

Development of QuizWhizzer Learning Media for Elementary Schools

Feri Hermawan ✉

Universitas Wijaya Kusuma Surabaya, Indonesia

Diyas Age Larasati

Universitas Wijaya Kusuma Surabaya, Indonesia

Savitri Suryandari

Universitas Wijaya Kusuma Surabaya, Indonesia

✉ ferihermawan905@gmail.com

Abstract

This study aimed to develop QuizWhizzer media on the topic of currency values and their functions and to determine its validity and effectiveness in elementary school IPAS learning. The study employed a Research and Development (R&D) method using the ADDIE model, consisting of Analysis, Design, Development, Implementation, and Evaluation stages. The research was conducted at SDN Pakis V Surabaya involving media experts, material experts, a third-grade teacher, and 24 third-grade students. Data were collected through observation, interviews, questionnaires, and tests. Data were analyzed using percentage techniques to determine the validity and practicality of the media, while learning improvement was analyzed using

the N-Gain test assisted by SPSS version 31.0.2.0 (126). The results showed that QuizWhizzer obtained a media expert validation score of 91.25% and a material expert validation

score of 81.25%, both categorized as highly valid. Student responses reached 88.125%, categorized as highly practical. The N-Gain analysis showed an average score of 0.9583 or 95.83%, which falls into the high category. Therefore, QuizWhizzer is considered highly valid, highly practical, and effective for IPAS learning on currency values and their functions in third-grade elementary school students.

Keywords

QuizWhizzer; digital learning media; IPAS; currency values; elementary school

I. Introduction

The development of information and communication technology in the 21st century has brought significant changes to the field of education. Advances in information technology and the demands of 21st-century learning require educators to utilize learning media that are not only static but also interactive, flexible, and capable of creating meaningful learning experiences for students (Adawiyah et al., 2024). The utilization of digital learning media is one of the efforts that can be made to improve the quality of education, particularly in elementary schools, where the learning process must be aligned with students' developmental characteristics (Yuanta et al., 2023).

One technology-based learning medium that can be utilized in the teaching and learning process is QuizWhizzer. QuizWhizzer is a web-based digital learning platform that integrates gamification elements through interactive quizzes, digital game boards, point systems, and student competitions. The use of QuizWhizzer can help overcome students' boredom and low participation in conventional learning, which tends to be less

interactive (Mustahibah et al., 2024). Furthermore, the implementation of QuizWhizzer creates a more dynamic, collaborative, and enjoyable learning environment, thereby increasing students' motivation and interest in learning (Hermawan & Suharto, 2025).

QuizWhizzer offers various features that support both the learning process and assessment. Teachers can design formative quizzes that function not only as assessment tools but also as diagnostic instruments to quickly and effectively identify students' levels of competency achievement (Muthmainah et al., 2024). Another advantage of QuizWhizzer lies in its incorporation of game elements that enhance students' enthusiasm for learning through positive competition and immediate feedback on their responses, enabling students to recognize their mistakes and improve their understanding (Muliadi, 2025).

The results of classroom observations indicated that students' engagement in Natural and Social Sciences (IPAS) learning remained relatively low. Most students tended to be passive when teachers delivered instructional materials using PowerPoint presentations, resulting in a predominantly teacher-centered learning process. This condition contributed to students' limited understanding of the topic of currency values and their functions, as reflected in learning outcomes that remained below the Minimum Learning Achievement Criteria (KKTP). These findings indicate the need for the development of learning media capable of enhancing students' active participation, learning motivation, and meaningful learning experiences at the elementary school level.

Theoretically, the development of QuizWhizzer is supported by constructivist learning theory, which posits that knowledge is actively constructed through learning experiences involving students' interaction and engagement in the learning process. In addition, gamification theory suggests that the integration of game elements, such as points, challenges,

competition, and rewards, can enhance students' intrinsic motivation and engagement throughout the learning process. By combining instructional content with game-based activities, QuizWhizzer enables students to learn actively while enjoying an engaging learning experience.

The urgency of developing QuizWhizzer lies in its ability to address the demands of 21st-century learning, which emphasizes the effective integration of digital technology into education. This platform functions not only as an assessment tool but also as an interactive learning medium capable of improving students' motivation, participation, and learning outcomes. Therefore, the development of QuizWhizzer for the topic of currency values and their functions is essential to support more innovative, engaging, and developmentally appropriate IPAS learning in elementary schools.

The uniqueness of QuizWhizzer as a game-based learning medium lies in its ability to combine learning activities with interactive gameplay experiences. Unlike many other digital quiz platforms that primarily emphasize individual participation, QuizWhizzer encourages interaction, active participation, and strategic learning through an engaging game-based system. Consequently, QuizWhizzer has the potential to improve students' interest in learning as well as their academic achievement across various subjects (Listiani, 2025). Previous studies have also demonstrated that game-based learning media effectively increase classroom participation and help maintain students' attention throughout the learning process (Iskandar et al., 2023).

In the subject of Natural and Social Sciences (IPAS), particularly the topic of currency values and their functions, students are expected to understand different types of currency, currency denominations, and the functions of money in everyday life. This topic is closely related to simple economic activities that students frequently encounter in their daily lives. However, learning processes that continue to rely on traditional teaching

methods often result in limited student participation, leading to insufficient conceptual understanding of currency values. Therefore, innovations in interactive digital learning media are needed to facilitate students' comprehension of the learning materials (Maharani, 2025).

Based on observations and interviews conducted with the Grade III-A teacher at SDN Pakis V Surabaya on October 9, 2025, it was found that the teacher primarily relied on PowerPoint presentations as the main instructional medium. Although PowerPoint helps present information visually, its predominantly one-way implementation creates a monotonous learning atmosphere and provides limited opportunities for active student engagement. Moreover, the teaching materials used had not been fully adapted to students' characteristics and learning needs, making the instructional process less contextual. As a result, students' participation remained low, and their IPAS learning outcomes were still below the Minimum Learning Achievement Criteria, which was set at 79. In addition, teachers had not yet utilized interactive game-based learning media capable of optimally enhancing students' motivation and active participation.

These findings indicate the need for learning media that are more interactive, engaging, and appropriate for the developmental characteristics of elementary school students. Previous studies have shown that game-based learning media can effectively improve students' learning motivation, classroom engagement, and conceptual understanding (Listiani, 2025). Therefore, the development of QuizWhizzer represents an alternative instructional medium that can support IPAS learning on the topic of currency values and their functions.

Based on the foregoing discussion, this study aims to develop QuizWhizzer learning media for teaching the topic of currency values and their functions to third-grade students at SDN Pakis V Surabaya. Furthermore, the study seeks to examine the

validity and effectiveness of the developed QuizWhizzer media in supporting IPAS learning at the elementary school level.

II. Method

This study employed the Research and Development (R&D) method to develop an instructional product in the form of QuizWhizzer learning media on the topic of currency values and their functions for third-grade elementary school students. The R&D method focuses on developing products that are valid, practical, and effective through a series of systematic stages. This study adopted the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation) because it provides a systematic, straightforward, and practical framework for developing digital learning media (Yuanta & Larasati, 2022).

The study was conducted at SDN Pakis V Surabaya during the second semester of the 2025/2026 academic year. The research participants consisted of one media expert, one subject matter expert, the Grade III-A classroom teacher, and 24 third-grade students from Class III-A of SDN Pakis V Surabaya. The media expert evaluated the aspects of media design, attractiveness, application, and usability of the developed learning media, while the subject matter expert assessed the alignment of the instructional content with the learning outcomes, learning objectives, and the characteristics of elementary school students.

The Analysis phase was conducted through classroom observations and interviews with the Grade III-A teacher at SDN Pakis V Surabaya. This phase aimed to identify instructional needs, student characteristics, and problems encountered in science and social studies (IPAS) learning. The findings revealed that learning media were still limited in variety, classroom instruction had not yet been sufficiently contextualized, and assessment was still conducted conventionally using paper-based tests, indicating that the integration of digital technology into the learning process had not been optimized.

The Design phase focused on designing the QuizWhizzer learning media and supporting instructional media in the form of PowerPoint (PPT) presentations for content delivery. This phase included formulating the learning objectives, preparing the test blueprint, designing the media storyboard, developing the validation instruments, and designing the QuizWhizzer interface for third-grade elementary school students.

During the Development phase, the QuizWhizzer learning media were developed based on the prepared storyboard,

including the organization of learning materials and assessment questions aligned with the instructional objectives. The completed product was subsequently validated by the media expert and the subject matter expert to evaluate its quality, the appropriateness of the instructional content, and its feasibility for classroom implementation. The validation results served as the basis for revising and improving the product according to the experts' recommendations to ensure that the developed media met the required standards of media quality and instructional content before being implemented in the classroom. Once the media were declared feasible, a limited field trial was conducted involving 24 students from Class III-A of SDN Pakis V Surabaya. The implementation included administering a pre-test, conducting classroom instruction using QuizWhizzer, administering a post-test, and distributing a student response questionnaire to evaluate the practicality of the developed learning media.

The Implementation phase was carried out after the learning media had been revised based on the validators' feedback. The implementation involved classroom trials with Grade III-A students at SDN Pakis V Surabaya to determine the effectiveness of QuizWhizzer in teaching the topic of currency values and their functions in IPAS. During this phase, students completed a pre-test before the learning activities and a post-test after learning with QuizWhizzer. They also completed a response questionnaire to assess their acceptance of the developed learning media.

The Evaluation phase was conducted to determine the overall quality of the developed media based on expert validation results, students' learning outcomes, and students' responses to the use of QuizWhizzer. Formative evaluation was carried out throughout each stage of the development process to ensure that the learning media met instructional needs and were suitable for classroom use. In addition, summative evaluation was conducted after the implementation phase to assess the validity, practicality, and effectiveness of QuizWhizzer as an instructional medium for teaching IPAS in elementary schools.

Data were collected through observations, interviews, questionnaires, and tests. Observations and interviews were conducted to obtain information regarding classroom learning conditions, student characteristics, and the need for instructional media in Class III-A of SDN Pakis V Surabaya. Questionnaires were used to collect data on media expert validation, subject matter expert validation, and students' responses to the developed QuizWhizzer media. Meanwhile, pre-tests and post-tests were administered to measure students' learning outcomes before and after the implementation of the learning media.

The validation data obtained from the media expert and the subject matter expert were analyzed using percentage analysis to determine the feasibility of the developed learning media. Students' response data were also analyzed using percentages to evaluate the practicality of the media. Furthermore, students' learning outcomes were analyzed using the normalized gain (N-Gain) score to determine the improvement in learning achievement after using QuizWhizzer on the topic of currency values and their functions. The N-Gain analysis was performed using the Statistical Package for the Social Sciences (SPSS) version 31.0.2.0 (126) to obtain more accurate and systematic analytical results.

III. Result and Discussion

The development of the QuizWhizzer learning media on the topic of currency values and their functions was carried out using the ADDIE model, which consists of five stages: Analyze, Design, Development, Implementation, and Evaluation. During the analysis stage, it was found that the teacher primarily used PowerPoint (PPT) as the main instructional medium. As a result, the learning process tended to be teacher-centered and provided limited opportunities for students to participate actively. In addition, the evaluation process was still conducted conventionally using paper-based worksheets, indicating that the integration of digital technology into the learning process had not yet been optimized.

During the design stage, the learning objectives were formulated, assessment instruments were developed, supporting media were selected, and the learning flow using QuizWhizzer was designed. The instructional content focused on currency values and their functions in the Grade III Science and Social Studies (IPAS) curriculum. The final product was a game-based digital learning medium consisting of ten multiple-choice questions, equipped with interactive features such as avatars, a game board, a point-scoring system, and access through both a hyperlink and a QR code.

During the development stage, the media was validated by both media experts and subject-matter experts to obtain feedback regarding the quality of the interface, the appropriateness of the instructional content, and the ease of use.



Figure 1. QuizWhizzer Media Interface

The validation results served as the basis for revising the media, ensuring that the developed learning media became more appropriate for the characteristics of elementary school students. After being declared valid and feasible for use, the media were implemented with 28 third-grade students at SDN Pakis V Surabaya and subsequently evaluated through a learning achievement test and a student response questionnaire.

The implementation of the QuizWhizzer learning media began with the teacher explaining the topic of currency denominations and their functions using the prepared instructional materials. After the lesson was completed, the teacher distributed the QuizWhizzer game link or access code to the students. The students then joined the game using their respective devices. The teacher explained the game rules and demonstrated how to answer the questions provided in the QuizWhizzer platform. During the game, the students answered interactive questions related to currency denominations and their functions. Each response was processed instantly by the system, allowing the players' positions on the game board and their scores to be displayed in real time. The learning atmosphere became more

active and engaging as the students participated in a fun competition through features such as the game board, avatars, and the point system. After all the questions had been completed, the teacher and students discussed the correct answers and conducted a learning evaluation based on the results obtained.

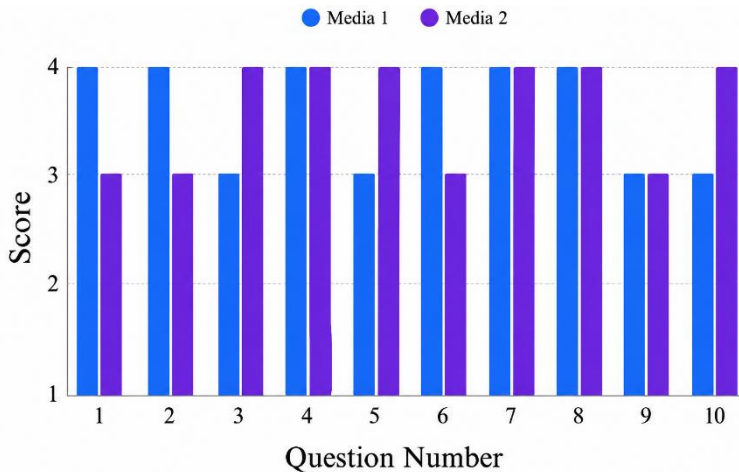


Figure 2. Media Validation Results

The media validation assessment was conducted using a Likert scale. Based on the data provided by the media validator, the researcher calculated the scores for all assessment aspects.

Based on the media expert validation data, the QuizWhizzer media obtained a percentage score of 91.25%, which falls into the highly valid category. This result indicates that QuizWhizzer has fulfilled the feasibility criteria of instructional media in terms of media design, visual attractiveness, ease of application use, and its usefulness in supporting the learning process. According to Mustahibah et al. (2024), QuizWhizzer demonstrates a high level of feasibility because it effectively integrates visual elements, interactivity, and gamification into a single instructional media platform.

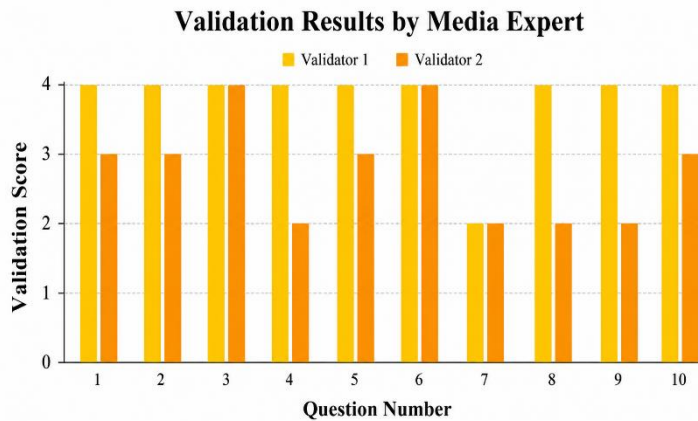


Figure 3. Results of the Material Validation

The material expert validation of the topic Currency and Its Functions obtained a percentage score of 81.25%, which falls into the "very valid" category. These results indicate that the materials presented in the QuizWhizzer media are aligned with the learning outcomes, learning objectives, and the characteristics of elementary school students. According to Iskandar et al. (2023), the use of QuizWhizzer as a learning medium can increase students' motivation and engagement throughout the learning process. Furthermore, the competitive elements incorporated into the game encourage students to participate more actively in classroom learning.

The results of the student response questionnaire administered to Class III-A students at SDN Pakis V Surabaya indicated that the QuizWhizzer media received a positive response, with a percentage score of 88.125%, which falls into the very practical category. These findings suggest that QuizWhizzer was well accepted by the students and was easy to use throughout the learning process.

Based on the N-Gain calculation conducted using the Statistical Package for the Social Sciences (SPSS) version 31.0.2.0 (126), a total of 20 students were included in the analysis out of the 24 students in the class. Four students were excluded because both their pre-test and post-test scores reached the maximum score of 100, resulting in a division by zero in the N-Gain formula. Consequently, SPSS identified these cases as missing values. Therefore, the effectiveness analysis of learning outcome improvement was based on the 20 valid student datasets.

The analysis revealed that the students' N-Gain scores ranged from a minimum of 0.50 to a maximum of 1.00, with a mean score of 0.9583. This average falls within the high category, as it exceeds the criterion of 0.70, indicating that the use of QuizWhizzer was highly effective in improving students' learning outcomes. The minimum score of 0.50 represents a moderate level of improvement, while the maximum score of 1.00 indicates that some students achieved the highest possible level of learning improvement.

Based on the N-Gain analysis, no students obtained an N-Gain score (G) of ≤ 0.30 , indicating that none experienced low learning improvement. Furthermore, two students achieved N-Gain scores ranging from $0.30 \leq G \leq 0.70$, corresponding to a moderate level of improvement, while eighteen students obtained N-Gain scores of ≥ 0.70 , indicating a high level of learning improvement. This distribution demonstrates that the majority of students experienced substantial improvement in their learning outcomes following the implementation of QuizWhizzer.

The SPSS analysis also indicated an average N-Gain percentage of 95.83%, confirming that the improvement in students' learning outcomes was classified as high. These findings further strengthen the evidence that the use of QuizWhizzer as a learning medium had a positive impact on students' academic achievement.

In terms of data distribution, the standard deviation of the N-Gain scores was 0.13107, indicating relatively low variability among students' scores and suggesting that the improvement in learning outcomes was fairly consistent across the class. Similarly, the standard deviation of the N-Gain percentage was 13.10663, reflecting a stable distribution and indicating that the observed learning improvements occurred consistently among the students.

These findings are consistent with the study by Maharani (2025), which reported that the use of QuizWhizzer had a positive effect on elementary school students' learning outcomes in Science and Social Studies (IPAS). Likewise, Muliadi (2025) found that technology-based QuizWhizzer significantly enhanced students' conceptual understanding and learning outcomes. The substantial improvement in learning outcomes observed in the present study can be explained through gamification theory, which posits that integrating game elements into instructional activities enhances students' motivation and engagement. When students actively participate in the learning process, they develop a deeper understanding of the subject matter, which ultimately contributes to improved learning outcomes.

IV. Conclusion

Based on the results of the research and development conducted, it can be concluded that the QuizWhizzer learning media on the topic of currency values and their functions was successfully developed using the ADDIE model, which consists of the Analysis, Design, Development, Implementation, and Evaluation stages. The developed media achieved a media expert validation score of 91.25% and a subject matter expert validation score of 81.25%, both of which fall into the highly valid category, indicating that the media is appropriate for use in elementary school IPAS (Natural and Social Sciences) learning. Furthermore, the QuizWhizzer learning media received a positive response from

students, with a practicality score of 88.125%, which is categorized as highly practical. The N-Gain analysis showed an average score of 0.9583 (95.83%), which falls into the high category, indicating that the QuizWhizzer learning media is effective in improving students' learning outcomes on the topic of currency values and their functions. Therefore, QuizWhizzer can serve as an alternative digital learning medium that enhances elementary school students' engagement, motivation, and learning outcomes.

V. References

- Adawiyah, E. R., Winarno, A., & Onia, S. I. (2024). Effectiveness of Interactive Learning Media Development Based on Articulate Storyline 3 in Elementary School Education. *EDUCARE: Journal of Primary Education*, 5(2), 105–118. <https://doi.org/10.35719/educare.v5i2.253>
- Hermawan, M. R., & Suharto, Y. (2025). Pemanfaatan Aplikasi Quizwhizzer untuk Menumbuhkan Minat Belajar Siswa pada Model Pembelajaran Berbasis Permainan. *Journal of Language Literature and Arts*, 5(2), 140–149. <https://doi.org/10.17977/um064v5i22025p140-149>
- Iskandar, S., Sholihah Rosmana, P., Fazriyah, A., Febriyano, A., Rosyada, A. A., & Febriana, N. (2023). Pengembangan Media Pembelajaran QuizWhizzer dan Kinemaster untuk Meningkatkan Motivasi Belajar Siswa di Sekolah Dasar. *Journal on Education*, 05(02), 3239–3245.
- Listiani, S. (2025). The Role of Quizwhizzer in Enhancing Students' Interest in English at The Eighth Grade Students of SMPN 1 Taluditi. *Jurnal Pendidikan Mosikolah*. <https://pendidikan.e-jurnal.web.id/index.php/terbaru/index>

- Maharani, I. A. (2025). Pengaruh Penggunaan Media Pembelajaran Quizwhizzer Terhadap Hasil Belajar Peserta Didik pada Pembelajaran IPAS Kelas V SD Negeri 6 Sungai Raya. *Indo-MathEdu Intellectuals Journal*, 6(1), 1410–1417. <https://doi.org/10.54373/imeij.v6i1.2678>
- Muliadi, H. A. Y. (2025). Penggunaan Media QuizWhizzer Berbasis Teknologi Untuk Meningkatkan Hasil Belajar IPAS Siswa Kelas V SD Inpres 6/75 Kabupaten Bone. *Jurnal Ilmiah PGSD FKIP Universitas Mandiri*.
- Mustahibah, H. A., Rikiansyah, S. D., Muhammad, N., & Ristanto, R. D. (2024). Pengembangan Game Edukasi Quiz Whizzer dengan Model VAK (Visual-Auditory-Kinesthetic). *Jurnal Riset Pendidikan Dasar (JRPD)*, 5(2), 199. <https://doi.org/10.30595/jrpd.v5i2.20090>
- Muthmainah, A. S. N., Jihad, A., & Nurdiansyah, R. (2024). Development of learning media using QuizWhizzer based on ethnomathematics as a learning exercise. *Jurnal Gantang*, 9(2), 135–146. <https://doi.org/10.31629/jg.v9i2.7461>
- Yuanta, F., & Larasati, D. A. (2022). Developing Social Science Learning Videos in Elementary Schools During Covid-19 Pandemic. *Jurnal Basicedu*, 6(5), 8466–8474. <https://doi.org/10.31004/basicedu.v6i5.3874>
- Yuanta, F., Larasati, D. A., Wijaya, U., & Surabaya, K. (2023). Developing Canva-Based Learning Media on Maps and Class Layout for Third Graders of Elementary School. *Education and Human Development Journal Tahun*, 8(2). <https://doi.org/10.33086/ehdj.v8i2>