

Practicality of the Wayground Digital Learning Platform for Elementary Science Education under the Merdeka Curriculum

Ghoziyah Nida Mahmudah¹, Hisny Fajrussalam^{1*}, Nenden Permas Hikmatunisa¹

¹ Indonesia University of Education, Bandung, Indonesia

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Corresponding Author:

Hisny Fajrussalam

hfajrussalam@upi.edu

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Abstract: The use of digital learning platforms in elementary science education has increased with the implementation of the Merdeka Curriculum; however, empirical evidence regarding the practicality of Wayground remains limited, particularly from both student and teacher perspectives. This study aimed to evaluate the practicality of Wayground in elementary science learning and explore teachers' experiences in its implementation. A mixed-methods explanatory sequential design was employed involving 109 fourth- and fifth-grade students and four elementary school teachers in Jakarta, Indonesia. Quantitative data were collected through practicality questionnaires and analyzed descriptively, while qualitative data were obtained through teacher interviews. The results showed that Wayground achieved practicality scores of 82.7% from students and 96.6% from teachers, both categorized as very practical. Student engagement and interest obtained the highest score (85.2%), indicating that Wayground was perceived as engaging and supportive of classroom participation. Ease of understanding received the lowest score (80.7%), suggesting that digital media alone may not fully address the abstract nature of some science concepts. Interview findings revealed that Wayground was easy to use, time-efficient, and beneficial for instructional activities. Overall, Wayground has the potential to support elementary science learning within the context of the Merdeka Curriculum, although further studies are needed to examine its effectiveness.

Keywords: Elementary school, IPA, Merdeka Curriculum; Practicality, Wayground

Introduction

The implementation of the Merdeka Curriculum emphasizes student-centered learning that encourages active participation, meaningful experiences, and the use of appropriate learning technologies. In elementary science education, these demands are important because students need to develop not only conceptual understanding but also critical thinking, problem-solving, and active engagement in learning ((Darmawati & Mustadi, 2023; Firmansyah et al., 2024; Tangu Daga et al., 2022)). However, preliminary observations conducted at the elementary school where this study was undertaken indicated that science learning in the upper grades was still predominantly delivered through teacher-centered lectures and had not yet utilized digital learning technology. Students were observed to become

easily bored during science lessons, while their participation in classroom activities tended to be passive. The preliminary observation also indicated that students' science learning achievement had not yet reached the school's expected learning standard. These conditions indicate a gap between the demand for interactive and student-centered science learning and the learning practices observed in the classroom. This situation is particularly relevant to science learning because some scientific concepts are abstract and require visualization and meaningful learning experiences to support students' understanding (Yun & Crippen, 2024).

Student engagement is an important consideration when integrating digital technology into learning because technology can influence how students participate in and interact with learning activities. (Chiu, 2021) emphasized that digital learning environments

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can support student engagement when technological features are aligned with students' psychological and learning needs. Therefore, interactive digital platforms may provide an alternative for creating more participatory learning experiences when appropriately integrated into classroom instruction.

Interactive digital media can provide opportunities for students to engage actively with learning content and receive immediate feedback. Interactive learning activities can support better knowledge retention than passive learning, while immediate feedback can encourage student engagement and reflection on learning outcomes (Wilcox et al., 2020; Yaseen et al., 2025). Previous studies have also shown that educational technologies can enhance student engagement and contribute to more meaningful learning experiences (Bond et al., 2020; Nkomo et al., 2021). One platform that incorporates these functions is Wayground, formerly known as Quizizz. Wayground provides interactive quizzes, learning materials, formative assessment, student progress monitoring, and real-time feedback. These features provide opportunities for teachers to conduct more interactive learning activities while obtaining information about students' learning progress. In primary education, the implementation of technology also requires attention to teachers' instructional practices and the characteristics of young learners. (Pappa et al., 2024) emphasized that technology education in primary schools is influenced by the interaction between technological resources, teachers, students, and classroom practices. Therefore, the use of digital learning media needs to be accompanied by appropriate pedagogical support rather than being treated as an independent solution.

Although previous studies have reported positive effects of digital quiz platforms on student motivation, engagement, and learning outcomes, research has predominantly focused on effectiveness rather than practicality. For example, gamified e-quizzes have been reported to enhance student engagement and support formative assessment (Zainuddin et al., 2020), while Quizizz has been associated with positive student perceptions and improved learning outcomes (Bahriah et al., 2021; Chaiyo & Nokham, 2017). The use of gamified elements in digital learning has also been associated with students' engagement. A systematic review by (Kalogiannakis et al., 2021) found that gamification has been increasingly applied in science education to support students' motivation and engagement. However, the learning benefits of gamification depend on how game elements are integrated with instructional objectives and learning activities. However, empirical research specifically examining the practicality of Wayground in elementary science learning remains limited. In particular, previous

studies have not sufficiently examined practicality from both teacher and student perspectives while also using qualitative evidence to explain users' experiences. This gap is important because the educational value of a digital platform depends not only on its potential effectiveness but also on whether it can be used easily, efficiently, and appropriately in authentic classroom contexts.

The concept of practicality provides an important theoretical basis for evaluating the usability of educational products. (Nieveen, 2013) identifies validity, practicality, and effectiveness as three important qualities of educational products. Practicality concerns the extent to which a product can be used easily and efficiently and is appropriate for users and real learning situations. In digital learning media, practicality therefore involves more than technical usability; it also includes the extent to which the media supports learning activities, engages students, facilitates understanding, and presents content appropriate to learners' needs. Accordingly, this study evaluates the practicality of Wayground through five student-related aspects: ease of use, engagement and interest, ease of understanding, support for learning, and content relevance. From the teacher perspective, practicality is examined through ease of use, time efficiency, usefulness, student interest, and appropriateness of materials.

Based on this research gap, the present study examines the practicality of Wayground in elementary science learning within the context of the Merdeka Curriculum using an explanatory sequential mixed-methods design. The novelty of this study lies in integrating quantitative evaluations from students and teachers with qualitative evidence from teacher interviews to provide a more comprehensive understanding of the practicality of Wayground in actual classroom use. Rather than focusing solely on whether Wayground improves learning outcomes, this study investigates how practical the platform is for its intended users and uses teachers' experiences to further interpret the quantitative findings. Thus, the study contributes empirical evidence to the literature on the practicality of digital learning media based on Nieveen's framework and provides practical information for teachers considering the use of Wayground in elementary science learning. Specifically, this study aims to evaluate the practicality of Wayground in elementary science learning and explore teachers' experiences in its classroom implementation.

Method

This study employs a mixed-methods explanatory sequential design, a research approach that combines

quantitative and qualitative methods in sequence. Research data were collected through questionnaires and interviews, thereby enabling data triangulation. The use of these various data sources aims to obtain more comprehensive information and enhance the validity, credibility, and objectivity of the research findings (Campbell et al., 2020; Hanson-DeFusco, 2023). The first stage involved the collection and analysis of quantitative data through a practical questionnaire administered to teachers and students. Next, in the second stage, qualitative data were collected through interviews and observations to deepen and explain the quantitative results obtained. According (Creswell, 2014), the explanatory sequential design is used to help researchers gain a deeper understanding of the research phenomenon through the systematic integration of two types of data.

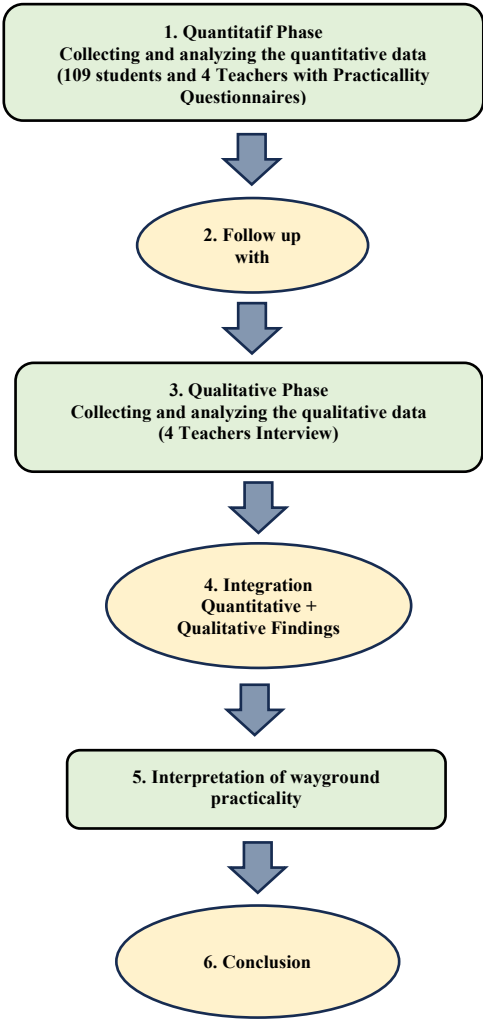


Figure 1. Research Flow of the Explanatory Sequential Mixed-Methods Design

The study was conducted at an elementary school in Cengkareng Subdistrict, West Jakarta, Indonesia. The

participants consisted of the entire population of fourth- and fifth-grade students and four teachers involved in IPAS learning. The student population comprised 36 students from class IV-A, 36 students from class IV-B, and 37 students from class V, resulting in a total of 109 students. Because the entire accessible population was included in the study, total population sampling was employed. Thus, all 109 students participated in the study and completed the student practicality questionnaire after participating in the Wayground-supported learning activities. The use of the entire accessible population was intended to ensure that the practicality evaluation represented the experiences of all students involved in the learning activities.

Four teachers who were directly involved in the implementation of IPAS learning using Wayground also participated in the study. The teachers completed the teacher practicality questionnaire and participated in interviews using the same set of questions based on the teacher practicality indicators.

The student questionnaire consisted of five aspects: ease of use, engagement and interest, ease of understanding, support for learning, and content relevance. The teacher questionnaire consisted of five aspects: ease of use, time efficiency, usefulness, student interest, and appropriateness of materials.

The concept of practicality was based on Nieveen’s framework, which identifies practicality as one of the important quality criteria in educational products. (Nieveen, 2013) explain that formative evaluation in educational design research is concerned with evaluating the quality and usability of educational interventions during their development. Accordingly, the present study examined practicality not only in terms of ease of use but also in relation to users’ experiences, learning support, efficiency, engagement, and appropriateness of the learning materials.

Data were collected using two primary methods. Quantitative data were obtained through teacher and student questionnaires using a Likert scale. Before the questionnaires were administered to teachers and students, they underwent an expert-judgment process to ensure that each item measured what it was intended to measure. The questionnaires were then tested by 23 students with characteristics similar to those of the study participants to assess their validity and reliability. The validity test showed that 8 of 10 items were deemed valid. The reliability test results indicated a Cronbach’s Alpha value of 0.643. (Taber, 2018) argued that Cronbach’s Alpha values should be interpreted within the context of the study rather than using rigid threshold values. Accordingly, the Cronbach’s Alpha coefficient of 0.643 indicates acceptable internal consistency for the present study. Thus, this research instrument is reliable and suitable for use as a data collection tool. Data

analysis was conducted using descriptive statistics with IBM SPSS Statistics 29 to determine the minimum, maximum, and mean values, as well as the overall standard deviation. Microsoft Excel was used to calculate the mean for each statement item and the percentage of students who responded, providing a detailed overview of each indicator. Meanwhile, qualitative data were collected through interviews with four practicing teachers, allowing the researcher to explore in greater depth the practicality indicators of the learning media. Quantitative data were analyzed using descriptive statistics to calculate the frequency and percentage of each questionnaire item. Meanwhile, qualitative data were analyzed by identifying the main themes from the interview results, which provided a deeper understanding of the research problem. Qualitative data obtained from interviews with the four teachers were analyzed using thematic analysis following (Braun & Clarke, 2006) The analysis involved six phases: (1) familiarizing the researcher with the interview data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes, and (6) producing the report. The themes were developed based on recurring patterns in teachers’ responses concerning the practicality of Wayground, particularly ease of use, time efficiency, usefulness, student interest, and appropriateness of materials.

The implementation of Wayground was integrated into IPAS learning activities. First, the teacher prepared and delivered the IPAS learning material according to the learning objectives. Second, students accessed the Wayground learning activity provided by the teacher. Third, students participated in the interactive activities and completed the questions presented through the platform. During the activity, students received immediate feedback on their responses. The teacher monitored students’ participation and responses and provided additional explanations when necessary. The learning activity was followed by discussion to reinforce students’ understanding of the material.

After the learning activities were completed, students and teachers completed their respective practicality questionnaires. The four teachers were subsequently interviewed using the same set of questions developed according to the five teacher practicality indicators. The interviews were conducted to obtain deeper information about teachers’ experiences in using Wayground during IPAS learning. By combining these two analyses, the study was able to provide a more complete and comprehensive picture of the phenomenon under investigation. The questionnaire framework for assessing the practicality of instructional media for teachers is presented in Table 1 below.

Table 1. Questionnaire Framework on the Practicality of Instructional Media for Teachers		
Aspects Assessed	Indicator	Item Number
Ease of Use	The ease with which teachers understand how the media works	1.2
Time Efficiency	The media’s ability to save time in lesson preparation and delivery	3,4
Usefulness	The media’s ability to achieve learning objectives	5.6
Student Interest	The media’s ability to enhance student motivation, engagement, and active participation in learning	7.8
Appropriateness of Materials	The suitability of media for learning needs and student characteristics	9.10
(Hidayatullah, 2026)		
Furthermore, the questionnaire framework for the practicality of learning media for students is presented in Table 2.		
Table 2. Questionnaire Framework on the Practicality of Learning Media for Students		
Aspects Assessed	Indicator	Item Number
Ease of Use	The ease with which teachers understand how the media works	1.2
Engagement and Interest	The media’s appeal to students and its ability to engage students in learning	3,4
Ease of understanding	Students’ ease of understanding the learning material when using educational media	5.6
Support for Learning	The ability of the media to help students with motivation, engagement, active participation, recall, evaluation, and completing practice problems	7
Content Relevance	The alignment of the content and presentation of the learning media with the material being studied.	8
(Hidayatullah, 2026)		
The teacher and student practicality questionnaires were adapted from the practicality instrument developed by (Hidayatullah, 2026)with modifications to suit the characteristics of the Wayground learning platform and the objectives of the present study. The study was conducted by asking teachers and students to use the <i>Wayground</i> interactive learning medium in IPAS lessons, after which they provided evaluations using a practicality questionnaire that had been provided. Next,		

four practicing teachers were interviewed to support the practicality indicators of the digital learning medium, and the practicality score was calculated using Formula 1.

$$\text{Practicality Score} = \frac{\text{Skor yang diperoleh}}{\text{Skor Maksimum}} \times 100\% \quad (1)$$

The practicality score was interpreted using the categories presented in Table 3.

Table 3. Criteria for Interpreting the Practicality of Learning Media

Practicality Percentage (%)	Practicality Categories
81%–100%	Very Practical
61%–80%	Practical
41%–60%	Fairly Practical
21%–40%	Not Very Practical
0%–20%	Impractical

(Yanto, 2019)

Results and Discussion

Results

The practicality of Wayground was evaluated by 109 students and four teachers after its implementation in IPAS learning. Quantitative data were analyzed using descriptive statistics because the quantitative phase was intended to describe users' perceptions of the practicality of Wayground rather than to test causal relationships, differences between groups, or the effectiveness of the platform. Therefore, inferential statistical analysis was not applied. The quantitative findings were subsequently used to identify aspects requiring further explanation through teacher interviews, consistent with the explanatory sequential mixed-methods design.

The results of the practicality testing of the interactive learning media by students are presented in Table 4 below.

Table 4. Summary of Learning Media Practicality Scores (Tested by Students)

Aspects Analyzed	Score	Percentage	Category
Ease of Use	721	82.65%	Very Practical
Engagement and Interest	743	85.2%	Very Practical
Ease of Understanding	704	80.7%	Practical
Support for Learning	354	81.1%	Very Practical
Content Relevance	366	83.9%	Very Practical
Total Score		2,888	
Percentage		82.7%	
Practicality Category		Very Practical	

The student evaluation resulted in an overall practicality score of 82.7%, which was categorized as very practical. The highest score was obtained for Engagement and Interest (85.2%), followed by Content Relevance (83.9%), Ease of Use (82.65%), and Support for Learning (81.1%). Ease of Understanding received the lowest score (80.7%), although it remained within the practicality range.

The relatively high score for Engagement and Interest indicates that students perceived Wayground as an engaging medium for participating in IPAS learning. Through this engagement, students can connect scientific concepts to phenomena encountered in daily life, thereby enabling the development of their critical thinking, scientific reasoning, and decision-making skills more effectively (English, 2023; García-Carmona, 2025). This interpretation is supported by teacher observations from the interviews, in which teachers reported that students appeared more enthusiastic and active when answering questions through Wayground. Teachers also observed that the quiz-based activities created a learning experience that students perceived as similar to playing while learning. This finding is consistent with (Nkomo et al., 2021), who reported that digital technologies can support behavioral, emotional, and cognitive engagement.

However, the relatively lower score for Ease of Understanding indicates that engagement with a digital platform does not necessarily mean that all learning content becomes immediately understandable. This distinction becomes particularly important in elementary IPAS learning, where some concepts require students to connect representations with phenomena that are not directly observable. The interview findings provide further explanation of this result. The results of the teachers' practicality testing of the interactive learning media are presented in Table 5.

Table 5. Summary of Learning Media Practicality Scores (Tested by Teachers)

Aspects Analyzed	Score	Percentage	Category
Ease of Use	22	91.6%	Very Practical
Efficiency Time	23	95.8%	Very Practical
Usefulness	23	95.8%	Very Practical
Student Interest	24	100%	Very Practical
Appropriateness of material	24	100%	Very Practical
Total Score		116	
Percentage		96.6%	
Practicality Category		Very Practical	

The teacher evaluation resulted in an overall practicality score of 96.6%, which was categorized as

very practical. Student Interest and Appropriateness of Materials received the highest scores at 100%, followed by Time Efficiency and Usefulness at 95.8%, while Ease of Use received 91.6%.

The high teacher scores were supported by the interview findings. Teachers described Wayground as relatively intuitive and easy to operate, while its integrated materials and quizzes were perceived as helping to organize learning activities. Teachers also reported that students could access the activity using a code, allowing the learning activity to begin immediately.

The 95.8% score for Time Efficiency was similarly supported by teachers' perceptions that the platform brought learning materials and quizzes into one environment and reduced the time needed to begin classroom activities. The 95.8% Usefulness score was also consistent with teachers' observations that images, activities, and direct practice helped students focus on the learning content.

The quantitative and qualitative findings were integrated to explain the patterns identified in the questionnaire results. Rather than treating the interview findings as a separate source of evidence, the qualitative data were used to explain the quantitative results that required further interpretation.

Overall, the quantitative results showed that Wayground was perceived as very practical by both students (82.7%) and teachers (96.6%). However, the difference between the two ratings is meaningful because the two groups interacted with Wayground from different roles. Students experienced the platform primarily as learners who had to read instructions, process learning content, respond to questions, and interpret feedback. Teachers, in contrast, experienced Wayground as an instructional tool for organizing learning activities, managing time, providing practice, and observing student participation. The higher teacher score can therefore be interpreted as reflecting differences in user perspective and function, rather than indicating that Wayground was universally easier for teachers than for students. The distinction between the two user perspectives is consistent with the broader understanding that technology integration involves not only technological usability but also the pedagogical roles and experiences of users (Consoli et al., 2023). Teachers in the present study evaluated Wayground primarily as an instructional tool, whereas students experienced it as part of their learning process. Consequently, the higher teacher rating may reflect the instructional and organizational benefits perceived by teachers, while students' ratings were more closely influenced by their direct experience of understanding and interacting with the learning content.

This interpretation is reinforced by the qualitative findings. Teachers consistently emphasized Wayground's ease of use, time efficiency, usefulness, and ability to stimulate student participation. For example, teachers reported that students became more enthusiastic and active when completing quizzes through the platform. At the same time, the student questionnaire showed that Ease of Understanding was the lowest-rated aspect at 80.7%. Thus, teachers could perceive substantial instructional and operational benefits from Wayground while students could still experience difficulties in understanding particular IPAS concepts.

This convergence and divergence between the two datasets provides an important interpretation of the findings. Wayground was highly practical as an instructional platform, but practicality from the teacher's perspective did not automatically translate into complete conceptual understanding from the students' perspective. The qualitative findings therefore help explain why the teacher rating was higher while also clarifying the relatively lower student score for Ease of Understanding.

The Ease of Understanding score of 80.7% was the lowest among the student practicality aspects. Although it remained within the practical category, the finding indicates that some students still required additional support to understand particular IPAS concepts. Teacher interviews showed that students were generally enthusiastic and active during Wayground activities, but some students still needed additional explanations when encountering specific IPAS terms or concepts. This finding can be further understood through Cognitive Load Theory. (Sweller et al., 2019) explain that working memory has a limited capacity for processing novel information, meaning that learners may experience difficulties when instructional information requires substantial cognitive processing. In digital learning environments, the presence of multiple interactive or representational elements may also contribute to extraneous cognitive load when they are not appropriately designed (Skulmowski & Xu, 2022). Therefore, although Wayground provides interactive and visual learning experiences, students may still require teacher guidance when learning concepts that involve relatively complex or abstract information. Teachers also indicated that students tended to understand the material more easily when it was accompanied by concrete illustrations or examples related to their daily lives. From the perspective of multimedia learning, the effectiveness of digital presentations also depends on how learners select, organize, and integrate verbal and visual information (Mayer, 2021). (Fiorella & Mayer, 2021) further emphasize the importance of reducing extraneous

processing through appropriate multimedia design. Therefore, interactive elements in Wayground should be accompanied by clear explanations, relevant visual representations, and appropriate instructional guidance so that students can focus their cognitive resources on essential IPAS concepts.

This finding can be understood from the characteristics of IPAS content and elementary students' cognitive development. Some IPAS concepts cannot be directly observed and therefore require students to connect representations with real-world phenomena. Interactive digital presentation can provide visual and interactive support, but it does not necessarily remove the conceptual demands of the material. When students encounter relatively abstract concepts, they may still require teacher assistance to connect the information presented on the screen with concrete experiences.

The pedagogical implication is that Wayground should be used as a complementary learning medium rather than as a substitute for teacher explanation. Teachers can strengthen its use by providing concrete examples before or during digital activities, connecting abstract concepts to students' everyday experiences, and providing additional scaffolding when students encounter difficult terms or concepts. This approach is consistent with the interview finding that students understood some material more easily when it was accompanied by concrete illustrations, while concepts requiring deeper reasoning still required additional guidance.

The finding also highlights an important distinction between engagement and conceptual understanding. Students may be highly interested in interactive quizzes and actively participate in learning, while still needing instructional support to construct deeper understanding. Therefore, the high Engagement and Interest score of 85.2% should not be interpreted as evidence that Wayground independently resolves difficulties in conceptual understanding. Instead, the findings suggest that the value of the platform lies in combining interactive learning experiences with appropriate teacher scaffolding. This finding can be interpreted in relation to the characteristics of gamified learning environments. (Li et al., 2024), through a meta-analysis and systematic review, found that gamification can positively influence students' intrinsic motivation, autonomy, and relatedness, although its effects may vary across learning outcomes. Thus, the relatively high Engagement and Interest score in the present study suggests that Wayground's interactive features were useful for encouraging students' participation, but engagement should not be interpreted as evidence of improved conceptual understanding.

Taken together, the findings indicate that Wayground was perceived as highly practical by both

students and teachers, but the two groups emphasized different dimensions of practicality. Students particularly responded positively to the engagement provided by the platform, whereas teachers perceived strong instructional and operational benefits, including ease of use, time efficiency, usefulness, and support for student interest. The qualitative findings strengthen these quantitative results by showing how these benefits were experienced during classroom implementation.

These findings are broadly consistent with previous research showing that interactive digital learning media can promote student engagement and support classroom learning. (Nkomo et al., 2021) reported that digital technologies can enhance students' behavioral, emotional, and cognitive engagement, while (Yulyani et al., 2023) found interactive multimedia to be practical for elementary education. The present study extends these findings by examining Wayground specifically from both student and teacher perspectives and by integrating questionnaire results with teacher interview findings.

The main contribution of the present findings is therefore not simply that Wayground obtained a high practicality score. Rather, the findings show that practicality is multidimensional and user-dependent. Wayground can be highly practical for teachers because it facilitates instructional organization and classroom activities, while students may still require additional support when digital activities involve more demanding conceptual content. This distinction is important when interpreting the role of digital media in elementary IPAS learning.

This study has several limitations that should be considered when interpreting the findings. First, the research was conducted in one elementary school, involving 109 students and four teachers, so the findings may not be directly generalizable to schools with different student characteristics, learning environments, or technological conditions. Second, the study focused on the practicality of Wayground based on user perceptions and did not directly examine its effectiveness in improving learning outcomes, conceptual understanding, critical thinking, or other learning competencies. Third, the qualitative explanation was obtained primarily from teacher interviews; therefore, further research could incorporate student interviews or classroom observations more systematically to obtain a broader explanation of students' experiences. Future studies should also examine Wayground using experimental or quasi-experimental designs to determine whether its use produces measurable improvements in learning outcomes.



Figure 2. Use of Wayground Media in the Classroom

This indicates that students at this school are better suited to an approach that combines technology with engaging visualizations, such as the *Wayground* digital platform. Therefore, the development of *Wayground-based* learning materials can be an effective alternative for increasing student engagement and interest.

Conclusion

This study demonstrates that *Wayground* is a highly practical digital learning platform for elementary IPAS learning, as perceived by both students and teachers. More importantly, the explanatory sequential findings show that practicality is multidimensional and user-dependent: teachers emphasized the platform's instructional and operational benefits, while students' evaluations reflected their direct learning experiences, particularly the extent to which the platform helped them understand the content. The lower score for Ease of Understanding indicates that interactive digital media alone may not fully address the abstract nature of some IPAS concepts. Thus, the scientific contribution of this study lies in extending the understanding of digital learning media practicality by integrating student and teacher perceptions with qualitative explanations of their classroom experiences.

Theoretically, these findings reinforce the view that practicality should be considered not only in terms of usability but also in relation to the learning context, user experience, and the support required to facilitate meaningful learning. Practically, *Wayground* has potential as a complementary medium for IPAS learning by increasing student engagement and helping teachers organize interactive learning activities, while teacher explanation, concrete examples, and scaffolding remain important for supporting conceptual understanding. However, the study was conducted in one elementary school and focused on practicality rather than learning effectiveness. Future research should therefore examine the effectiveness of *Wayground* across diverse school contexts and investigate its potential effects on learning

outcomes and higher-order competencies using experimental or quasi-experimental designs.

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Author Contributions

Conceptualization: G.N.M. and N.P.H.; methodology: G.N.M. and H.F.; validation: H.F. and N.P.H.; formal analysis: G.N.M.; investigation: G.N.M.; resources: G.N.M., H.F., and N.P.H.; data curation: G.N.M., H.F., and N.P.H.; writing—original draft preparation, G.N.M.; writing—review and editing, G.N.M., H.F., N.P.H.; visualization, G.N.M.; All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors declare no conflict of interest.

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