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Game-based Interactive Digital Module: Application to Announcement Materials in English Language Learning

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Abstract

This study aims to develop a game-based interactive digital module that is effective in helping students understand the material "announcement" in English learning. The game-based approach is expected to increase student engagement, interest in learning, and understanding of concepts. The research method used is Research and Development with the stages of needs analysis, module design, expert validation, field trials, and evaluation. The results showed that this module can increase students' active participation in learning and can facilitate them in understanding the material. The findings support the application of technology and game-based learning media as an innovative solution in language education.

Keywords: digital module;game based learning;english learning

Introduction

The development of digital technology has brought significant changes in various aspects of life, including in the field of education. The use of technology as a learning medium is growing along with the increasing need for innovation in teaching methods. One of the most popular approaches is game-based learning, which is known to be effective in increasing students' motivation, engagement and understanding of learning materials (Eutsler, 2021; Giannakas et al., 2018). Through this media, students can learn in a more fun and interactive way, thus reducing boredom in the conventional learning process (Gee, 2003; Prensky, 2003). In English language learning, especially in the material of "announcement", the main challenge that is often faced by students is the low interest and understanding of the concepts taught. This can occur due to uninteresting learning methods, as well as the lack of use of media that is relevant to the needs of students in the digital era. It is in this context that a game-based learning approach has exciting potential to be implemented. By utilizing game elements, material that considered difficult and boring expected to be easier to understand and interesting for students (Clark et al., 2016; Tobias et al., 2014) . This study aims to develop a game-based interactive digital module specifically designed to facilitate students' understanding of "announcement" material in English language learning. With this research, it expected that the results can contribute to the development of technology-based learning media, as well as provide alternative innovative solutions for teachers and students in facing learning challenges in the digital era. The adoption of game-based learning media not only expects to improve learning outcomes but can also be a solution to create a more dynamic learning atmosphere and in accordance with the characteristics of today's digital generation (Putra et al., 2018). Hopefully, this game-based interactive digital module can increase students' involvement in the learning process, motivate them to learn independently, and help them understand the material better (Dick et al., 2022; Gall et al., 2007).

Methods

The research method used in this study refers to the research and development model by referring to the development model adapted from Lee and Owens (2004), There are five stages in the model in implementing the research development of Game-Based Digital Modules for English subjects, especially on Announcement material. The five stages of media development according to Lee and Owens (2004) are as follows: (1) Assessment and Analysis (2) Design (3) Development (4) Implementation (5) Evaluation. Assessment and Analysis is a stage where the needs and learning objectives on this game-based dig-

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ital module are analyzed. Design is the stage of designing the module concept and detailed development planning. Development is the stage of making game-based digital module content in accordance with the previously planned design. After the module content has created, Implementation conducted to evaluate the digital module in a real learning environment. During this stage, an evaluation of the module implementation was conducted to ensure that the module can effectively facilitate the students in the learning process. Evaluation is the evaluation stage of the entire process of developing this game-based digital module. An evaluation conducted to evaluate the effectiveness and effectiveness of the module in achieving the learning objectives that have been set previously. Data on the development process of Game-Based Announcement Digital English Module is in the form of descriptive data, namely reviews and suggestions from material experts and media experts in accordance with the development procedures conducted. The initial stage of development research conducted by collecting references about the material. The next stage is the preparation of research instruments and media development. The last stage is assessment. The media validated by material experts and media experts.

Findings

The product resulting from this development is a game-based digital module that contains interactive features of quizzes and instructions. This module can be accessed through digital devices such as smartphones, laptops, and tablets. This module is designed to support English learning on Announcement material in junior high school. The results showed that this game- based digital module is effective in the learning process, in terms of validity, convenience, attractiveness, and its ability to motivate students. Based on the validation results, this module obtained a score of 0.885, which is categorized as valid. The assessment includes construct and content aspects, with detailed validation data in Table 1

The results of the questionnaire distributed to students to find out their responses after using the digital module, with a total score obtained of 1,278 from a maximum score of 1,320. The comparison between the total score and the maximum score resulted in a value of 0.968 or 96.8%. Based on this data, it can be concluded that the Game-Based Digital Module is considered easy to use, interesting, and able to motivate students in its application. The success of the Game-Based Digital English Module was also measured through learning outcomes, namely from the Initial Ability Assessment and the Final Ability Assessment. Both assessments were statistically analyzed using paired sample t-test, which showed a significant value of 0.000 (¡0.05). The pre-test and post-test results showed significant differences, indicating that the Game-Based Digital Module is effective in supporting learning.

Discussion

The development of Game-Based Interactive Digital Modules for Announcement material in English learning refers to the Lee and Owens (2004) media development model, which includes five stages: Assessment and Analysis, Design, Development, Implementation, and Evaluation. These stages aim to create a module that is relevant to students' needs and existing facilities, as well as ensuring that the module can be accessed through devices such as PCs, laptops, or smartphones connected to the internet (Lee & Owens, 2004). The development of this Game-Based Interactive Digital Module also considers aspects of user experience which include ease of use and student comfort in operating the module. According to Clark et al. (2016), Giannakas et al. (2018), and Putra et al. (2018), intuitive interface design plays a significant role in driving learning effectiveness, especially in the context of digital education. This module is designed with simple navigation for easy use by students, so they can focus on the learning material without being hampered by technical difficulties. Gamification in this module serves not only as an interactive medium but in increasing engagement, i.e., students' active participation in the learning process, which is important in English learning. When students are faced with challenges in the form of games, they tend to be more motivated to complete the task, which has an impact on improving the understanding of the material (Febriansah et al., 2024). The results of this study show that the Game-Based Interactive Digital Module applied to Announcement material in English learning obtained a positive response from students, with an assessment percentage of 96.8%. This percentage indicates that this game-based digital module is not only easy to use but also attractive to students, which is in line with the theory of user-centered design which emphasizes that interfaces and content that suit user needs can improve the overall learning experience. Modules that are accessible and responsive to user preferences allow students to learn more comfortably, reduce boredom, and make them more motivated to engage in learning activities (Huang & Hew, 2018). Furthermore, the success of this module in increasing students' motivation can be attributed to self-determination theory, which states that when students feel in control and

Table 1: Validation Results

No	Assessment Aspect	Percentage (V)	Validity
1	Learning Materials	0.93	Valid
2	Media	0,84	Valid
3	Average	0,89	Valid

feel challenged by enjoyable learning activities, their intrinsic motivation will increase (Bernstein, 1990; Deci & Ryan, 2014). Game-based modules structured with interactive elements can create a learning atmosphere that provides opportunities for students to feel successful, accept challenges, and get immediate feedback, thus strengthening their motivation to learn. This is also supported by research showing that game-based learning approaches can encourage internal motivation and help students learn more efficiently (Aslam et al., 2024; Chen & Chang, 2024; Li & Hou, 2024). In addition, the significant increase in learning outcomes from pre-test to post-test analyzed using paired sample t-test (with a significant value of 0.000) confirms that this Game-Based Digital Module is effective in supporting students' understanding of the material taught. This finding is in line with research that shows that well-designed educational games can strengthen student understanding through simulation and firsthand learning experiences. Game elements such as challenges, rewards, and feedback can make learning more contextualized, encouraging students to apply their understanding in various situations. This effectively develops students' critical thinking and critical thinking skills, which are important in foreign languages. One important aspect in the success of this module is the inclusion of interactive features that not only aid comprehension of the material but also strengthen memory through active learning. Cognitive load theory states that optimally organized interactive learning can balance students' cognitive load, thus helping them focus on essential information and reduce irrelevant cognitive load (Sweller, 2024). Digital modules organized based on this approach allow students to learn gradually and focus on core understanding before facing more complex challenges. Furthermore, the implications of this study support the role of interactive technology in helping teachers achieve better learning outcomes. The use of digital modules in English learning also helps students to learn independently, as they can access the content at any time according to their needs. Technology-based learning, especially those that utilize game elements, has the potential to support blended learning, where students can learn some of the material online outside of class. This opens opportunities for teachers to focus more on the discussion, practice, and problem-solving aspects directly in the classroom (Bonk & Graham, 2006). In this context, it is important for educators to consider using game-based digital modules that are not only fun but also motivate and enhance students' understanding. This study makes an important contribution to the field of language teaching, especially in leveraging technology to meet the needs of 21st century learning that increasingly prioritizes active engagement and personalization in learning. In other words, learning that involves technology like this will be extremely useful in facing the challenges of education in the digital era

Conclusion

This study concludes that game-based interactive digital module is effective in improving students' understanding and motivation on "announcement" material in English learning. This module provides an interesting, interactive learning media, and can encourage students' active participation. Suggestions for future research are to further develop the gamification feature and expand the module implementation to other materials in the English curriculum. In addition, training for teachers in the use of game-based digital modules can increase the effectiveness of technology-based learning in schools. It is hoped that this module can be a reference for educators and learning media developers in creating similar innovations in the field of education.

References

Aslam, F., Rahman, H., Wahid, S. A., Wahid, S. A., & Ali, N. (2024). Enhancing children's learning experience through alphabet ar-game: A usability and acceptability assessment of augmented reality game-based learning. *Multimedia Tools and Applications*. https://doi.org/10.1007/s11042-024-20346-0

Bernstein, D. J. (1990). Of carrots and sticks: A review of Deci and Ryan's Intrinsic Motivation and Self-Determination in Human Behavior. *Journal of the Experimental Analysis of Behavior*, *54*(3), 323–332. https://doi.org/10.1901/jeab.1990.54-323

Bonk, C. J., & Graham, C. R. (Eds.). (2006). *The handbook of blended learning: Global perspectives, local designs* (1st ed) [OCLC: ocm60776550]. Pfeiffer.

Chen, C.-H., & Chang, C.-L. (2024). Effectiveness of AI-assisted game-based learning on science learning outcomes, intrinsic motivation, cognitive load, and learning behavior. *Education and Information Technologies*, *29*(14), 18621–18642. https://doi.org/10.1007/s10639-024-12553-x

Clark, D. B., Tanner-Smith, E. E., & Killingsworth, S. S. (2016). Digital Games, Design, and Learning: A Systematic Review and Meta-Analysis. *Review of Educational Research*, *86*(1), 79–122. https://doi.org/10.3102/0034654315582065

Deci, E. L., & Ryan, R. M. (2014). *Intrinsic motivation and self-determination in human behavior*. Springer Science+Business Media.

Dick, W., Carey, L., & Carey, J. O. (2022). *The systematic design of instruction* (Ninth edition). Pearson.

Eutsler, L. (2021). Pandemic induced remote learning increases need for mobile game-based learning to engage learners. *Educational Technology Research and Development*, *69*(1), 185–188. https://doi.org/10.1007/s11423-020-09861-7

Febriansah, A. T., Syaifuddin, A., & Soepriyanto, Y. (2024). GAMIFICATION DEVELOPMENTS IN EDUCATION: PERKEMBANGAN GAMIFIKASI DI BIDANG PENDIDIKAN. *Scholaria: Jurnal Pendidikan dan Kebudayaan*, *14*(2), 177–186. https://doi.org/10.24246/j.js.2024.v14.i2.p177-186

Gall, M. D., Gall, J. P., & Borg, W. R. (2007). *Educational research: An introduction* (8. ed., Pearson internat. ed). Pearson.

Gee, J. P. (2003). What video games have to teach us about learning and literacy. *Computers in Entertainment*, *1*(1), 20–20. https://doi.org/10.1145/950566.950595

Giannakas, F., Kambourakis, G., Papasalouros, A., & Gritzalis, S. (2018). A critical review of 13 years of mobile game-based learning. *Educational Technology Research and Development*, *66*(2), 341–384. https://doi.org/10.1007/s11423-017-9552-z

Huang, B., & Hew, K. F. (2018). Implementing a theory-driven gamification model in higher education flipped courses: Effects on out-of-class activity completion and quality of artifacts. *Computers & Education*, *125*, 254–272. https://doi.org/10.1016/j.compedu.2018.06.018

Lee, W. W., & Owens, D. L. (2004). *Multimedia-based instructional design: Computer-based training, web-based training, distance broadcast training, performance-based solutions* (2nd ed). Jossey-Bass.

Li, C.-T., & Hou, H.-T. (2024). Remote Blended Game-Based Learning: Integrating Synchronous Game-Based Learning with Asynchronous Inquiry-Based Learning. *Journal of Science Education and Technology*, *33*(5), 746–758. https://doi.org/10.1007/s10956-024-10118-8

Prensky, M. (2003). Digital game-based learning. *Computers in Entertainment*, *1*(1), 21–21. https://doi.org/10.1145/950566.950596

Putra, A. P., Soepriyanto, Y., & Husna, A. (2018). PENGEMBANGAN MULTIMEDIA GAME EDUKASI TENTANG KERAGAMAN MASAKAN KHAS DAERAH-DAERAH DI INDONESIA UNTUK KELAS V SD [Number: 4]. *JKTP: Jurnal Kajian Teknologi Pendidikan*, *1*(4), 299–306. Retrieved February 3, 2025, from https://journal2.um.ac.id/index.php/jktp/article/view/6911

Sweller, J. (2024). Cognitive load theory and individual differences. *Learning and Individual Differences*, *110*, 102423. https://doi.org/10.1016/j.lindif.2024.102423

Tobias, S., Fletcher, J. D., & Wind, A. P. (2014). Game-Based Learning. In J. M. Spector, M. D. Merrill, J. Elen, & M. J. Bishop (Eds.), *Handbook of Research on Educational Communications and Technology* (pp. 485–503). Springer. https://doi.org/10.1007/978-1-4614-3185-5_38