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Development of Interactive Media Using the Quantum Learning Method in Geography Education at Seririt 1 Public High School

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ABSTRACT

This study aims to describe the validity, practicality, and effectiveness of interactive learning media based on Quantum Learning using the Quizizz application in Geography lessons for grade XI students at SMA Negeri 1 Seririt. This research is of the R&D type, adapting the ADDIE model. The subjects of this research are one Geography teacher and 34 students from class XI-4 at SMA Negeri 1 Seririt. Research data was collected through expert validation, teacher and student responses, pretest, and posttest. Data analysis was conducted using descriptive quantitative methods. The research results are as follows: (1) the validity of the media has an average score of 81.23 (very suitable), (2) the practicality of the media has an average score of 91.65 (very practical), and (3) the effectiveness of the media shows a high average N-Gain score of 0.74 (73.75%). Therefore, the interactive learning media based on Quantum Learning assisted by the Quizizz application is deemed valid, practical, and effective as a learning tool for Geography that supports the improvement of concept understanding among Grade XI-4 students.

Keywords: Interactive learning media; quantum learning; quizizz; geography; concept understanding

INTRODUCTION

Education is a right for every individual. Education is expected to shape good personality and character in humans. Education is a structured and deliberate effort to motivate, nurture, assist, and guide individuals so that they can develop their full potential (Amirin et al., 2022). Education is a very important element in life. This is because education is believed to improve the quality of life through various aspects, such as knowledge, skills, and experience. According to Kulniwan et al. (2019), in the world of education, learning activities are one of the crucial factors in achieving optimal learning outcomes.

In the context of geography, education is highly relevant. Given that natural disasters often have a significant impact on human life, geography-based education can improve community preparedness and resilience. Therefore, it is important to integrate geographical aspects into the education system. Through quality education, communities are not only provided with knowledge about potential hazards but also trained to recognize disaster warning signs and understand the processes involved in mitigating risks and their impacts. Especially in Indonesia, which is a region where tectonic plates converge, making it prone to natural disasters (Muslim, 2020).

Geography education can develop human potential in facing natural challenges and disasters in a more organized and systematic manner. This aligns with the educational goal of creating individuals who not only possess knowledge but are also prepared to act in critical situations. By understanding and applying geographical concepts, individuals are expected to protect themselves and others while contributing to building stronger community resilience. The importance of Geography education necessitates educators to continuously innovate to create engaging learning environments. Educational systems evolve alongside societal progress. With the development of the existing learning system, teachers must adapt to the current conditions. Changes in the learning system are also related to the teacher's approach, which is still undergoing renewal and refinement to improve learning success (Fadila and Hariyati, 2019). Therefore, evaluation in the field of education must be carried out continuously to improve a country's educational standards.

During an observation on January 18, 2025, in class XI-4 at SMA Negeri 1 Seririt, it was found that students' interest in learning, especially in geography, was still relatively low. This lack of enthusiasm was evident in the students' behavior, which tended to be inactive and difficult to concentrate when the teacher explained the material. One of the causes was the lack of optimal use of learning media by the geography teacher, especially in the use of video media. In teaching and learning activities, teachers rely solely on projectors and textbooks as primary sources, without the support of more varied media such as educational videos that can visualize concepts in a more engaging manner. The material is delivered through lectures, accompanied by assignments in the form of worksheets, which makes the classroom atmosphere less interactive and not conducive to learning. Additionally, many students prefer to spend their free time playing games on their phones rather than using them as learning tools. The technological tools that should support learning have not been maximally utilized by the students.

This situation reflects that the learning process is still dominated by the role of the teacher or teacher-oriented. However, the learning approach that is in line with the demands of the 21st century emphasizes the active involvement of students in the learning process, especially in solving various problems they face (Khoiri et al., 2016). To achieve this ideal learning, the selection of appropriate learning models and methods is essential. Learning methods can be categorized based on the strategies employed. Indirect learning strategies typically utilize methods such as inquiry, case studies, problem-solving, and concept mapping. For self-directed learning strategies, appropriate methods include homework assignments, scientific writing, project-based research, computer-assisted learning, and the use of e-learning (Soraya, 2022).

One learning model that can improve students' abilities to be more active is Quantum Learning. According to Lestari (2018), Quantum Learning is a learning method designed to be enjoyable, involving various dynamic elements that can encourage successful learning processes. This approach encompasses various aspects such as individual interests, diversity, interaction among students, and other elements that can strengthen motivation and opportunities for optimal learning. In general,

Quantum Learning can be understood as a pattern or design used as a reference in planning and implementing the learning process, both in the classroom and during tutorial sessions. Therefore, it can be concluded that Quantum Learning is a learning strategy that integrates systematic planning and specific patterns formulated as guidelines for implementing learning activities.

Based on interviews with geography teachers at SMA Negeri 1 Seririt, one of the main challenges in geography learning is the lack of interest and active participation among students. Teachers stated that the learning methods used so far, such as lectures and assignments through worksheets, are considered ineffective in attracting students' attention. Teachers also acknowledged that the use of learning media is still limited to projectors and textbooks, so that materials that should be visualized in an interesting way are not maximized. Additionally, teachers mentioned that students tend to be more interested in using their cell phones to play games than to use them as learning tools. This makes the learning atmosphere less conducive and learning objectives are often not achieved optimally.

Meanwhile, interviews with students in class XI-4 at SMA Negeri 1 Seririt showed that the majority of students are bored when learning is monotonous. Students admitted that Geography learning often feels boring because it only focuses on teacher explanations and worksheet assignments. Some students also stated that they find it difficult to understand theoretical Geography material without visualization or concrete examples. Additionally, students revealed that they are more interested in using their smartphones for gaming or browsing social media than for learning. However, students also stated that they would be more interested if Geography lessons were presented in a more interactive and enjoyable manner, such as using educational videos or apps that allow them to learn while playing.

> "Geography lessons are boring, Mrs. The teacher just lectures, and then we're told to do worksheets. It's not very exciting. If there were videos or games that could make learning more fun, it would be more interesting."
>
> "I play games on my phone more often than I open my Geography materials. That's because learning is so monotonous. But if there were apps or quizzes that made learning more fun, I think I would be more interested."

The interview results indicate that both teachers and students are aware of the problems in Geography learning. This highlights the importance of developing learning models such as Quantum learning based on the Quizizz application to increase student enthusiasm and understanding. These interview results further reinforce the issues raised in the study, namely the low enthusiasm and engagement of students when learning Geography. This highlights the need for innovation in teaching methods and media, such as the use of the Quantum Learning model based on the Quizizz application, to create a more engaging and effective learning environment. As a result, it is hoped that students will become more active, motivated, and better understand Geography material, while also utilizing technology positively to support the learning process.

There are several research gaps identified in this study. Despite the relevance and importance of Geography education, particularly in Indonesia, which is prone to natural disasters, there remain challenges in implementing effective learning in the classroom. The learning process, which is still dominated by traditional teaching methods such as lectures and limited use of media, is the main issue. This impacts students' understanding of the material and their lack of practical skills in dealing with disasters. Additionally, while technology-based learning models like Quantum learning and the Quizizz app have the potential to enhance interactivity and learning effectiveness, the application of these approaches in the context of Geography has not been extensively explored. Based on the above, the development of learning media is needed to address these issues. The purpose of this research is to describe the validity, practicality, and effectiveness of interactive learning media based on Quantum Learning using the Quizizz application in Geography lessons for Grade XI students at Seririt State High School 1 as a support for student learning.

METHOD

This research is R&D research by adapting the ADDIEm model, namely Analyze, Design, Development, Implementation, and Evaluation. The research location is at SMAN 1 Seririt. This study will involve all students enrolled in the class, who are the group that will receive the application of interactive media based on Quantum learning using learning videos on Geography material. The research population consists of 34 students in class XI-4 at SMAN 1 Seririt, using a saturated sampling technique, thus including all students in class XI-4. Research data was collected through observation, questionnaires, interviews, expert validation, tests, and documentation. Data was analyzed through expert validation, practicality, and effectiveness analysis.

FINDINGS AND DISCUSSION

Research Findings

The validity test of interactive learning media in the form of learning videos using the Quantum Learning method assisted by Quizizz is shown in Table 1.

Table 1. Validity of Interactive Learning Media

No	Aspek	Nilai	Kategori
1	Media	86,45	Veri good
2	Material	76	Feasible
Average		**81,23**	**Very Feasible**

Table 1 shows that the validity of interactive learning media in the form of educational videos has been evaluated and obtained very satisfactory results in terms of media, as well as satisfactory results in terms of material. Based on the assessment results for the two main aspects, namely media and material, a score of 81.23 (Very Satisfactory) was obtained. This assessment was carried out through an analysis of relevant indicators in each aspect. With an overall average of 81.23, it is concluded that

interactive learning media in the form of educational videos using the Quantum Learning method assisted by Quizizz is suitable for use in the learning process, both in terms of technical design and content. This average score reflects the combination of visual, functional, and pedagogical quality of the developed media.

The practicality test for this interactive learning media was conducted through two main user groups, namely teachers and students. Each group assessed based on indicators relevant to the practical functions of the media in the learning process. The assessment was conducted by one Geography teacher at SMA Negeri 1 Seririt and 34 students from class XI-4.

Table 2. Practicality of Interactive Learning Media

No	Responden	Score	Category
1	Teacher	100	Very Practical
2	Students	83.29	Very Practical
	Rata-rata	**91.65**	**Very Practical**

Based on Table 2, the average practicality score was 91.65 (very practical), indicating that interactive learning media in the form of educational videos are very practical for use in learning activities, both by students and teachers. This media is considered capable of assisting the learning process efficiently, attractively, and easily, so it is highly recommended for implementation in learning activities.

The results of the effectiveness test showed a significant improvement in students' understanding of the concepts. This improvement was demonstrated by comparing the pretest and posttest scores, which were then analyzed using the N-Gain Score.

Table 3. Effectiveness of Interactive Learning Media

No	Aspek	Pretest Value	PosttestValue
1	Average Score	59.41	87.94
2	Different between Pretest dan Posttest	28.53	
3	N-Gain Score (Rata-rata)	0.74 (High)	
4	N-Gain Score (%)	73.75% (High)	

The data above shows that students' average conceptual understanding increased by 28.53 after they participated in learning using interactive learning media in the form of educational videos with the Quantum Learning method assisted by Quizizz. The initial pretest score of 59.41 increased to 87.94 on the posttest, reflecting a substantial improvement. The N-Gain coefficient of 0.74 or 73.75% indicates that the increase in students' conceptual understanding falls within the range of 0.70–1.00, which is considered high or effective. This indicates that video media can present material in an easily understandable manner, encourage active student engagement in the learning process, and facilitate the reinforcement of conceptual understanding through interactive quizzes. Thus, interactive learning media in the form of educational videos

using the Quantum Learning method and Quizizz are effective in improving students' conceptual understanding.

Discussion

1) Validity of Interactive Learning Media Based on Quantum Learning Assisted by the Quizizz Application in Geography Material for Grade XI at SMA Negeri 1 Seririt

The assessment was carried out based on two main aspects, namely the media aspect and the material aspect, each of which included a number of relevant indicators that had been adjusted to the learning needs of Grade XI-4 Geography. First, the media expert indicated that the media received a score of 86.45 (Very Suitable). This assessment covered three main aspects: (1) Design Suitability, which included seven indicators such as visual appearance, layout, color selection, and font type; (2) Language, with three indicators assessing the clarity and accuracy of language according to EYD standards and ease of understanding; (3) Learning Aspect, with three indicators covering effectiveness, ease of use, and student independence. A high score in the media aspect indicates that the media is visually appealing, easy to use, communicative, and functional in supporting the learning process. This score indicates that the instructional design applied in the media is capable of meeting the standards of quality for digital-based learning. Second, subject matter experts gave a score of 76 (Satisfactory). This assessment includes ten indicators covering topic clarity, alignment with learning objectives and curriculum, text readability, presentation of material, and potential for encouraging independent learning.

Overall, the average validity score is 81.23 (Very Acceptable). This score is a combination of visual quality, technical functionality, clarity of material presentation, and alignment of content with the curriculum. Thus, this interactive learning media based on Quantum Learning assisted by the Quizizz application is deemed suitable for use as an alternative learning resource for Geography class XI-4. The results of this study reinforce similar findings from Mariezki et al. (2021) and Bouatoa et al. (2020), who state that learning media are deemed valid if they have undergone validation by experts before being widely used. A similar opinion was also expressed by Supriyono et al. (2023), who stated that teaching materials are deemed suitable after receiving an assessment from experts through a validity test.

2) The Practicality of Interactive Learning Media Based on Quantum Learning Assisted by the Quizizz Application in Geography Material for Grade XI at Seririt 1 Public High School

The practicality of interactive learning media in the form of Quantum Learning-based learning videos assisted by the Quizizz application was determined after conducting trials on two main user groups, namely teachers and students. First, the practicality of the media was assessed by teachers through a set of indicators comprising 11 key points. These indicators included: engaging media, relevance of content to the subject matter, ease of understanding, completeness of information, systematic presentation, clarity of discussion, media appearance, font size, use of color, visual appeal, and creativity in presentation. From this assessment, a score of 100

(Very Practical) was obtained. This indicates that the learning media greatly assists teachers in delivering the material and is easy to use without the need for additional training. Second, the results of the practicality assessment by students focused on two main aspects: media appearance and material delivery, with a total of 10 assessment indicators. These indicators include image clarity, attractive presentation, text readability, easy-to-understand language, and enjoyment in using the media. The results from 34 students showed an average score of 83.29 (Very Practical). This indicates that the media aligns with students' learning characteristics and needs, as it is easy to operate, communicative, and capable of enhancing learning enthusiasm.

Overall, the average practicality score from both respondents was 91.65 (Very Practical). This score confirms that the interactive learning media in the form of Quantum Learning-based educational videos assisted by Quizizz is highly suitable for use. The results of this study are in line with the findings of Mariezki et al. (2021) and Bouatoa et al. (2020), who stated that teaching materials are considered practical if they have been assessed by practitioners (teachers) and direct users (students) with satisfactory results. Supriyono et al. (2023) also added that the assessment of practicality by teachers is important to be done before the media is widely implemented in learning, while students become an important source of data during the trial.

3) Effectiveness in Improving Conceptual Understanding Using Interactive Learning Media Based on Quantum Learning Assisted by the Quizizz Application on Geography Material for Grade XI at SMA Negeri 1 Seririt

Based on the effectiveness test conducted on Grade XI-4 students at Seririt State High School 1, the results showed a significant improvement in concept understanding after using interactive learning media in the form of educational videos with a Quantum Learning approach assisted by the Quizizz application. From the calculations, the average pretest score of 59.41 increased to 87.94 on the posttest, with an improvement of 28.53 points. This score indicates a substantial improvement in students' conceptual understanding. Furthermore, an N-Gain coefficient of 0.74 or 73.75% (high) was obtained. Therefore, the media is deemed effective in enhancing students' conceptual understanding of geography material.

These findings indicate that the use of the Quantum Learning approach in delivering material through learning videos and the integration of interactive quizzes through the Quizizz application can help students understand concepts more deeply and enjoyably. This statement is also supported by the research of Rohmat et al. (2023), which states that there is a significant change between pretest and posttest scores. Research by Zaharah et al. (2021) also shows an increase in student learning outcomes.

CONCLUSION

The conclusion of this study is that the interactive learning media in the form of educational videos using the Quantum Learning approach, assisted by the Quizizz application, developed for the Geography subject in Grade XI at Seririt State Senior High School 1, is valid, highly practical, and effective for use. The validity of the learning media is categorized as Very Suitable with a score of 81.23, based on evaluations from media experts (86.45) and subject matter experts (76). The practicality of the media is categorized as Very Practical with a score of 91.65, based on evaluations from teachers (100) and students (83.29). The effectiveness of the media in improving students' conceptual understanding is demonstrated by the increase in the average pretest and posttest scores from 59.41 to 87.94, with an N-Gain of 0.74 (73.75%), classified as High.

Based on the above conclusions, the author suggests that teachers utilize interactive learning media based on Quantum Learning with the assistance of the Quizizz application as an alternative learning medium that is interesting, innovative, and improves students' conceptual understanding. Students are encouraged to maximize the use of this medium to support their conceptual understanding, both during lessons and in independent study at home. For future researchers, it is hoped that they can develop similar media with different content or for different educational levels, and test their effectiveness in a broader context.

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