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Quizizz: Science learning media in elementary school in developing critical thinking skills

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ABSTRACT

The ability to use technology in the era of the Industrial Revolution 4.0 is something everyone should have. Likewise in the field of education, teachers and students can use technology as part of the media used during the learning process. Learning by utilizing technology as learning media is expected to give a pleasant, challenging, and interactive impression that contributes to the abilities of elementary school students. One of the abilities of elementary school students that are expected to develop is critical thinking skills. Critical thinking skills are the ability to observe, analyze, and evaluate previously acquired knowledge based on logical reasoning. Critical thinking skills can be developed with the help of learning media. One of the technology-based learning media that can be used is Quizizz. Quizizz is a web tool or smartphone-based application that can create interactive quizzes in the form of games used in the learning process both in and/or outside the class or in distance learning. Therefore, Quizizz is expected to contribute in the development of students' critical thinking skills in elementary schools, especially in science learning.

INTRODUCTION

Technology is a means to facilitate all human activities. In the current era, technology has progressed and developed very rapidly in all fields. Technology that continues to develop will affect human life on personal, activity, or way of thinking. The very rapid technological advances must be utilized, especially in the field of education starting from the elementary level.

The industrial revolution 4.0 is an era that requires everyone to have the ability to use technology. Likewise in the field of education, technology influences teaching and learning activities. In this case, technology changes the learning patterns from conventional to technology-based learning. Technology-based learning is learning that uses technology as learning media. Media is one of the five important components that can be used during the learning process. These five components, i.e.: objective, material, method, media, and learning evaluation, influence one another (Nastiti & Purwanta, 2019; Wibawa et al., 2019).

Technological advances have influenced the learning media used by teachers in schools in increasing the understanding and skills of students in achieving the expected learning competencies. Technology-assisted learning media can also cover various aspects of student learning styles, i.e.: audio, visual, and kinesthetic in order to create a learning environment that is fun, challenging, and interactive. The competence that is expected from learning is not only understanding but also skills. Skills related to the understanding of students are critical thinking skills. Critical thinking skills should be built by teachers for students starting at the elementary school level. Critical thinking skills are a part of students' ability to observe, analyze, and evaluate previously acquired knowledge based on logical reasoning. This is in accordance to Abrami et al. (2015) which states that critical thinking is a self-regulatory assessment that aims and produces interpretation, analysis, evaluation, and inference as well as an explanation of the considerations on which the assessment is based.

Critical thinking skills can be achieved when students are dealing with topics that are happening in their daily life so that they can understand easier. One of the lessons with topics in everyday life is science learning, especially for elementary school students. Science learning in elementary schools is learning that

requires students to be able to master self-concept and the natural surroundings that are related to everyday life. Apart from self-concept and the environment, technology has also become a part of daily life for students, such as using gadgets, cellphones, and the internet. Therefore, critical thinking skills can be honed through science learning, which is integrated with technology as a learning media. Apart from being a learning media, technology also functions to help innovate the learning process and improve performance by creating, using, and managing effective and efficient processes (Suharsono, 2020). This is also supported by (MacNamara & Murphy, 2017) which states that online learning or the use of technology is increasing significantly compared to offline or traditional learning. Therefore, several online quiz applications can be used as technology-based learning media to measure the level of understanding of students, including QMP; TodaysMeet; Padlet; Mentimeter; Kahoot; Quizizz; ThatQuiz; GoConqr; ClassMarker; Edmodo; Scorative, or Google-Flubaroo (Jamro, 2017).

From the previous explanation, one of the technology-based learning media that can be used is Quizizz. Quizizz is a media in the form of a web tool or application, which contains learning material that is packaged in the form of questions and these questions can be answered within a specified time. Quizizz can be used in the learning process both in and outside the classroom or distance learning. In this case, the questions that can be made in Quizizz are questions that can hone critical thinking skills associated with learning science in elementary schools. Thus, Quizizz is expected to contribute to developing critical thinking skills of students in elementary schools, especially in science learning.

LITERATURE REVIEW DISCUSSION

Quizizz as a science learning media

Science learning is a learning subject that has been taught starting at the elementary school (SD) to the senior high school (SMA) levels. The purpose of science learning is to instill curiosity and a positive attitude towards science, technology, and society, develop process skills to investigate the natural surroundings, solve problems and make decisions, develop natural phenomena so that students can think critically and objectively (Surahman et al., 2015). In giving science learning, the learning media is needed as a means of conveying information to students so that it is easier to understand. This is in accordance with Nasution (2019) which states that achieving the scope of science learning such as scientific work, understanding the concept, and its application requires learning media that can support science learning for students in elementary schools.

Learning media in the era of the industrial revolution 4.0 has progressed very rapidly. This progress is due to technological developments. So, there is a shift in the use of learning media, which has traditionally turned into technology-based learning media.

In this case, Quizizz is a technology-based learning media that may be used as a learning media. Quizizz as a learning media can help the understanding of students who have audio and visual learning style. This is supported by Dewi (2018); and Rachman et al. (2020) who stated that application-based learning is potential to be used as an effective learning media as it can stimulate visual and verbal components.

Quizizz is a web tool or smartphone-based application that can create interactive quizzes in the form of games in the learning process, both in and outside of the classroom or distance learning. In Quizizz it is possible to create a multiplayer quiz as long as all students can keep up with the requirements of the mobile device connected to the Internet (Guhlin, 2016). Quizizz has four answer options including the correct answer and one can add pictures to the background of the questions. Also, Quizizz has game characteristics such as avatars, themes, memes, and music in the learning process (Mulyati & Evendi, 2020).

According to (Aini, 2019), the way to create and utilize Quizizz media is by accessing the web at www.Quizizz.com. For newcomers or those who do not have an account, one can first create a Quizizz account by registering or signing up on the website, and then completing the registration. Once registered, the account can be used to log into Quizizz by filling in the email and password, and clicking the login option on the web. Furthermore, after entering the web, a library display can be seen with a collection of quizzes that has been made previously. The available quizzes can be used by students for learning by making homework or practicing independently. In addition to the available quizzes, there is also a feature section that can be used to create quiz content. To make a quiz independently, click on the feature ‘create my quiz’.

The first step is to prepare a set of questions for the quiz content to be created. Then, open the app and input the questions that are already in the set. Once completed, publish the content to be used, not only in private but also in general. If the quiz has been posted, then the quiz is ready to be shared with a certain code to students. Furthermore, students can log into the quiz. After logging into the Quizizz app, students can answer the questions that appear on their gadget display. After students have finished answering all the

questions, students are able to find out the correct or wrong answers. Apart from that, students can also see their rank directly on the leaderboard. Teachers as the quiz content creators can also track the number of students who answer the questions.

Quizizz is an interesting and fun learning media for students. The media also has advantages and weaknesses. According to Suharsono (2020) the advantages of Quizizz are (1) interesting and fun; (2) easy to understand the material; (3) the results immediately appear on the screen; (4) display is on cellphones or laptop; (5) motivates more thoroughly; and 6) motivates to study independently. Whereas the weaknesses of Quizizz are (1) depends on the internet network; and (2) the material is not discussed at all.

According to Rusmana (2020) the advantages Quizizz are (1) representative content, objective, and avoids subjective elements; (2) easy and fast to check the results; (3) examinations can be submitted to others, and (4) the absence of a subjective element in examining the test results. Whereas the weaknesses of Quizizz are as follows: (1) cannot see the true abilities of students; (2) preparation for composing the tests is more difficult than traditional tests; (3) difficult to measure the mental processes; and (4) open to play purely based on chance.

Based on the previous explanation, Quizizz aims to be a technology-based science learning media that can provide a fun, challenging, and interactive atmosphere for students and provides innovation in the learning process to achieve the learning objectives.

Quizizz plays a role in developing critical thinking skills in science learning in elementary schools

According to Screven & Paul (Tawil & Liliasari, 2013), critical thinking is a disciplinary process that is intellectually active and skilled at conceptualizing, applying, analyzing, synthesizing, and evaluating information gathered from or generated by observation, experience, reflection, upgrading, or communication, as a guide to belief and action. Yustriana (2013) argued that critical thinking skills are thinking skills with mature concepts by expressing ideas and logically questioning everything that is deemed inappropriate to be focused on determining what to believe or do. Azizah et al. (2018) stated that critical thinking skills are students' cognitive processes in systematically and specifically analyzing the problems faced, distinguishing these problems carefully and thoroughly, and identifying and assessing information to plan problem-solving strategies.

Based on the explanation of critical thinking skills from several experts, it is concluded that critical thinking skills are part of students' ability to observe, analyze, and evaluate previously acquired knowledge based on logical reasoning so that they can believe and make decisions. Critical thinking skills are one of the skills that are needed in problem-solving. This is in accordance with Wihartanti et al. (2019) who stated that critical thinking skills are needed to analyze a problem through the stage of finding a solution to solve the problem.

In addition, according to Sapriya (2009), the purpose of critical thinking is to test an opinion or idea, including making considerations or thoughts based on the opinion proposed. Referring to these objectives, critical thinking skills are needed by students and need to be learned from early level. Critical thinking skills are closely related to higher-order thinking skills (HOTS). This has been explained in the attachment of Permendikbud No. 21 of 2016 that the cognitive dimensions based on Bloom's taxonomy are classified into factual, conceptual, and procedural as well as metacognitive whose mastery needs to be started from the level of basic education (Menteri Pendidikan dan Kebudayaan Republik Indonesia, 2016).

Elementary school is a means provided to train students in taking small steps first before finally becoming skilled at thinking at a higher level. Students at the elementary school level if trained, will be more competent and can learn more due to an attitude of openness to new information and a willingness to learn. This is following D'Ar-cangelo (in Yustriana, 2013), which stated that when children are allowed to use HOTS in class, in the end, they will get used to distinguishing between truth and lies, appearance and reality, facts and opinions, and knowledge and beliefs.

Critical thinking skills are best achieved when dealing with topics that are familiar to students, especially at the elementary school level. Therefore, learning that needs to be taught and introduced to students is learning that is around everyday life. One of the lessons that is suitable for everyday life is science learning. Science learning is learning that emphasizes mastery of the self-concept and nature surroundings.

Critical thinking skills in science learning in elementary schools need to go through several approaches to reach the learning objectives. Applied approaches in critical thinking skills include applied problem solving, case studies, simulations, playing games, and role-playing (Abrami et al., 2015). An approach that may be uses is to play games. Playing games is the closest to students in elementary school. Therefore, in science learning, the media that is close to the world of students is clearly needed.

Quizizz is an application that presents an interactive quiz game. In this case, teachers can take advantage of Quizizz as a fun science learning media for students. Quizizz in science learning media is used as a place to make questions that are categorized as HOTS. HOTS aims to train the critical thinking skills of elementary school students. Moreover, by using Quizizz as a science learning media, it is hoped that students are playing games on their respective gadgets.

Based on this explanation, Quizizz, hopefully, not only becomes a science learning media that provides a playful and fun atmosphere for elementary school students, but also becomes a media that train students' critical thinking skills.

CONCLUSION

Based on the explanation and discussion above, it is concluded that Quizizz may be used as an alternative science learning media in elementary schools that provides a fun, challenging, and interactive atmosphere such as playing games for students and providing innovation in the learning process to reach the learning objectives. Also, hopefully, the game trains the critical thinking skills of elementary school students.

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