

Implementation of Wordwall-Based Game-Based Learning to Enhance Instructional Design Creativity of PIAUD Students

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Abstract: This study aims to analyze the implementation of Wordwall-based game-based learning in enhancing the instructional design creativity of Early Childhood Islamic Education (PIAUD) students. The research employed a quantitative approach with a quasi-experimental design. The subjects of this study were PIAUD students enrolled in instructional media development courses. Data were collected through observation, questionnaires, and documentation, while statistical analysis was used to examine differences before and after treatment. The results indicate that the use of Wordwall in game-based learning significantly improves students' creativity in designing innovative, interactive, and engaging instructional materials. Furthermore, students demonstrated enhanced reflective abilities and greater exploration of creative ideas during the learning process. Therefore, the implementation of Wordwall-based game-based learning is effective as a learning strategy to improve the quality of instructional design among PIAUD students.

Keywords: Game-Based Learning; Wordwall; Creativity; Instructional Design; PIAUD Students.

Abstrak: Penelitian ini bertujuan untuk menganalisis implementasi *game-based learning* berbasis Wordwall dalam meningkatkan kreativitas desain pembelajaran mahasiswa Pendidikan Islam Anak Usia Dini (PIAUD). Metode penelitian yang digunakan adalah pendekatan kuantitatif dengan desain eksperimen semu (*quasi-experimental design*). Subjek penelitian adalah mahasiswa PIAUD yang mengikuti mata kuliah pengembangan media pembelajaran. Teknik pengumpulan data dilakukan melalui observasi, angket, dan dokumentasi, sedangkan analisis data menggunakan uji statistik untuk melihat perbedaan sebelum dan sesudah perlakuan. Hasil penelitian menunjukkan bahwa penggunaan Wordwall dalam

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pembelajaran berbasis permainan mampu meningkatkan kreativitas mahasiswa dalam merancang desain pembelajaran yang inovatif, interaktif, dan menarik. Selain itu, mahasiswa menunjukkan peningkatan dalam kemampuan refleksi dan eksplorasi ide-ide kreatif dalam proses pembelajaran. Dengan demikian, implementasi *game-based learning* berbasis Wordwall efektif digunakan sebagai strategi pembelajaran dalam meningkatkan kualitas desain pembelajaran mahasiswa PIAUD.

Kata Kunci: Game-Based Learning; Wordwall; Kreativitas; Desain Pembelajaran; Mahasiswa PIAUD.

A. Introduction

The rapid development of digital technology has significantly transformed the landscape of education, particularly in higher education contexts. The integration of technology into teaching and learning processes has created new opportunities for enhancing student engagement and creativity. In this digital era, educators are required to adopt innovative strategies that align with the characteristics of modern learners who are highly familiar with interactive and technology-based environments (Prensky, 2001).

One of the emerging approaches in contemporary education is *game-based learning* (GBL), which integrates game elements into instructional processes to foster motivation and active participation. GBL has been widely recognized as an effective pedagogical strategy that can improve students' cognitive, affective, and psychomotor skills (Plass, Homer, & Kinzer, 2015). By incorporating elements such as challenges, rewards, and feedback, GBL creates an engaging learning atmosphere that encourages students to explore and construct knowledge actively.

In the context of teacher education, particularly in Early Childhood Islamic Education (PIAUD), the development of instructional design skills is a crucial competency. Prospective teachers are expected to design creative, interactive, and meaningful learning experiences for young learners. However, many students still face difficulties in developing innovative instructional designs due to limited exposure to engaging and technology-integrated learning tools (Koehler & Mishra, 2009).

Creativity in instructional design is an essential aspect that determines the effectiveness of teaching and learning processes. Creative instructional design involves the ability to combine pedagogical knowledge, content knowledge, and technological skills to produce innovative learning materials (Runco & Jaeger, 2012). Therefore, fostering creativity among PIAUD students is a fundamental goal in teacher education programs.

Despite the importance of creativity, traditional teaching methods often fail to stimulate students' creative thinking and active participation. Conventional approaches tend to emphasize passive learning, where students receive information without meaningful engagement. This condition highlights the need for innovative teaching strategies that can encourage students to think critically and creatively (Bonwell & Eison, 1991).

The use of digital platforms in education has opened new possibilities for implementing interactive learning strategies. One such platform is Wordwall, an online tool that allows educators to create interactive games and quizzes. Wordwall provides various templates that can be customized to suit different learning objectives, making it a flexible and user-friendly tool for both teachers and students.

Wordwall has gained popularity as an effective medium for implementing game-based learning. It enables students to participate actively in learning activities through interactive games that promote engagement and motivation. Previous studies have shown that digital game-based platforms can significantly enhance students' learning outcomes and creativity (Gee, 2003).

In addition to improving engagement, Wordwall also supports the development of higher-order thinking skills. Through interactive game features, students are encouraged to analyze, evaluate, and create, which are essential components of 21st-century skills (Anderson & Krathwohl, 2001). This makes Wordwall a valuable tool for enhancing instructional design creativity among prospective teachers.

In the context of PIAUD students, the use of Wordwall in game-based learning is particularly relevant. Early childhood education requires creative and engaging teaching methods that can capture young learners' attention. Therefore, PIAUD students need to

be equipped with the ability to design interactive and innovative learning experiences using digital tools.

Furthermore, reflective practice plays an important role in developing instructional design skills. Reflection allows students to evaluate their learning experiences and identify areas for improvement. Game-based learning environments, such as those facilitated by Wordwall, provide opportunities for students to engage in reflective thinking through immediate feedback and interactive activities (Schön, 1983).

The integration of game-based learning and reflective practice can create a comprehensive learning experience that enhances both creativity and critical thinking. By engaging in interactive games and reflecting on their experiences, students can develop a deeper understanding of instructional design principles.

However, despite the potential benefits of Wordwall and game-based learning, there is still limited research focusing on their implementation in PIAUD contexts. Most existing studies have primarily examined general education settings, leaving a gap in understanding how these approaches can be applied effectively in early childhood teacher education.

This research aims to address this gap by exploring the implementation of Wordwall-based game-based learning in enhancing the instructional design creativity of PIAUD students. By focusing on this specific context, the study contributes to the development of innovative teaching strategies in teacher education programs.

Moreover, this study emphasizes the importance of integrating technology into teacher education curricula. As future educators, PIAUD students must be prepared to utilize digital tools effectively in their teaching practices. This requires not only technical skills but also the ability to design meaningful and engaging learning experiences.

The significance of this research lies in its potential to provide empirical evidence on the effectiveness of Wordwall as a game-based learning tool. The findings are expected to offer insights into how digital platforms can be utilized to enhance creativity and instructional design skills among prospective teachers.

In addition, this study also highlights the role of student-centered learning approaches in promoting creativity. Game-based learning shifts the focus from teacher-centered instruction to active student participation, allowing learners to take ownership of their learning process (Hmelo-Silver, Duncan, & Chinn, 2007).

The research also considers the role of motivation in learning. Game elements such as points, levels, and rewards can increase students' intrinsic motivation, which in turn enhances their engagement and learning outcomes (Deci & Ryan, 2000). This makes game-based learning an effective approach for fostering creativity and innovation.

Another important aspect of this study is the exploration of how Wordwall facilitates the expression of creative ideas. Through interactive features, students can experiment with different instructional design strategies and receive immediate feedback, which supports the development of creative thinking skills.

Based on the background and theoretical framework presented, this study formulates several research objectives. First, to analyze the implementation of Wordwall-based game-based learning in PIAUD classrooms. Second, to examine its impact on students' instructional design creativity. Third, to evaluate students' reflective abilities and their exploration of creative ideas during the learning process.

Finally, this study aims to provide practical recommendations for educators and institutions in integrating game-based learning into teacher education programs. By doing so, it is expected that the quality of instructional design among PIAUD students can be improved, ultimately contributing to the development of innovative and effective early childhood education practices.

B. Research Methodology

This study employed a quantitative approach using a quasi-experimental design to investigate the effectiveness of Wordwall-based game-based learning in enhancing instructional design creativity among PIAUD students. A quasi-experimental design was chosen because it allows researchers to examine causal relationships in educational settings where random assignment is not always feasible (Creswell & Creswell, 2018).

Specifically, this study utilized a pre-test and post-test control group design to compare the outcomes between experimental and control groups.

The research was conducted at a higher education institution offering the Early Childhood Islamic Education (PIAUD) program. The participants of this study were undergraduate students enrolled in the instructional media development course. A purposive sampling technique was used to select participants who met specific criteria, such as active enrollment in the course and prior exposure to basic instructional design concepts (Etikan, Musa, & Alkassim, 2016). The total number of participants was divided into two groups: an experimental group receiving the intervention and a control group receiving conventional instruction.

The experimental group was taught using Wordwall-based game-based learning, while the control group received traditional lecture-based instruction. The intervention was carried out over several sessions, during which students in the experimental group engaged in interactive learning activities using Wordwall. These activities included quizzes, matching games, and problem-solving tasks designed to stimulate creativity and engagement. Game-based learning elements such as feedback, rewards, and challenges were integrated into the learning process to enhance motivation (Plass et al., 2015).

Data were collected using multiple instruments, including observation sheets, questionnaires, and documentation. The observation sheets were used to assess students' participation and engagement during the learning process. Questionnaires were administered to measure students' creativity in instructional design, using indicators such as originality, flexibility, elaboration, and fluency (Runco & Jaeger, 2012). Documentation, including students' instructional design products, was also analyzed to provide additional evidence of creativity development.

To ensure the validity and reliability of the research instruments, several procedures were conducted. Content validity was established through expert judgment involving educational technology and instructional design specialists. Reliability testing was performed using Cronbach's alpha to determine the internal consistency of the

questionnaire items (Field, 2013). These procedures ensured that the instruments were appropriate for measuring the intended variables.

Data analysis was conducted using both descriptive and inferential statistical techniques. Descriptive statistics were used to summarize the data, including mean scores and standard deviations. Inferential statistics, particularly paired sample t-tests and independent sample t-tests, were employed to examine the differences between pre-test and post-test scores within and between groups (Gay, Mills, & Airasian, 2012). Statistical analysis was performed using appropriate software to ensure accuracy and efficiency.

Ethical considerations were also taken into account in this study. Participants were informed about the purpose of the research and their consent was obtained prior to data collection. Confidentiality and anonymity of participants were maintained throughout the study. Additionally, the research adhered to ethical guidelines in educational research to ensure that participants were not exposed to any form of harm (Creswell & Creswell, 2018).

C. Results and Discussion

The results of this study indicate that the implementation of Wordwall-based game-based learning had a significant impact on students' instructional design creativity. Based on the descriptive statistical analysis, the mean score of the experimental group increased considerably from the pre-test to the post-test, indicating a positive development in students' creative abilities.

In contrast, the control group, which was taught using conventional lecture-based methods, showed only a slight improvement in their post-test scores. This suggests that traditional teaching approaches are less effective in fostering creativity compared to interactive and technology-based learning environments (Bonwell & Eison, 1991).

The inferential statistical analysis using paired sample t-tests revealed that the improvement in the experimental group was statistically significant. This finding confirms that the use of Wordwall in game-based learning contributes to enhancing students' instructional design creativity.

Furthermore, the independent sample t-test results demonstrated a significant difference between the experimental and control groups in the post-test scores. This indicates that the treatment provided to the experimental group was effective in improving learning outcomes.

The findings of this study are consistent with previous research that highlights the effectiveness of game-based learning in enhancing student engagement and creativity (Plass et al., 2015). The integration of game elements such as rewards, challenges, and feedback creates a stimulating learning environment that encourages active participation.

One of the key findings is that Wordwall facilitates students' ability to generate original ideas in instructional design. Students in the experimental group demonstrated higher levels of originality in their learning products compared to those in the control group. This aligns with the concept of creativity as the ability to produce novel and useful ideas (Runco & Jaeger, 2012).

In terms of flexibility, students who engaged with Wordwall were able to explore various approaches to designing instructional materials. The interactive nature of the platform allowed them to experiment with different formats and strategies, leading to more diverse and innovative outputs.

Elaboration, as another component of creativity, was also significantly improved among students in the experimental group. They were able to develop more detailed and comprehensive instructional designs, incorporating multiple elements such as visuals, interactivity, and structured learning sequences.

Fluency in idea generation was evident in the increased number of creative ideas produced by students. Wordwall activities encouraged rapid thinking and problem-solving, which contributed to the development of fluency in instructional design.

The use of Wordwall also enhanced students' motivation to participate in learning activities. Game-based elements such as points, levels, and immediate feedback increased students' intrinsic motivation, which is a crucial factor in successful learning (Deci & Ryan, 2000).

Observation data further supported these findings, showing that students in the experimental group were more actively engaged during the learning process. They participated enthusiastically in discussions and activities, demonstrating higher levels of interest and involvement.

Another important finding is the role of immediate feedback provided by Wordwall. Feedback is essential in learning as it helps students identify their strengths and areas for improvement (Hattie & Timperley, 2007). In this study, immediate feedback enabled students to refine their instructional designs more effectively.

The integration of reflective practice within game-based learning also contributed to the improvement of students' creativity. Students were encouraged to reflect on their learning experiences and evaluate their own work, which enhanced their critical thinking skills (Schön, 1983).

Moreover, Wordwall supported collaborative learning among students. Through interactive activities, students were able to share ideas and learn from one another, which further enriched their creative processes (Vygotsky, 1978).

The findings also highlight the importance of integrating technology into teacher education programs. As future educators, PIAUD students need to develop digital competencies that enable them to design engaging and effective learning experiences (Koehler & Mishra, 2009).

Despite the positive results, this study also identified some challenges in implementing Wordwall-based learning. Some students initially faced difficulties in adapting to the technology, particularly those with limited digital literacy skills.

However, these challenges were gradually overcome as students became more familiar with the platform. This suggests that adequate training and support are essential for successful implementation of technology-based learning.

The results of this study also emphasize the importance of student-centered learning approaches. Game-based learning shifts the focus from teacher-centered instruction to active student participation, which is essential for developing creativity (Hmelo-Silver et al., 2007).

In addition, the findings demonstrate that Wordwall can be an effective tool for facilitating the exploration of creative ideas. Its interactive features allow students to experiment with different instructional design concepts in a dynamic and engaging way.

Overall, this study provides strong evidence that Wordwall-based game-based learning is an effective strategy for enhancing instructional design creativity among PIAUD students. The integration of technology, interactivity, and reflective practice creates a comprehensive learning experience that supports the development of 21st-century skills.

Finally, the findings of this study contribute to the growing body of literature on game-based learning and educational technology. They offer practical implications for educators and institutions seeking to improve the quality of teacher education through innovative and technology-driven approaches.

D. Conclusion

In conclusion, this study demonstrates that the implementation of Wordwall-based game-based learning significantly enhances the instructional design creativity of PIAUD students. The findings reveal that students who were exposed to interactive and game-oriented learning environments showed substantial improvements in creativity indicators, including originality, flexibility, elaboration, and fluency. Compared to conventional teaching methods, game-based learning provides a more engaging and stimulating environment that encourages active participation and innovative thinking.

Furthermore, the integration of Wordwall as a digital learning platform not only improves creativity but also fosters students' motivation, engagement, and reflective abilities. The presence of immediate feedback, interactive features, and collaborative opportunities supports students in exploring and refining their instructional design ideas. These results highlight the importance of incorporating technology-driven and student-centered approaches in teacher education programs, particularly in preparing future educators to meet the demands of 21st-century learning.

Finally, this study contributes to the advancement of educational practices by providing empirical evidence on the effectiveness of game-based learning in higher

education contexts. It is recommended that educators and institutions adopt Wordwall and similar digital tools as part of their instructional strategies to enhance learning outcomes. Future research may explore the long-term impact of game-based learning and its application across different disciplines and educational levels to further strengthen its pedagogical value.

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