

Development of E-Books and Quizizz-Based Interactive Quizzes to Improve Learning Evaluation Engagement of Fifth-Grade Elementary School Students

Latri Aras¹, Arini Arianty²

¹PGSD, Universitas Negeri Makassar, Indonesia

²PGSD, Universitas Negeri Makassar, Indonesia

Article	Abstract
<p>Keywords: E-Book; Quizizz; Learning Evaluation; Student Engagement; Elementary School.</p> <p>Article History Received: Nov 12, 2025 Reviewed: Des 11, 2025 Accepted: Jan 11, 2026 Published: Feb 03, 2026</p>	<p><i>This study aims to develop learning media in the form of an e-book and Quizizz-based interactive quizzes to improve student engagement in learning evaluation in elementary schools. This research uses the Research and Development (R&D) method with the Borg & Gall development model consisting of ten stages of product development. However, this study is limited only to the product development stage and theoretical evaluation through a literature review approach without direct field testing. Data collection techniques were carried out through library research by reviewing various scientific sources in the form of books, national journals, and relevant previous research findings. The results of the review indicate that the use of digital learning media such as e-books and Quizizz has the potential to increase students' motivation, engagement, and active participation in learning evaluation activities. Thus, the developed media is theoretically considered feasible as an innovative learning evaluation medium that is in accordance with the characteristics of elementary school students.</i></p>



Copyright ©2026 by Author(s); This work is licensed under a Creative Commons Attribution-ShareAlike 4.0 International License. All writings published in this journal are personal views of the authors and do not represent the views of this journal and the author's affiliated institutions.

INTRODUCTION

Education is a process that plays an important role in shaping the quality of human resources. This process not only focuses on the transfer of knowledge but also on the comprehensive development of students' thinking abilities, attitudes, and skills. Quality learning requires active student involvement so that educational goals can be achieved optimally.

Student engagement in learning is one of the important indicators in determining the success of the learning process. This engagement includes cognitive, affective, and behavioral aspects demonstrated through students' active participation in learning activities. A high level of engagement will encourage students to be more focused, motivated, and able to understand the material better. Conversely, low

student engagement can cause the learning process to become less effective and result in poor learning outcomes.

Learning evaluation has a strategic role in the educational process. Evaluation is used to measure the level of students' competency achievement and serves as a basis for improving the learning process. A good evaluation not only assesses learning outcomes but is also able to provide meaningful learning experiences for students. The implementation of monotonous and less varied evaluations often causes students to feel bored, less interested, and not actively participate.

The reality in elementary schools shows that evaluation activities are still dominated by the use of conventional methods, such as written tests that tend to be one-way in nature. These methods are less capable of attracting students' attention and do not provide opportunities for students to interact actively. This condition is one of the causes of low student engagement in learning evaluation activities.

The development of information and communication technology provides great opportunities to create more effective and engaging learning innovations. The utilization of technology in learning enables the presentation of materials and evaluations in a more interactive manner. Digital learning media have advantages in presenting information visually, audibly, and audiovisually, thereby increasing students' attention and interest in learning.

E-books are one form of digital learning media that can be utilized in the learning process. E-books have advantages in terms of flexibility, ease of access, and the ability to present material attractively through a combination of text, images, and visual design. The use of e-books allows students to learn independently and improve their understanding of the material being studied.

In addition to e-books, the use of technology-based evaluation media such as Quizizz can also be an alternative for increasing student engagement. Quizizz is a game-based learning platform that allows students to answer questions interactively. Features such as automatic scoring, rankings, and attractive displays can increase students' motivation to participate in evaluation activities.

The use of Quizizz makes evaluation no longer a stressful activity but transforms it into an enjoyable and challenging experience.

The characteristics of elementary school students who are at the concrete operational stage require the use of visual and interactive learning media. Students at this stage more easily understand concepts through direct experiences, images, and activities involving interaction. The use of e-books and Quizizz-based interactive quizzes is considered suitable for these characteristics so that it can increase student engagement in learning.

The integration of e-books as learning resources and Quizizz as an evaluation medium is one innovation that can be applied in learning. The combination of these two media is capable of creating a more engaging, interactive, and less boring learning experience. Students not only receive material passively but are also actively involved in the evaluation process.

Previous studies have shown that the use of digital learning media has a positive influence on student motivation and engagement. Technology-based media can increase student activeness and create a more conducive learning atmosphere. This indicates that the development of digital learning media is very important in improving the quality of learning in elementary schools.

Based on the description above, it is necessary to develop learning media capable of increasing student engagement in learning evaluation. The development of e-books and Quizizz-based interactive quizzes is expected to become a solution for overcoming the problem of low student engagement. This study aims to develop such learning media using the Borg & Gall model through a literature review approach as an alternative learning evaluation medium that is innovative and in accordance with the characteristics of elementary school students.

METHOD

This study uses the Research and Development (R&D) method with the Borg and Gall development model, aiming to develop learning media in the form of e-books and Quizizz-based interactive quizzes to improve learning evaluation engagement among fifth-grade elementary school students. Research and development methods are methods used to produce an educational product while simultaneously testing the feasibility of the product so that it can be effectively used in the learning process. According to Borg and Gall, development research is a process used to develop and validate educational products through systematic and structured steps. In addition, Sugiyono (2019) explains that the R&D method is a research method aimed at producing certain products and testing the effectiveness of those products so that they meet user needs.

The selection of the Borg and Gall model in this study is based on its systematic steps, making it easier for researchers to develop learning media that are appropriate to the needs of elementary school students. The Borg and Gall model consists of several stages, namely research and information collecting, planning, develop preliminary form of product, preliminary field testing, main product revision, main field testing, operational product revision, operational field testing, final product revision, and dissemination and implementation. However, in this study, the development stages were limited only to the product development stage and theoretical validation without conducting direct field testing.

At the research and information collecting stage, researchers conducted a needs analysis related to the use of digital learning media in the learning evaluation process of fifth-grade elementary school students. Based on the results of observations and literature reviews, it was found that learning evaluation processes in elementary schools still largely use conventional methods in the form of written tests that are less attractive to students. This causes students to become easily bored, less active, and less motivated to participate in learning evaluation activities. Therefore, learning media that are more innovative, interactive, and aligned with developments in educational technology are needed.

The planning stage was carried out by designing the concept of the learning media to be developed. The media designed consisted of an interactive e-book containing learning materials, illustrative images, attractive colors, practice questions, and a display suitable for the characteristics of elementary school students. In addition, researchers also designed Quizizz-based interactive quizzes as learning evaluation media. The use of Quizizz was chosen because it has game-based learning features such as scores, avatars, rankings, and music that can increase students' interest and engagement in learning.

Furthermore, at the develop preliminary form of product stage, researchers began compiling the contents of the e-book and creating interactive quizzes according to the learning materials for fifth-grade elementary school students. The e-book was developed with an attractive visual appearance so that students could more easily understand the learning materials. The e-book also provides links to Quizizz-based interactive quizzes, allowing students to directly complete learning evaluations digitally. The media development process considered the characteristics of elementary school students, who tend to prefer visual, interactive, and enjoyable learning experiences.

The developed learning media were then evaluated theoretically through literature studies and validation based on relevant learning theories. The evaluation was conducted to determine the feasibility of the media in terms of material content, media appearance, language, and the suitability of the media with learning objectives. During the development process, researchers also made several improvements to the design of the e-book and interactive quizzes, such as clarifying text displays, improving image layouts, adjusting question difficulty levels, and adding interactive elements to make the media more attractive for students.

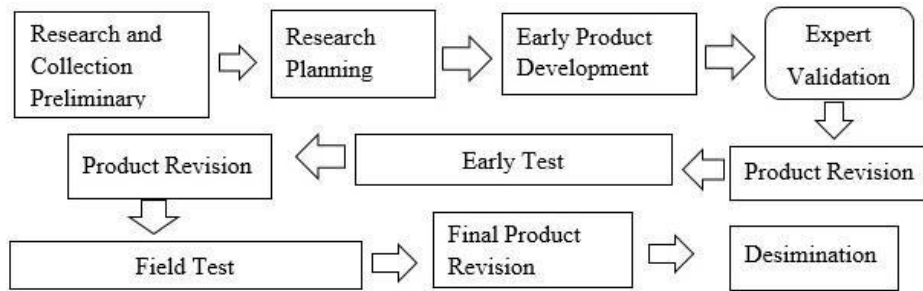


Figure 1. Borg and Gall Development Model Flow

The first stage is **research and information collecting**, which aims to identify learning needs, student characteristics, and problems occurring in the learning evaluation process in elementary schools. At this stage, researchers analyzed learning conditions in fifth-grade elementary school classrooms, particularly in learning evaluation activities. The analysis results showed that evaluation processes still largely use conventional methods in the form of written tests, causing students to be less active, easily bored, and less interested in participating in learning evaluations. In addition, the use of digital learning media in evaluation activities is still very limited. In fact, elementary school students tend to be more interested in learning that is visual, interactive, and technology-based. Therefore, digital learning media capable of increasing student engagement in learning evaluation activities are needed.

The second stage is **planning**, which is the stage of designing the learning media to be developed. At this stage, researchers designed media in the form of an interactive e-book and Quizizz-based interactive quizzes as tools for learning evaluation. The e-book was designed in a digital format containing learning materials, illustrative images, practice questions, and an attractive visual appearance suitable for the characteristics of fifth-grade elementary school students. In addition, researchers also designed interactive quizzes using features available in Quizizz such as scores, avatars, rankings, and music to make evaluation activities more enjoyable and interactive. Planning also included the preparation of materials, media display design, user instructions, and evaluation questions aligned with learning objectives.

The third stage is **develop preliminary form of product**, which is the realization stage of the previously created design. At this stage, researchers began developing the interactive e-book by incorporating learning materials, images, colors, icons, and engaging practice questions. In addition, researchers also began developing Quizizz-based interactive quizzes with various question formats such as multiple-choice and true-false questions. The initial product was designed to be easy for

students to use and capable of creating a more active and enjoyable learning evaluation atmosphere.

The fourth stage is **preliminary field testing**, which is the initial testing stage of the product that has been developed. However, in this study, the preliminary field testing stage was not conducted directly because the research used a literature review approach. Nevertheless, conceptually, the developed media were analyzed based on learning theories, the characteristics of elementary school students, and relevant previous studies regarding the use of digital media in learning.

The fifth stage is **main product revision**, which is the stage of improving the initial product based on the results of theoretical analysis and evaluation. At this stage, researchers made several revisions to the media appearance, such as clarifying the text, improving image layouts, selecting more attractive color combinations, and adjusting the level of question difficulty so that it would be easier for fifth-grade elementary school students to understand.

The sixth stage is **main field testing**, which is the stage of testing the media with a larger group to determine the quality and feasibility of the product in learning. However, in this study, this stage was not conducted directly in schools because the research focused only on product development and theoretical evaluation through literature studies.

The seventh stage is **operational product revision**, which is the stage of refining the media based on the evaluation results from the previous stage. At this stage, the e-book and Quizizz-based interactive quizzes were improved to make them more attractive, practical, and suitable for students' needs in learning evaluation activities.

The eighth stage is **operational field testing**, which is the stage of testing the media in actual learning conditions to determine its effectiveness in increasing student engagement. However, in this study, this stage was not conducted directly because of the limitations of the research, which only employed a literature review approach without field implementation.

The ninth stage is **final product revision**, which aims to refine the learning media before it becomes the final product. At this stage, researchers improved the material content, visual appearance, language, and ease of use of the media to better align with the characteristics of elementary school students and the objectives of learning evaluation.

The tenth stage is **dissemination and implementation**, which is the stage of distributing the developed learning product. At this stage, the e-book and Quizizz-based interactive quizzes can be introduced to teachers and students as innovative and interactive alternative learning evaluation media. This media is expected to

increase learning motivation, engagement, and active participation among fifth-grade elementary school students in learning evaluation activities.

RESULTS AND DISCUSSION

Results

This study produced a digital learning media product in the form of an e-book and Quizizz-based interactive quizzes designed to improve learning evaluation engagement among fifth-grade elementary school students. The media were developed using the Research and Development (R&D) method with the Borg and Gall model based on an analysis of learning needs in elementary schools.

The results of the media development consist of two main components, namely:

1. Interactive E-Book

The e-book was developed in a digital format with an attractive appearance and ease of use for elementary school students. The contents of the e-book include learning materials, illustrative images, practice questions, and links to Quizizz-based interactive quizzes. The media display uses bright colors, clear text, and a simple layout to suit the characteristics of fifth-grade elementary school students.



Figure 2. E-Book Media Display

2. Quizizz-Based Interactive Quiz

The interactive quiz was developed using the Quizizz platform with various types of questions such as multiple-choice and true-false questions. The quiz is equipped with game features including automatic scoring, avatars, rankings, and music, making evaluation activities more engaging and enjoyable for students.



Figure 3. Quizizz Media Display

During the **develop preliminary form of product** stage, researchers made several revisions to the developed media, including:

- Clarifying the font size,
- Improving image layouts,
- Adjusting color combinations,
- Simplifying usage instructions,
- And adjusting the difficulty level of the questions to match the abilities of elementary school students.

Visually, the resulting media have an interactive appearance and are easy to use by both teachers and students. The media can also be accessed using digital devices such as laptops and smartphones, making them more flexible to use in the learning process.

Based on the results of literature studies and theoretical evaluations, the e-book and Quizizz-based interactive quiz media are considered to have the potential to improve learning motivation, student engagement, and active participation in learning evaluation activities.

Discussion

The results of the study indicate that the development of learning media in the form of e-books and Quizizz-based interactive quizzes has strong potential to improve student engagement in learning evaluation activities in elementary schools. The use of digital media in the evaluation process can create a learning atmosphere that is more engaging, interactive, and enjoyable compared to conventional evaluation methods that rely solely on written tests.

The development of the interactive e-book in this study was carried out by adapting it to the characteristics of elementary school students, who tend to be more interested in visual learning and activities involving direct interaction. The developed e-book not only contains learning materials in text form but is also equipped with illustrative images, attractive colors, practice questions, and a simple display that is easy for students to understand. The use of these visual elements helps students understand learning materials more concretely, enabling them to focus more easily during the learning process.

The findings of this study are in line with the opinion of Azhar Arsyad, who states that visual learning media can help improve students' attention, motivation, and understanding of learning materials. Attractive digital media can create a learning environment that is not monotonous, encouraging students to become more active in learning activities. The use of e-books also provides flexibility for students because they can be accessed through digital devices such as smartphones and laptops, allowing students to learn anytime and anywhere.

The use of Quizizz-based interactive quizzes in this study demonstrates strong potential for increasing student engagement in learning evaluation activities. The game features available in Quizizz, such as automatic scoring, avatars, rankings, and music, are able to create a more enjoyable evaluation atmosphere.

DISCUSSION (Continued)

The game features available in Quizizz, such as automatic scoring, avatars, rankings, and music, are able to create a more enjoyable evaluation atmosphere. Students no longer perceive evaluation as a stressful activity but rather as a learning activity through play that is engaging and challenging. This condition indicates that the use of game-based learning evaluation media can increase students' motivation and participation in learning evaluation activities. Prensky's theory explains that game-based learning can increase students' interest in learning because it provides a more enjoyable and interactive learning experience. Feelings of enjoyment during learning can help improve students' focus and engagement with the learning materials.

The use of Quizizz also helps teachers conduct learning evaluations in a more practical and efficient manner. Teachers can view students' results automatically without having to manually check them one by one. The immediate display of evaluation results helps students quickly recognize their abilities, thereby motivating them to improve their learning outcomes. Previous studies support these findings. Rahmawati and Hidayati explain that digital interactive learning media can increase student activeness and create a more conducive and enjoyable learning environment. Another study conducted by Fadhilah, Mustaji, and Jannah showed that the use of interactive media can improve students' learning motivation because students are more interested in participating in learning activities that utilize digital technology.

The development of e-book and Quizizz media in this study demonstrates that the integration of technology in learning is highly important in today's digital era. Elementary school students belong to a generation that is already familiar with using technological devices in their daily lives. The use of digital learning media is one of the appropriate ways to align the learning process with current developments and the needs of learners. The developed media have several advantages, including attractive visual displays, ease of use, flexible access, and the ability to create more interactive learning evaluations. These media also help students become more active in learning because the evaluation process is carried out through enjoyable and non-monotonous activities.

This study still has several limitations. The research was conducted only up to the product development stage and theoretical evaluation without direct field testing. Therefore, the effectiveness of the media in improving student learning outcomes has not yet been empirically determined. Students' and teachers' responses to the use of the media have also not been analyzed directly. Future studies are expected to conduct direct implementation in elementary schools in order to obtain more accurate data regarding the effectiveness of e-books and Quizizz on students' learning outcomes, motivation, and engagement. Media development can also be enhanced by adding audio features, interactive videos, and animations to make the learning media more attractive and innovative.

Overall, the development of e-books and Quizizz-based interactive quizzes makes a positive contribution to creating learning evaluations that are more innovative, interactive, and effective in elementary schools. The developed media not only help students understand learning materials better but are also capable of increasing students' motivation, enthusiasm, and active participation in learning evaluation activities. The use of digital learning media can become one of the solutions for improving the quality of learning in elementary schools in accordance with current developments in educational technology.

CONCLUSION

Based on the results of the research and discussion, it can be concluded that this study produced learning media in the form of an e-book and Quizizz-based interactive quizzes designed to improve learning evaluation engagement among fifth-grade elementary school students. The media were developed using the Research and Development (R&D) method with the Borg and Gall model, which was implemented systematically through several stages of product development. The results of the review indicate that the e-book and Quizizz-based interactive quiz media have the potential to increase learning motivation, engagement, and students' active participation in learning evaluation activities. The developed media are also considered suitable for the characteristics of elementary school students because they have attractive visual displays, are interactive in nature, and are capable of creating a more enjoyable and less boring learning evaluation atmosphere. In addition, the use of game-based learning features in Quizizz can help increase students' interest in participating in learning evaluation activities. Thus, the developed learning media are theoretically considered feasible for use as alternative learning evaluation media in elementary schools. The development of these media is expected to help teachers create learning evaluation processes that are more innovative, interactive, and effective, thereby improving the quality of learning and student engagement in learning activities.

SUGGESTIONS

1. For School Principals

The development of digital learning media in the form of e-books and Quizizz-based interactive quizzes requires support in terms of facilities and policies from the school. School principals are expected to provide supporting facilities such as internet access, digital devices, and training on the use of technology-based learning media for teachers. Such support is important for creating learning processes that are more innovative, interactive, and aligned with developments in educational technology in elementary schools.

2. For Teachers

Teachers are expected to utilize e-book and Quizizz-based interactive quiz media optimally in learning and student evaluation activities. The use of digital media can help teachers create a more engaging evaluation atmosphere so that students become more active and motivated in learning. Teachers also need to continuously develop the media by adjusting the materials, displays, and forms of evaluation according to the characteristics and needs of elementary school students.

3. For Future Researchers

Future research is expected to conduct direct trials in elementary schools in order to obtain empirical data regarding the effectiveness of e-books and Quizizz in improving students' motivation, engagement, and learning outcomes. Research can also be conducted by involving a larger number of students as well as different grade levels and schools so that the findings become broader and more comprehensive.

4. Improvements for Similar Research in the Future

Future studies are recommended to develop more innovative digital learning media by adding audio features, interactive videos, animations, and other educational games. The development of more attractive and interactive media displays is expected to increase students' interest in learning more optimally. The use of more varied digital technologies can also help create learning evaluation processes that are more effective, enjoyable, and aligned with the needs of 21st-century learning.

ACKNOWLEDGMENTS

The author realizes that the preparation of this article could not be separated from the assistance, support, and contributions of various parties who played important roles, either directly or indirectly. Therefore, on this occasion, the author would like to express sincere gratitude to:

1. **The course lecturer**, who provided guidance, supervision, and constructive suggestions from the planning stage to the preparation of this article, enabling the research to be completed successfully.
2. **The principal and fifth-grade teacher at SD Inpres Mangasa, Makassar City**, who granted permission and provided support in the implementation of the research and the development of learning devices.
3. **The validators (material experts, language experts, and learning experts)**, who took the time to provide assessments, criticisms, and valuable suggestions for improving the developed E-Book and Quizizz products.
4. **The fifth-grade students**, who participated in the product trials and provided responses that helped assess the practicality and effectiveness of the E-Book and Quizizz.
5. **Colleagues and other parties who cannot be mentioned individually**, who provided assistance, support, and motivation throughout the research process.

The author hopes that all forms of assistance that have been provided will be rewarded accordingly and that this research can contribute to the development of learning in elementary schools, particularly in increasing student engagement

through the use of E-Books and Quizizz-Based Interactive Quizzes.

REFERENCES

- Arsyad, A. (2019). *Learning Media*. Jakarta: Rajawali Pers.
- Borg, W. R., & Gall, M. D. (1983). *Educational Research: An Introduction* (4th ed.). New York: Longman.
- Branch, R. M. (2009). *Instructional Design: The ADDIE Approach*. New York: Springer.
- Dale, E. (1969). *Audio-Visual Methods in Teaching*. New York: Holt, Rinehart & Winston.
- Dick, W., Carey, L., & Carey, J. O. (2009). *The Systematic Design of Instruction* (7th ed.). Boston: Pearson.
- Fadhilah, N., Mustaji, M., & Jannah, M. (2021). The influence of interactive learning media on elementary school students' learning motivation. *Cetta: Journal of Educational Science*, 4(3), 644–658.
- Fitri, A., Rifai, A. M., & Tati, A. D. R. (2024). The implementation of interactive learning media to improve elementary school students' learning motivation. *Lempu PGSD*, 1(3), 264–270.
- Gall, M. D., Gall, J. P., & Borg, W. R. (2003). *Educational Research: An Introduction* (7th ed.). Boston: Pearson Education.
- Moto, M. M. (2019). The influence of learning media use in education. *Indonesian Journal of Primary Education*, 3(1), 20–28.
- Mudijanto, L., Muhammadiyah, M. U., Utami, R. N., Suhirman, L., Laka, L., Boari, Y., & Yunus, M. (2024). *Research and Development Methodology: Theory and Application of R&D Methodology*. PT Sonpedia Publishing Indonesia.
- Piaget, J. (1970). *Science of Education and the Psychology of the Child*. New York: Viking Press.
- Prensky, M. (2001). *Digital Game-Based Learning*. New York: McGraw-Hill.
- Purba, L. S. L. (2019). Improving students' learning concentration through the use of Quizizz learning evaluation in the Physical Chemistry I course. *Journal of Educational Dynamics*, 12(1), 29–39.
- Rahmawati, F., & Hidayati, N. (2021). The use of digital interactive learning media to improve elementary school students' learning engagement. *Indonesian Journal of Basic Education*, 6(2), 45–53.
- Rahmadilla, H. H., & Kholidya, C. F. (2025). The use of digital media in improving elementary school students' understanding of learning concepts. *Journal of Educational Technology Students*, 14(11).
- Rayanto, Y. H. (2020). *Development Research: ADDIE and R2D2 Models – Theory & Practice*. Academic & Research Institute.
- Rindrayani, S. R., Rustiyana, R., Judijanto, L., Abdullah, G., & Ardiyanti, A. D. (2025). *Research and Development Methods: R&D Research and Development*. PT Sonpedia Publishing Indonesia.
- Safitri, M., & Aziz, M. R. (2022). ADDIE, a model for developing multimedia learning. *Journal of Basic Education*, 3(2), 51–59.

- Salsabila, U. H., Habiba, I. S., Amanah, I. L., Istiqomah, N. A., & Difany, S. (2020). The utilization of the Quizizz application as a learning medium during the pandemic among senior high school students. *Scientific Journal of Applied Sciences, University of Jambi*, 4(2), 163–173.
- Seels, B., & Glasgow, Z. (1998). *Making Instructional Design Decisions*. New Jersey: Prentice Hall.
- Sugiyono. (2019). *Research and Development Methods (Research and Development)*. Bandung: Alfabeta.
- Vygotsky, L. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.