediately because RQ appeared in the middle and end of the quiz. Therefore, RQ becomes the element that the subject has been waiting for. Apart from not appearing immediately, RQ is eagerly awaited because it is interesting. The positive impact from another affective aspect is happy and calmer. Feelings of pleasure arise when managed to answer correctly on this second opportunity. That way, the points will increase. But if the answer is wrong on the RQ, the subject feels annoyed. The existence of a guarantee to repeat answering questions causes the subject to be calmer in doing the quiz. There are also subjects who state that RQ has a negative impact because it can cause students to take quizzes casually or not seriously. However, RQ only appears a maximum of two times so that the subject cannot continue to answer incorrectly and only relies on the answer key that is displayed after answering the questions. In addition, several subjects mentioned minor factors that led to incorrect answers, such as not being careful in counting and clicking wrong answers. "This feature is actually useful if students sometimes make mistakes in counting or choosing answers. This feature is very useful for those who are careless because time is running fast." This finding may only apply to this study because the time for completing the questions can be set by the quiz maker.

The creation of RQ is based on the theory of spaced retrieval (Quizizz, 2019). Retrieval practice is a learning method by extracting information stored in the brain to answer questions (Agarwal, Roediger, McDaniel, & McDermott, 2020). All questions in the quiz are actually a form of retrieval practice because the subject is required to issue the material that has been studied to work on the questions. However, the RQ is slightly different because the information that the subject needs to release is the answer key to a question that was previously answered incorrectly. The retrieval practice method has proven to have a more positive impact from a cognitive perspective than only using learning methods to include material such as listening to lectures, reading, and taking notes (Agarwal, et al., 2020). The meaning of spaced in spaced retrieval is that retrieval practice is carried out for a long time after the material/information has been studied. The length of time can be interpreted relatively. The main idea is that the more delayed the retrieval practice, the more difficult the process of recalling or extracting information but having more impact on long-term learning (Carpenter & Agarwal, 2020). It appears on Quizizz that the RQ does not appear immediately after the subject answered incorrectly. In relation to retrieval practice, the subject has prepared himself to answer the RQ since knowing that the answer is wrong. "This makes me remember more mistakes and correct answers than questions I answered wrong." The same thing happened to the subject of Statistics for Psychology class students in a study conducted by Lyle & Crawford (2011). Some students do retrieval practice by doing some short questions at the end of each meeting. The question asks about the material learned in the meeting that day. One of the positive impacts of this retrieval practice is that students pay more attention to lectures during lecture meetings.

Just like the previous elements, the subject thought that this element was not suitable for use if the quiz scores were part of the report card scores. The points obtained after answering RQ correctly are the same as the points obtained after correctly answering the first question by exceeding the time limit. This is unfair because the efforts made are different, the first is to work on their own abilities and the second is to recall the answer keys that have been displayed. This element also leads to inauthentic judgments. "We recommend that this feature be removed because the value of the results of operations becomes impure."

Answer Key

The answer key in Quizizz is a form of feedback, it can even be called direct feedback. However, there is a feedback limitation on Quizizz, namely it cannot add feedback in the form of discussion of questions if the account owned by the quiz maker has not been upgraded. Just like other elements, the subject believes that the presence of an answer key is not suitable if it is used in the exam. The existence of students who use multiple accounts to view the answer key reveals the

negative side of this feature and creates a sense of injustice in students who work with one account. In addition, by displaying the answer key feature on the exam, it will help students answer redemption questions, so that it seems unfair because students already know the correct answer from the previously incorrectly answered questions. "In the context of the exam, the answer key that appears right after the player chooses the wrong answer will actually make the exam unfair because the player already knows the correct answer to fill out the redemption feature."

The answer key appears every time you finish answering one question and also at the end of the quiz in the form of a review. The feedback content of Quizizz consists of game summary (score and ranking), performance statistics (number of correct and incorrect answers, number of unanswered questions, average time per question, and number of streaks). At the end of the quiz, the player can review each question where the correct answer for each question can be revealed. However, to see the correct answer to each question, the player must click on each question individually. This causes the review to seem less practical.

Students use feedback as a source of information to assess their scores and ratings. All students stated that the feedback increased their motivation to perform better in the next quiz (Rahayu & Purnawarman, 2018). In line with the research, the subject also stated that the answer key features became material for self-evaluation so as not to repeat the same mistakes. "Answer keys are quite functional because we can find out where we are right and wrong and can be used as material for improvement if tomorrow there is a similar question." The answer key is also used by the subject as study material at a later date. "This feature really helps me to find out which answer is right and which is wrong, from that answer I can re-analyze questions whose answers are wrong". The existence of feedback in the form of a review at the end of the quiz makes the subject feel relieved and happy because he knows the correct answer. Subjects can remember answers based on the answer key given after each question and use it when answering redemption questions. "This answer key feature is useful in quizizz when doing quizzes to remember the right answer if you do something wrong which will be reworked in redemption".

CONCLUSION

From the results of research and discussion obtained the following results. The five Quizizz features studied had both positive and negative impacts on the subject. Leaderboards motivate you to play better in order to improve or maintain your ranking. But on the other hand, the leaderboard makes the subject not focus on answering the next question and creates a feeling of insecurity due to seeing their ranking position. Subjects argue that points are a form of feedback. The number of points the subject gets on a question affects his feelings when working on subsequent questions. High points elicit positive feelings, and vice versa. The number of points that are affected by the speed of answering causes the subject to be provoked to work on the questions in a hurry. The subject also thought that the speed of answering should not be assessed if Quizizz was used as a test medium.

In the power-ups element, the type of power-ups will be given randomly to players as rewards and bonuses. However, this affects players' feelings, such as feeling unfair because not all of them get it and feeling strange due to the provision of power-ups because some are useful and some are not. Redemption Questions is a feature that the subject has been waiting for. Subjects remember their mistakes and correct answers in preparation for the Redemption Questions. This feature causes the subject to be calmer in doing the quiz. The subject also thinks that this feature is not suitable to be applied to the exam because the effort to answer the Redemption Questions is not comparable to the effort to answer the question the first time. The answer key serves as feedback that the subject uses for study material and self-evaluation so as not to repeat the same mistakes. However, there is a feedback limitation on Quizizz which cannot add discussion questions if the quiz maker's account has not been upgraded.

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