

Using Quizizz as an Interactive Learning Media to Improve Cognitive Values in Elementary School Students

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Abstract

Learning is a complex process that occurs in a person's life. If there is contact between humans and their environment, individually or in groups, then learning will occur. Students use learning media as an intermediary tool to convey messages or information. Creative media can stimulate students' interest in the lesson. This study aims to investigate the application of quizzes in the digital era's learning process and assess their impact on enhancing students' cognitive values. This study uses a research and development method. Research indicates that to support the teaching and learning process effectively, web-based, application-based learning media must meet the standards of validity, practicality, and effectiveness. In this case, Quizizz, the developed learning medium, underwent material validation and technical evaluation stages to ensure that the presented content aligned with the curriculum and learning objectives. This validation also encompasses the suitability of the material's content and the application's user-friendliness. In addition to the validity aspect, the practicality of the media is also an essential factor in this assessment. Based on the observations and user responses, students and teachers responded positively to Quizizz as a learning medium. The ease of access and use of the available features, such as interactive questions and various quiz modes, make learning more engaging and not boring. This shows that Quizizz is practical and can increase students' interest in learning through a more dynamic approach. Finally, the effectiveness of Quizizz as a learning medium is evident in the results of observations and responses from students and teachers during the learning process. Students looked more enthusiastic and motivated to actively participate in the quizzes, which helped them understand the material better. The provided results analysis feature also aids teachers, enabling more accurate assessment of student learning outcomes. Quizizz is a valid, practical, and effective medium for interactive learning.

Keywords: *Media, Learning, Interactive, Web Applications, Quizizz.*

1. Introduction

The process of learning is intricate and persists throughout an individual's life. Learning can occur when individuals or groups interact with their environment, either directly or indirectly. Observable changes in behavior are one sign of learning [1]. This process encompasses various aspects, ranging from the reception of information to its application in daily life, all of which contribute to the individual's development. Along with the development of science and technology, the demands on educators are increasing. Teachers are not only required to master teaching materials but must also be able to develop skills in creating innovative and effective learning media [2]. This learning medium aims to facilitate the teaching and learning process, make the material easier to understand, and increase students' interest in learning. Teachers' ability to utilize technology in this digital era is essential to creating engaging and relevant learning. In addition to mastering the tools that are already available in schools, teachers are also required to be able to develop skills in creating learning media that are not yet available [3]. Adapting the media to the needs and characteristics of students is crucial. Thus, teachers can create a more meaningful and effective learning experience. Skills in designing learning media will help teachers achieve more optimal educational goals and positively impact student development [4].



Teachers use learning media as an intermediary tool to convey messages or information to students. Teachers can use creative media to stimulate students' interest and enthusiasm in following lessons [5]. Effective learning media can enhance the interest and enjoyment of learning, thereby boosting students' confidence and motivation to comprehend the taught material. In addition, learning media also functions as a tool, method, and approach to facilitate communication and interaction between teachers and students. In this context, media connects the taught material, making it easier for students to understand [6]. Media also allows students to be more actively involved in the learning process visually, audibly, and kinesthetically. We can define learning media as any tool that stimulates students' thoughts, attention, will, and feelings, thereby promoting the learning process. In other words, media is not just a tool but also an integral part of a learning strategy that can improve the quality of education [7].

Learning media have characteristics and uniqueness that distinguish them from each other. We categorize each learning medium to determine its purpose and role, aiming to simplify the process for teachers in selecting the most appropriate and efficient media for the class's learning material [8]. This media grouping is significant because, with the correct grouping, teachers can choose media that suits the characteristics of the material and the needs of students so that the learning process can take place more effectively. Learning media has several functions that can support the smoothness and quality of the teaching and learning process. The first function is the communicative function, which means that the media plays a role in conveying messages or information clearly and straightforwardly for students to understand [9]. The second function is the motivational function, where the media can stimulate students' enthusiasm and interest to participate more actively in learning. Media that is captivating and by students' interests can increase their motivation to learn. Furthermore, the meaningful function of learning media is to enhance students' comprehension of the subject matter and connect it to their experiences [10]. The equalization function is also essential because media can present information similarly for all students, thus creating equality in understanding the material. Lastly, the individuality function of media enables the adjustment of learning media to meet the unique learning needs of students, giving them the chance to learn according to their preferred learning styles [11].

The use of learning media in the teaching and learning process has a vital role in arousing students' interest and desire to learn. Appropriate use of media can enhance the interest of learning and boost student involvement in the process. In addition, media also functions to stimulate learning activities, help students understand the subject matter, and provide positive psychological impacts, such as increasing self-confidence and reducing boredom in learning [12]. The use of effective learning media requires special attention from teachers. Teachers must seek, find, and choose media to meet students' learning needs well. Suitable media can help students understand the material more easily and quickly and make learning more enjoyable. Therefore, selecting media that aligns with the material's characteristics and students' needs is crucial for achieving learning objectives [13].

Additionally, learning media must have the ability to spark students' interest in learning. Teachers can create a more dynamic and interactive learning atmosphere by using an intriguing press by technological developments or student interests. This boosts students' learning motivation and enhances their comprehension of the taught material. Therefore, selecting and using effective media is one of the critical factors in achieving optimal learning goals [14].

Games are an exciting and effective learning medium for increasing interaction between students. Games have an interactive nature that prioritizes student cooperation and communication and can create a fun learning atmosphere. One of the main characteristics of games in the context of learning is their ability to foster student motivation through fantasy, challenges, and curiosity. These elements help students stay engaged and motivated in learning, making them participate more actively. Games in learning function as entertainment and tools that can develop students' social and cognitive skills [15]. Games can be defined as any context that gives rise to interaction between players by following specific predetermined rules. In education, well-designed games will challenge students to think critically, solve problems, and work with their friends to achieve predetermined learning goals. Teachers can create a more dynamic and fun learning atmosphere using games as a learning medium. Games with motivational elements such as challenges and curiosity can stimulate students' active interest in learning. Additionally, games encourage students to interact actively, strengthen their social skills, and develop their ability to work in teams. Thus, games effectively increase motivation and enhance students' understanding of learning materials [16].

Teachers can apply various learning media, including game-based learning media, to enhance learning effectiveness. This medium not only presents material but also measures students' comprehension of the taught material. Students can become more active and motivated to learn through games, and teachers can assess the students' understanding of the delivered lessons. Quizizz is an efficient educational game application in this context. Teachers can easily adjust this narrative and flexible application to suit their teaching needs. In addition to functioning as a means of delivering material, Quizizz also allows teachers to conduct fun and engaging learning evaluations [17]. In the form of interactive quizzes, students can test their understanding of the material in a more engaging way than traditional evaluation methods. With the increasing ease of access to learning media, teachers now have various options to optimize the teaching and learning process. One option is to use applications like Quizizz to create evaluation media that are not only effective but also enjoyable. Through this application, teachers can evaluate student learning achievements in real-time while making the evaluation process more exciting and interactive and positively impacting student motivation in learning [18][19]. Based on the background that has been explained, the researcher is interested in conducting a study entitled "Using Quizizz as an Interactive Learning Media in the Digital Era to Improve Cognitive Values in Students at SD Islam Terpadu Dian Insani Class V." The goal of this study is to investigate the application of the Quizizz, a game-based learning medium, in the digital era's learning process and assess its impact on enhancing the cognitive values of students in class V at SD Islam Terpadu Dian Insani.

Along with the development of technology and the need for more exciting and interactive learning methods, quizzes are expected to impact students' understanding of the subject matter positively. With features that support aspects of interactivity and flexibility, this application not only delivers material in a fun way but can also be used as an effective evaluation tool to measure the extent to which students understand the material that has been taught. This study aims to uncover empirical evidence demonstrating the benefits of Quizizz as an interactive learning medium in enhancing students' cognitive values. The researcher also hopes that the results of this study can contribute to developing more innovative learning methods through technological developments in schools, especially at SD Islam Terpadu Dian Insani.

2. Research Method

This study employs the research and development method, also known as development research. Researchers use this method to produce a specific product and evaluate its effectiveness. Researchers in this study apply the ADDIE development model, one of the various

models available for development research. One of the popular approaches to developing learning media is the ADDIE model, which comprises five main phases or stages that researchers must successfully navigate. The first phase in the ADDIE model is analysis, where researchers conduct a needs analysis to identify existing problems and determine product development objectives. Based on the results of the needs analysis, the second phase, design, involves designing learning media and planning the materials, methods, and application formats. The third phase consists of developing and testing the design of the learning media products. Following the development in the learning medium, the next step is implementation, during which students test the developed product to understand its application in the learning context. Evaluation, the final stage, aims to evaluate the product's effectiveness, pinpoint its shortcomings, and offer suggestions for enhancement or refinement. This research hopes to produce practical and valuable learning media for students by adhering to the ADDIE model, particularly in improving their cognitive values.

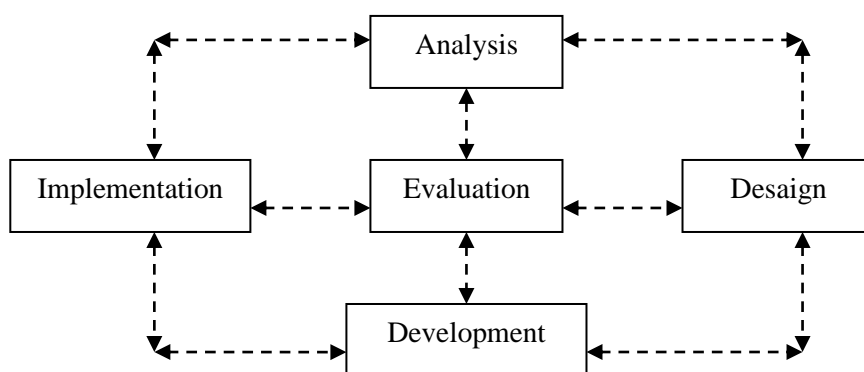


Fig 1. ADDIE Development

The data analysis technique in this study involves various stages of evaluation from several parties, including material experts, media experts, students, and teachers. Each party provides an assessment based on predetermined categories to help simplify the analysis process. We will convert the narrative or descriptive evaluation results into points using a specific scale, which includes the categories "Very Good," "Good," "Enough," and "Poor." This aims to simplify the assessment process and make the evaluation results easier to interpret. Material experts focus their evaluation on the appropriateness of the learning media content, its suitability to the learning objectives, and the depth of the presented content.

Meanwhile, media experts evaluate aspects of the design and appearance of the media, ease of use, and its suitability to the characteristics of the students who will use it. The prepared scale then converts these assessment categories into points, enabling researchers to gather quantitative data from narrative feedback. Additionally, we conducted a practicality test on both students and teachers to evaluate the effectiveness of this learning medium in aiding students in understanding the material and its ease of implementation in teaching and learning activities. Students provide feedback on the appeal and practicality of the media, while teachers evaluate the ease of use and the potential of the media to improve learning effectiveness. Using this assessment scale, researchers can comprehensively analyze the effectiveness of learning media and obtain important input for further improvement and development.

Table 1. Validity Criteria for Learning Instruments

No	Value	Criteria
1	80% < P < 100%	Very Valid
2	60% < P < 80%	Valid
3	40% < P < 60%	Quite Valid
4	20% < P < 40%	Less Valid
5	0% < P ≤ 20%	Not Valid

3. Result and Discussions

3.1. Analysis Stages

At this stage, data analysis involves three main aspects: needs analysis, curriculum analysis, and student characteristics analysis. We conduct a needs analysis to determine the most suitable learning medium for enhancing the teaching and learning process. Interviews and classroom observations revealed several advantages of the current school learning media. One of them is its ability to clarify the delivery of material so that it does not only rely on written or spoken words but also provides visualizations that help students understand concepts more concretely. In addition, existing learning media can also overcome limitations of space, time, and sensory power. For instance, teachers can present objects too large or challenging to physically present in the classroom through pictures, films, or models, thereby aiding students in understanding the material even when the object is not physically present. Therefore, this educational tool enhances students' learning experiences and provides access to information that may not be readily available in the classroom. This is particularly beneficial in situations where physical and time constraints pose obstacles to learning. Another advantage of existing learning media is its ability to increase interaction and reduce students' passive attitudes in the classroom. This medium can trigger active student involvement with various exciting presentations, making them more motivated to understand the material. Additionally, teachers and students can access this media online and offline, depending on the availability of an internet connection. Despite these advantages,

schools can use learning media as an essential tool to enhance learning effectiveness, but there is still room for improvement to achieve more optimal results.

Although the learning media in the school has many advantages, several disadvantages affect its effectiveness. One of the main disadvantages is that the continuous use of media without sufficient variation can make students feel bored. Repeated use of the same media can create a monotonous learning atmosphere, leading students to lose interest in actively participating. As a result, their enthusiasm for following the lesson decreases, impacting their ability to absorb the material optimally. This boredom requires special attention from educators so that the media used remains relevant and enjoyable. In addition to the problem of boredom, some students also have difficulty maintaining focus on the material presented through this medium. The lack of interactivity in the media's appearance or presentation can lead to students' disinterest, as they perceive it as not engaging enough to capture their attention. The lack of variation or attractive design in learning media can make it difficult for students to maintain their attention to the material, especially for students who have visual and kinesthetic learning styles. Therefore, we must innovate the media presentation to make it more dynamic and interactive, ensuring students stay actively engaged in learning. In addition to student-related issues, the use of this technology-based learning medium is also challenged by technical constraints. Internet network disruption is a common technical constraint, particularly during power outages or periodic connection disruptions. Reliance on a stable internet connection is essential, primarily if this learning medium operates online. A blackout or network disruption hinders the learning process and disrupts the flow of material delivery, thereby reducing the effectiveness of the media. Ensuring that the media remains unobstructed is a particular concern. Therefore, it is important to consider solutions to overcome these limitations so that the teaching and learning process runs more effectively and efficiently. We can approach this by compiling more interesting media variations and paying attention to interactive aspects in their design, ensuring the media supports learning optimally. In addition, providing offline alternatives or backups when technical constraints occur will also be very helpful in maintaining the smooth running of the learning process. By responding to existing deficiencies, learning media can be more responsive to student needs and improve the school's learning quality.

To enhance the effectiveness and efficiency of the learning process, teachers must adapt the use of learning media in the classroom to the material under study. With the variety of media available, teachers have the challenge of choosing suitable press according to the learning objectives and characteristics of the material. Selecting the appropriate media is crucial in overcoming various obstacles in the classroom, such as limited time and space and variations in student learning styles. The press chosen must effectively convey educational messages clearly and engagingly, encouraging students to engage actively in learning. In addition, the suitable learning medium can change concepts that may be abstract into more concrete and easy-to-understand ones. Using visual or technology-based media makes material challenging to explain verbally or in writing more accessible for students to digest. For instance, visual aids such as images, diagrams, or animations can present concepts related to mathematics, science, or social studies, thereby simplifying the learning process for students. This increases student focus and motivation because they feel more involved in learning and interested in the exciting and interactive presentation method. In addition to helping students understand the material, effective learning media can also improve the quality of student understanding more interactively.

Using media not only for information delivery but also for activities that directly involve students, like quizzes or educational games, can increase their enthusiasm and active participation in learning. This activity reduces the boredom that often occurs in conventional learning while helping students to evaluate their understanding in a fun way. This is where innovation in media selection, such as using technology-based platforms that integrate entertainment elements with learning, is crucial. With this in mind, researchers took the initiative to develop Quizizz-based learning media as a teaching aid and assessment tool for the cognitive knowledge of fifth-grade students at SD Islam Terpadu Dian Insani. We chose Quizizz because it enables teachers to present material in an interactive and fun manner while providing direct evaluation through challenging quiz questions. Quizizz makes it easier for students to understand the material and instills a healthy competitive spirit, motivating them to study harder. Thus, using Quizizz can effectively create an engaging and in-depth learning experience for students.

3.2. Design Stages

In the second stage of this research, the researcher entered the design phase of Quizizz-based learning media. Creating a Quizizz account, a platform for presenting unique material for the Pendidikan Pancasila dan Kewarganegaraan (PPKN) subject, is the first step in this design process. We present the material more captivatingly through Quizizz, hoping to increase students' interest and attention to learning. We structure the lesson content to convey information and engage students directly in interactive learning activities. We present the material either in paper mode or by scanning a barcode. The design of this method allows students to engage in learning activities without needing personal mobile devices. Each student receives a unique barcode from the teacher to use during the learning process. This barcode functions as a substitute for digital devices, so students can still follow learning activities optimally without distractions from using mobile phones. With this, students can stay focused and active in learning without relying on their personal technology. The implementation of this barcode is quite simple and effective. Every time a question requires a student's response, they can show the barcode as a sign of readiness to answer. This provides a different experience than usual because students become more enthusiastic and feel that learning is an interactive game. They actively participate in learning rather than just listening or taking notes. This method makes the classroom atmosphere livelier, and students are more directly involved in solving the questions. Using this barcode increases student enthusiasm and makes them more focused and quicker in providing answers. This system encourages students to be active and involved in the learning process more efficiently. This method boosts motivation and enhances students' understanding and memory of the material by enabling direct participation. Overall, the Quizizz platform's Scan Barcode method offers a dynamic, engaging, and interactive learning experience that enhances students' comprehension of the subject matter.

Examples of features in Quizizz:

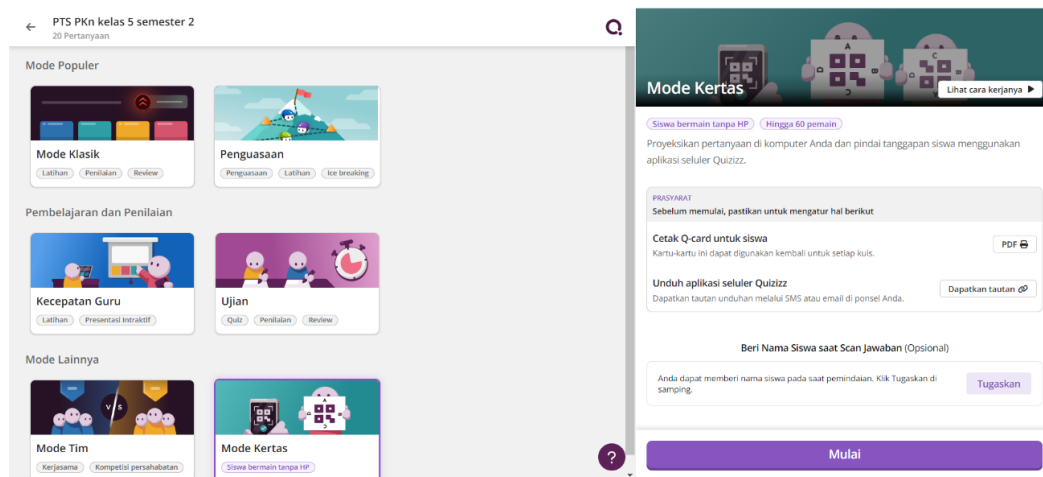


Fig 2. Assessment and Evaluation Features (Indonesia)



Fig 3. Application in Learning

4. Conclusion

Research indicates that to support the teaching and learning process effectively, web-based application-based learning media must meet the standards of validity, practicality, and effectiveness. In this case, Quizizz, the developed learning media, underwent material validation and technical evaluation stages to ensure that the presented content aligned with the curriculum and learning objectives. This validation also encompasses the suitability of the material's content and the application's user-friendliness. In addition to the validity aspect, the practicality of the media is also an essential factor in this assessment. Based on the observations and user responses, students and teachers responded positively to Quizizz as a learning medium. The ease of access and use of the available features, such as interactive questions and various quiz modes, make learning more engaging and not boring. This shows that Quizizz is practical and can increase students' interest in learning through a more dynamic approach. Finally, the effectiveness of Quizizz as a learning medium is evident in the results of observations and responses from students and teachers during the learning process. Students looked more enthusiastic and motivated to actively participate in the quizzes, which helped them understand the material better. The provided results analysis feature also aids teachers, enabling more accurate assessment of student learning outcomes. Quizizz is a valid, practical, and effective medium for interactive learning.

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