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PENGEMBANGAN MEDIA PEMBELAJARAN QUIZWHIZZER: INOVASI INTERAKTIF UNTUK MENINGKATKAN EFEKTIVITAS PEMBELAJARAN IPA

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Abstract. Technology has become a crucial element in education, as evidenced by the emergence of various applications that support the learning process. One example of such applications is interactive games that use information and communication technology. In learning Natural Sciences (IPA), students often only follow the teacher's direction and use books as references, causing passive learning in the classroom. The main objective of this research is to explore and find out the application of Quizwhizzer learning media in science learning process. This research uses a qualitative method of literature study to analyze current sources of information. The research problem involves aspects such as network stability and potential student cheating that can affect the effectiveness of using Quizwhizzer. The results showed that the use of Quizwhizzer can increase student engagement behaviorally, emotionally, and cognitively, and provide positive results in student achievement. Nonetheless, the study also identified some drawbacks, such as network instability and potential student cheating. The conclusion of this study provides an in-depth look at the benefits and challenges of using Quizwhizzer in interactive learning, with implications for educators and educational technology developers to improve the learning experience through innovation and problem solving found.

Keywords: Learning Media, Interactive, Quizwhizzer

Abstrak. Teknologi telah menjadi elemen krusial dalam dunia pendidikan, terbukti dengan munculnya berbagai aplikasi yang mendukung proses pembelajaran. Salah satu contoh aplikasi tersebut adalah permainan interaktif yang menggunakan teknologi informasi dan komunikasi. Dalam pembelajaran Ilmu Pengetahuan Alam (IPA), seringkali siswa hanya mengikuti arahan guru dan menggunakan buku sebagai referensi, menyebabkan pembelajaran di kelas bersifat pasif. Tujuan utama penelitian ini adalah untuk mengeksplorasi dan mengetahui penerapan media pembelajaran Quizwhizzer proses pembelajaran IPA. Penelitian ini menggunakan metode kualitatif studi pustaka untuk menganalisis sumber-sumber informasi terkini. Permasalahan penelitian melibatkan aspek-aspek seperti stabilitas jaringan dan potensi kecurangan siswa yang dapat memengaruhi efektivitas penggunaan Quizwhizzer. Hasil penelitian menunjukkan bahwa penggunaan Quizwhizzer dapat meningkatkan keterlibatan siswa secara perilaku, emosional, dan kognitif, serta memberikan hasil positif dalam pencapaian siswa. Meskipun demikian, penelitian ini juga mengidentifikasi beberapa kelemahan, seperti ketidakstabilan jaringan dan potensi kecurangan siswa. Kesimpulan dari penelitian ini memberikan pandangan mendalam tentang manfaat dan tantangan penggunaan Quizwhizzer dalam pembelajaran interaktif, dengan implikasi bagi pendidik dan pengembang teknologi pendidikan untuk meningkatkan pengalaman pembelajaran melalui inovasi dan pemecahan masalah yang ditemukan.

Kata Kunci: Media Pembelajaran, Interaktif, Quizwhizzer

INTRODUCTION

Education is the foundation for creating a smart and competitive society. In today's digital era, technology is becoming an essential component in various aspects of life, including education. Today's generation of students growing up in a digital environment are often dissatisfied with conventional learning approaches. Therefore, a paradigm shift in learning approaches is needed to make the learning experience more engaging, interactive and relevant.

Technology in education not only complements, but also transforms the way students and teachers learn. Creative solutions focus on increasing students' interest and participation, as well as evaluating their understanding. The main research questions are how the development of Quizwhizzer learning media is carried out to increase interactivity in the science learning process, and to what extent the effectiveness of science learning can be improved through its application in the educational context. Traditional teaching strategies are often difficult to attract students' attention and less able to adapt to changing trends in education. In this context, Quizwhizzer presents itself as an innovative interactive learning tool that can make learning more interesting and productive. Through more dynamic engagement with learning content, it is expected that students' participation in the learning process can increase.

This research is geared towards measuring the extent to which Quizwhizzer has enhanced learning in educational environments and to provide a thorough overview of the development process of this learning tool. It is intended that by having a thorough understanding of how this technology is used, this research will be able to provide a solid foundation for a more sophisticated approach to learning growth that meets contemporary needs. The main objective of this research is to explore and understand how the development of Quizwhizzer learning media is done to enhance interactivity in the learning process. In addition, this research aims to measure the extent to which learning effectiveness can be improved through the application of Quizwhizzer learning media in an educational context. Through this research, it is expected to find valuable information in supporting the development of learning methods that are more dynamic and responsive to the needs of digital generation students. In addition, this research contributes to the practical understanding of the utilization of technology in improving the quality of education.

METHOD

This research adopts the qualitative approach of literature study as the methodological framework. This approach was chosen to explore an in-depth understanding of the development of Quizwhizzer learning media in improving interactivity and learning effectiveness. The steps

of the literature study included topic selection, information search, determination of research focus, data acquisition, preparation of data presentation, and report preparation. Information search was conducted through academic journals, current literature, and scientific articles relevant to the research topic. The time limit of the journals used in this research ranges from 2010 to 2023. This time span was chosen to ensure the inclusiveness of the latest literature relevant to the development of interactive learning media.

Data obtained from literature, documents and other sources of information will be analyzed qualitatively. This analysis involves identifying patterns, themes and key concepts that support understanding of the development of the Quizwhizzer learning media. A descriptive approach is used to describe individual opinions, responses, or perceptions expressed in previous research. The qualitative literature study method is a method of collecting data and studying the conceptual framework and theory that supports the development of Quizwhizzer learning media (Adlini et al, 2022). However, the limitation lies in the reliance on the researcher's interpretation and analysis of existing literature. Nevertheless, this approach provides a strong foundation for formulating arguments and analyzing research issues with a more in-depth and holistic approach.

RESULTS

Basic Concept of Interactive Learning Media

Teachers can utilize interactive learning media, a multimedia-based technology, to help students learn faster by communicating ideas or information to them. This approach uses information and communication technology (ICT) to engage students and communicate with them. The media and users (students) engage in an active two-way conversation during this process. The field of constructive media includes learning, learners, and educational processes, and interactive media is one of them. Globally available web networks and multimedia tools have a significant impact on the way students learn, even in terms of computer technology. According to Warsita (2013), an interactive multimedia program is a type of computer-based learning media that synergizes various media, including text, graphics, photos, video, animation, music, and narration.

The purpose of interactive learning materials is to motivate students to take an active role in their education, including the capacity of students to engage in learning activities, take part in conversations, and interact with subject matter (Maryamah, 2023). Technology is also used in interactive learning media to transmit information and enable student engagement with the

subject matter. This technology can take the form of interactive multimedia, applications, simulations, or software.

Learning materials in interactive media are tailored to students' needs and level of understanding. Students are able to learn according to their own learning style and pace because of this flexibility. Direct user (student) actions or replies can be responded to by this interactive learning tool. This can be in the form of real-time assessment, rapid feedback, or the provision of more data in response to user activity. Three categories of interactive learning resources are available on the internet, specifically:

- E-learning-based interactive learning multimedia; this is a learning method that uses information and communication technology (ICT) to deliver information and interact with students. E-learning allows students to learn independently and find in-depth help when and where appropriate.

- Educational website learning media online learning site: it is an online learning platform that provides various learning materials and interactive tools to assist students in the learning process. This platform allows students to learn independently and access information and resources from various places and times.

- Software-based interactive media and android application-based interactive learning media.

- These are software or applications that allow students to perform simulations, answer questions, and interact with learning materials directly. This application allows students to learn independently and access information and resources from various places and times.

The Role of Technology in Learning

The second definition of educational technology from 2004 states that the scope of educational technology involves the creation, use and management of appropriate learning processes and materials, which are the focus of ethical study and practice in support of learning. Like the previous definition, this statement highlights similarities in character and purpose, seeing educational technology as a field of scientific study that is not limited to specialized disciplines such as psychology, sociology and economics. Instead, educational technology is regarded as a constantly evolving domain. (Sukban, 2016).

Educational technology is the study and practice aimed at supporting learning and improving performance by using technology ethically. The focus is on creating, using and managing technology appropriately to facilitate learning and improve efficiency. It is an

interdisciplinary field that combines various disciplines to facilitate the learning process, improve the quality of learning, and improve performance holistically.

Learning technology can improve the effectiveness of learning in various ways. First, technology enables e-learning, which allows flexibility of time and place, as well as the use of videos to enhance student understanding. In addition, technology can also make learning materials more interesting and varied, for example through interactive multimedia, video, animation, podcasts and augmented reality. This can increase learners' interest in learning and facilitate access to information, thus affecting student learning outcomes Thus, learning technology has a significant contribution in advancing learning methods and improving the effectiveness and efficiency of learning. Jack Ma (2018) underlined the major challenges in education in this century. He warned that without changes in education, within the next 30 years, there will be great difficulties. Current education that focuses more on knowledge than attitudes and skills may produce graduates who are less able to compete with artificial intelligence. Jack Ma also emphasized the need for qualified educators with appropriate qualifications and competencies.

So, it can be said that innovation in education and education technology are intertwined as an inseparable whole. Innovation is the core, while educational technology is the means to achieve the goal of innovation. Technology cannot be separated from human problems because it is developed to overcome existing problems. Therefore, educational technology is considered as a result and process, not only as a science but also as a source of knowledge that supports the learning process as needed. Educational technology plays an important role in major changes in the world of education, particularly in the 21st century educational revolution and its advanced phase, known as education 4.0. In this phase, the role of the teacher has shifted from being the center of learning to being more student-focused, where the teacher acts as a facilitator who helps provide learners' learning needs and provides learning resources and media.

The Importance of Student Engagement in Learning

Frederick (2012) states that there are three components of student engagement: behavioral, emotional, and cognitive (Devy Mukaromah Sugiyo, and Mulawarman). The focus of emotional engagement is on how students respond, both positively and negatively, to classmates, teachers, and school activities. This is not the same as cognitive engagement, which is a student's effort to apply every resource to master challenging material and understand complex ideas. Engaging in academic, social, and extracurricular activities that require effort

and behavior is known as student behavioral engagement. Finn (2012) showed that student disengagement leads to poorer achievement, a higher likelihood of disappointment, and the likelihood of receiving unpleasant feedback from teachers. The results of Finn's study show how important it is to increase student engagement in schools.

Student participation in the learning process can take various forms, according to Soli Abimayu (2017): (a) Physical involvement, including taking measurements, calculating, collecting data, demonstrating an idea, and so on; (b) Mental involvement, which includes intellectual involvement, which can involve paying full attention to what is being taught, talking with classmates, and completing learning tasks. (c) One way to be emotionally involved is to respect feelings, values, attitudes, and so on. According to the above view, learning activities include all actions taken by a person or group in an effort to change their physical, mental, or emotional behavior as a result of interaction with their environment during the learning process.

To effectively transform knowledge and experience in the learning process, teachers need a series of methodologies and experiences. There have been modifications to the traditional teaching and learning model, which previously tended to focus on the role of the teacher and viewed students as passive consumers of information. Nowadays this method emphasizes students' active participation and involvement more than ever before (Harmanto, 2016). When students actively participate in the learning process, their interest and motivation towards teaching increases. Through active engagement, students can dig deeper into concepts and ideas, gain hands-on experience, and connect the content they learn to real-world situations. By playing an active role, students can ask questions, participate in conversations, apply what they have learned to real-world scenarios, and develop a deeper and more meaningful understanding (SYAPARUDDIN et al., 2020).

Evaluation of Learning Media Effectiveness

Prototypes are educational materials that are still in the testing stage of development. One way to assess media before target consumers use it is to analyze the prototype of learning media (Kurniawati, 2011). A prototype is the first iteration of a learning tool or example before it is made available to the public for educational use. Therefore, a crucial step in the evaluation process is to evaluate the learning media prototype.

Evaluation is a planned process that aims to assess the extent to which the objectives of a program have been achieved (Kurniawati, 2011). Evaluation also refers to the interpretation or interpretation derived from quantitatively obtained data, the result of measurement. To be able

to give proper interpretation to this quantitative data, predetermined criteria are required. Evaluation of learning media is the process of assessing learning media by looking at predetermined standards or objectives, to enable decision making on the object being evaluated. The assessment of learning media should consider the criteria that have been set to evaluate a particular type of media. In this assessment process, it is important not to evaluate arbitrarily, but based on predetermined criteria. Criteria or standards are measures used as guidelines or minimum limits in the assessment or selection of something (Warsita, 2013). Therefore, the use of assessment criteria is an important step in any evaluation activity to analyze data and make decisions.

The process of assessing learning media using criteria is called evaluation. In assessing learning media, there are three main factors to consider: (1) content and quality of objectives; (2) teaching quality; and (3) technological quality. One way to ensure quality control of learning media is to conduct a pre-mastery evaluation, which involves at least three evaluation activities: expert evaluation, one-to-one evaluation, small group evaluation, and field experiment. In learning media development, a detailed plan and adequate resources play an important role. This development process can be carried out in a structured and comprehensive manner, following instructional system design principles that refer to the design, production and evaluation stages. Evaluation, which is the final stage in this development, has the main purpose of ensuring that the learning media created meets the expected quality standards. Moreover, it aims to identify fundamental flaws and fatal errors that may be present in the learning media before it is widely introduced. This process not only guarantees the quality of the learning media, but also ensures its effectiveness and conformity to the learning objectives that have been set earlier.

Using Quizwhizzer in Science Learning

Quizwhizzer is an interactive game developed to enhance the learning experience in the classroom. The app allows users to create quizzes with game concepts such as racing or snakes and ladders. With a variety of exciting features, Quizwhizzer creates a more dynamic and fun classroom atmosphere. Unique characteristics such as themes, images and music are used to enrich the learning process. Quizzes can be run live in class or given as assignments. The types of quizzes presented in Quizwhizzer are generally multiple choice (Trias, 2022). The use of Quizwhizzer, an interactive game in the classroom environment, brings a number of advantages to the teaching-learning process. The application makes students more engaged and more open in communication due to its competitive atmosphere, which makes them not hesitate when

giving answers. Incorporating these games in the learning process helps students understand and remember the material being taught. More than that, the use of game media also emphasizes the importance of values such as mutual respect, building closeness between students, and strengthening the aspect of honesty when competing to do the questions in the game.

The utilization of quizwhizzer media or application in the learning process has a positive impact on students' interest in learning and can be used as an alternative to conventional learning methods. This application offers various features that can increase students' interest in learning. Inadequate facilities and infrastructure in schools often make students feel bored when carrying out lesson assignments, however, Quizwhizzer can be a solution by providing a more interesting learning experience. Although Quizwhizzer has advantages, there are also some disadvantages in its use, and teachers may need further preparation to optimize its benefits. Research conducted by Faijah et al (2022) showed that the use of games with the help of Quizwhizzer was effective in improving students' understanding of mathematics material, especially the Pythagorean theorem. The results showed that the average value of the experimental class was higher than the control class (9.19> 7.06). According to Meilani et al. (2021), Quizwhizzer can be considered an interactive learning tool that helps teachers make learning more interesting and avoid boredom. In addition, this game can encourage student participation in answering questions posed by the teacher.

Researchers can conclude that there is an effect of the Quizwhizzer application on the learning interest of grade IV students on energy source material. They will make this conclusion based on theoretical opinions and relevant research. Not only that, Quizwhizzer brings a new dimension to student engagement. They become more active in communication, apart from the fear of being wrong in answering because of the competitive atmosphere created. The integration of this app into learning provides significant advantages in facilitating comprehension and retention of subject matter. In addition to the academic benefits, the use of games in the learning process also helps in shaping the social aspects of students. Learners learn to respect each other, build closer relationships, and value honesty when interacting in question competitions. This not only improves interaction between students, but also fosters positive values that are important in everyday life.

Thus, the implementation of Quizwhizzer not only enhances the learning experience in the classroom, but also provides added value in students' social and academic development. The integration of advanced game technology into this kind of learning process shows that an

innovative and fun approach can result in a more effective and memorable learning experience for students.

According to research by Oktavian, et al (2023) the use of quizwhizzer shows a difference during the learning process, where conditions when not using quizwhizzer students are considered less active it can be seen when the teacher asks but students are just silent. The data obtained from the learning outcomes also shows that the percentage that is complete is only 48% of all students. It is different when the use of quizwhizzer is applied showing the results of a 90% percentage that is complete. This proves that the use of quizwhizzer has a positive impact and is an innovative solution to help the learning process take place.   In line with research by Iskandar, et al (2023) stated that the use of quizwhizzer was proven to help the learning process. Where learners show better test results when quizwhizzer is used. Learners feel enthusiastic by being actively involved in the learning process.

According to Susanto & Ismaya's research (2022: 108), the Quizwhizzer application has a series of advantages that can be utilized. These include the ease with which teachers can create innovative information technology-based questions, an automated scoring system with points and ratings, presentation of correct answers and explanations when answers are incorrect, as well as a randomized mode option that helps prevent cheating and teaches honesty to students. However, on the other hand, the app also has drawbacks identified by Susanto & Ismaya (2022: 108). These include network or internet instability that can disrupt the learning process, the potential for students to look up answers on the internet while working, possible downgrading due to ineffective time management, and problems when students join late in providing resources and learning media.

CONCLUSION

The use of interactive learning media, such as Quizwhizzer, has a positive impact on the learning process. It allows students to be more active and engaged in learning, creating a dynamic and fun classroom atmosphere. In addition, educational technology, such as interactive multimedia and apps, provides flexibility in learning according to each student's style and pace. Quizwhizzer in evaluating the effectiveness of learning media becomes an important step in ensuring that learning objectives are achieved. Learning media prototypes are evaluated with reference to pre-defined criteria, including content, teaching quality and technological quality. This process helps identify shortcomings and errors that need to be corrected before widespread use of the media.

The use of Quizwhizzer as an interactive game in science learning brings many advantages, such as increased student interest in learning, active involvement in the learning process, and the formation of social aspects. Despite its advantages, it also has challenges, such as network instability, potential student cheating, and time management issues. Overall, innovation in education and learning technology are intertwined and support each other. Technology is not only a means, but also an outcome and process in achieving the goal of innovation in learning.

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