

Physics Learning Games With Scientific Literacy

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Abstract

Physics is a branch of natural science that is important to life. To fulfill the mentioned learning objectives, learning physics must be unique from other learning environments. Learning medium is one of the factors that is important in this scenario. A game is one type of learning material that may be employed. This physics learning game has been certified by experts in terms of scientific literacy, but it has yet to be evaluated for usefulness. The purpose of this study was to assess the feasibility of integrating physics learning games with scientific literacy for Bandung City High School students. This is a descriptive study with a sample of students and instructors from six high schools in Bandung City divided into three levels: high, medium, and low. A practical questionnaire with four answer options was employed as the study instrument. The data analysis approach employed in this study is descriptive analysis. The results showed that the convenience aspect received a practicality percentage of 76.76% from students and 90.63% from teachers, the attractiveness aspect received a percentage of 79.10% from students and 86.25% from teachers, and the efficiency aspect received a percentage of 76.43% from students and 92.50% from teachers. Overall, with a score of 78.43%, students believe this game is useful. The game has a percentage of 90.63%, according to the teacher, with a highly useful category.

Keywords: Games; Physics learning; Scientific literacy

Introduction

Physics is a branch of natural science that is important to life. Scientific literacy is one of the abilities that students are supposed to have after studying science. Literacy is defined as the ability to use scientific knowledge, recognize questions, and draw conclusions based on facts in order to comprehend the world and the changes brought about by human activity (Rakhmawan et al., 2015).

To fulfill the given learning objectives, physics learning cannot be isolated from other learning settings. Learning is greatly influenced by approaches, techniques, models, and media. Learning models, strategies, and tactics assist instructors in creating effective and efficient learning environments (Djalal, 2017). Teachers can choose from a variety of teaching methods, including constructivist, cognitive, and behavioristic approaches, based on the needs and characteristics of their students. Learning strategies such as cooperative learning, problem-based learning, and inquiry-based learning can help students learn in a variety of ways, and teachers can help students learn in a variety of ways by applying learning models such as project-based learning. Teachers may assist students in learning in a variety of ways by utilizing learning models such as project-based learning and integrated learning. To get the most out of their educational experience, teachers might use a variety of learning strategies such as lectures, seminars, simulations, and practicums. Computers, cellphones, movies, and other learning technologies may all be utilized to enhance teaching efficacy by serving as interactive learning media. By paying attention to these crucial components, teachers may select the proper approaches, techniques, models, methods, and learning media to ensure the accomplishment of learning objectives. Learning media are resources

or tools that make learning more accessible and efficient. Sugiyono (2016) defines learning media as "any instrument or material used to enhance learning messages so students can understand them better." Visual media, audio media, audiovisual media, and multimedia are the four types of learning media (Ryandra, 2011). People, things, text, music, visual, video, multimedia computers, and computer networks are the eight categories that may be used to categorize learning media (Pribadi, 2011).

The usage of learning media is extremely important in education and learning. Learning media may help instructors improve their teaching activities, speed up the learning process, and increase student interest in learning. To boost students' knowledge after learning, good learning medium must be effective and efficient in conveying content fast. Learning media must increase the efficacy and efficiency of the learning process in the classroom to meet learning objectives (Magdalena et al., 2021). Good learning media must be verified and appraised for its usefulness in order to be used successfully in the learning process. The validity of instructional media may be determined using didactic, construct, and technological criteria. The utilization of learning media and their compliance with user capabilities give actual proof of their use (Fitra & Maksum, 2021) .

A game is one type of learning material that may be employed. Since 2021, physics learning games incorporating scientific literacy have been produced (Afrizon et al., 2021). This game serves as a learning tool for the straight-motion subject covered in class X. This ten-level game has a traffic safety theme. There are scientific ideas, processes, and situations at each level, as well as sample questions and quizzes at the conclusion of the game to assess students' comprehension of physics subjects .

Experts have certified this physics learning game with scientific literacy with a legitimate category in terms of material content, learning design, and visual communication presentation. According on the replies of instructors and students, this game has yet to be evaluated for practicality (Afrizon et al., 2021). The capacity of learning material to simply and efficiently support learning objectives is referred to as its practicality. The simplicity of use for students and instructors, as well as the assessment results of users and users, demonstrate the usefulness of learning media . Furthermore, adapting media to learning objectives, student characteristics, and learning materials is critical (Milala et al., 2022).

Small group testing and field tests employing teacher and student perception surveys can be used to assess the usefulness of learning media. The usability of learning media is critical for supporting the attainment of learning objectives. The simplicity of use for students and instructors, as well as the outcomes of user or user reviews, demonstrate practicality (Irawan & Hakim, 2021). Expert validation is often included in the assessment of the practicality of learning media. As a result, researchers seek to examine the feasibility of physics learning games with scientific literacy, according to students and teachers.

Metod

This study employed descriptive research to examine the feasibility of combining physics learning games with scientific literacy. This study's sample consisted of students and teachers. Students from Padang's six high schools have been divided into three levels: high, medium, and low. Figures 1 and 2 demonstrate how games are used to engage teachers and students in physics learning in the classroom.



Figure 1. Students are using physics learning games in class

Figure 1 shows that students engage in game-based learning. Students complete a practicality questionnaire on the Google form after finishing numerous stages in the game. The following image depicts a teacher utilizing physics learning games as a learning medium in the classroom.



Figure 2. Teacher is using physics learning game in class

Figure 2 depicts how the teacher utilizes physics learning games to teach students straight-motion subject. Before the instructor uses the game, the researcher explains the game's characteristics to her so that she may use the game immediately in the classroom. Following the use of the game in class, the instructor evaluates its usefulness.

A practicality questionnaire was used to collect data. The collected data was analyzed to determine the perspectives of students and teachers on the physics learning game that was being built. This questionnaire evaluates three factors: simplicity of use, attractiveness, and efficiency. Each of these sentences has four response options that students can fill in, namely 1, 2, 3, and 4. Number 1 indicates strongly disagree, number 2 indicates disagree, number 3 indicates agree, and number 4 indicates highly agree. The responses of students and teachers were examined using descriptive analytic techniques and the equation 1.

$$P = \frac{R}{SM} \times 100 \%$$

P is the practicality percentage obtained from R (obtained score) divided by SM (maximum score) multiplied by one hundred percent.

The practicality % of utilizing the game is interpreted with the practicality category to determine how far the game's practicality level has progressed. The first category is extremely practical with an achievement level of 86%-100%, the second is practical with 76%-85%, the third is quite practical with 60%-75%, the fourth is less practical with 55%-59%, and the last is impractical with 54% (Purwanto, 2010).

Result and Discussion

The practical data on the implementation of physics learning games are classified into two categories based on student and instructor feedback

Practical Results of the Application of Physics Learning Games Loaded with Scientific Literacy by Students
The first part, according to students, obtained data, as shown in Table 1.

Table 1. The Practicality of Application of Physics Learning Games According to Students

Value	Questionnaire Items			Practicality
	Easy to Use	Attractiveness	Efficiency	
Average	76.76	79.10	79.43	7.43

In the practical category, the ease of use feature in Table 1 received an average practicality rating of 76.76%. The percentage in the practical category for beauty is 79.10%, while the proportion in the practical category for efficiency is 79.43%. According to students, the average percentage for the practicality of learning games from the three parts of the evaluation was 78.43% in the practical category.

According to the research that led to the development of the Cross Puzzle Game, games are one of the options for overcoming student interests, which has an influence on student learning outcomes (Alika & Radia, 2021). Cross Puzzle Game is more than simply a game; youngsters may play and learn at the same time. Furthermore, while presenting an idea, this game helps increase students' attentiveness, patience, and critical thinking. However, in practice, the availability and utilization of science-based learning resources must be enhanced. As a result, teachers might make better use of the media, resulting in less than ideal student learning results in classes when students focus only on the teacher and their own textbooks. The Curious Scientist Game, an educational game that incorporates technology, has been shown to stimulate kids to study (Aida et al., 2022). This game is designed for elementary school fifth graders. This game, as a teaching medium, adheres to the 2013 curriculum, which takes a scientific approach. This game implies that pupils will ultimately develop a scientific attitude.

Based on the data received, simplicity of use receives the lowest percentage of 76.76 since this game is only accessible via Android-based smartphones, therefore students with iOS-based smartphones are unable to play it. The appeal component was followed by a percentage of 79.10 since games are enjoyable to play, yet certain tasks are challenging, according to students. At the same time, efficiency receives the maximum percentage of 79.43 since it is cost and resource efficient. Mobile educational games are practical and versatile for students, according to earlier study (RB. Hendri Kuswantoro, 2018). Games are ideal for self-study since they may be accessible at any time and from any location (Febriani et al., 2020).

More specifically, the practical assessment of combining physics learning games with scientific literacy will be explored in three parts. The first component of evaluation is the simplicity of usage. Students must respond to eight assertions under the element of usability. The material is simple to learn (MEL), the scoreboard controls comprehension (SCC), games are simple to access (GEA), the study guide is simple (ESG), the game instructions are simple (EGI), the scientific process is simple to understand (SPE), and scientific concepts are simple to understand (SCU). Figure 3 depicts the findings of the ease-of-use aspect of scientifically charged physics learning games.

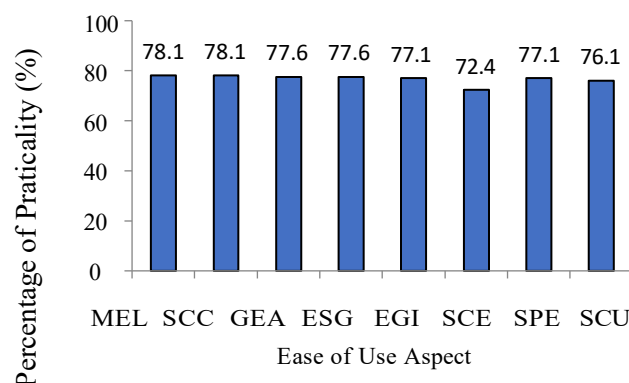


Figure 3. Practicality assessment on ease of use aspect

The first statement receives the greatest percentage, and the information is simple to master. Several research have examined the relationship between the ease of learning materials and features of ease of use in practical sessions. The practicality questionnaire, for example, identifies media usage patterns that are user-friendly (Ernica & Hardeli, 2019). Based on this research, the product created is a colloid system e-module that adheres to the curriculum . Basic Competency (KD) includes videos and animations linked to subject matter that can assist students answer questions on e-modules as content components. The questionnaire has various components, including factors of usability relevant to the usability of learning media. The practicality questionnaire was designed to identify media using behaviors that prioritized usability . Data on ease of use may be utilized to improve the usability of learning material. The material in the game is easy to learn, according to this statement, because there is material, sample questions, quizzes, simulations, material summaries, and basic concepts at the beginning of each level, and these concepts are also asked in quiz questions; if students answer this quiz incorrectly, they will be unable to continue the game. As a result, pupils will learn the subject in this game .

The second assertion is the one with the greatest percentage, and the scoreboard regulates understanding. The scoreboard is a control, which is one of the game's aspects. Students can exert control over themselves using this scoreboard. As a result, students with strong self-control may better manage their online gaming behavior, such as session time, intensity, and comprehension. This scoreboard displays student scores at each level, allowing students to regulate their knowledge. If a student does not receive a high score, he can repeat the level to better comprehend the subject that was missed, as shown in Figure 4.

**Figure 4.** Scoreboard as comprehension controller

This score is determined by the student's answers to the quiz questions at each level. Learning game scoreboards, when used correctly, may have a major influence on student understanding. Educational game scoreboards are a great method for engaging children and inspiring them to study. Students will be motivated to improve their scores and tackle new learning challenges if their game scores and progress are presented. Furthermore, learning game scoreboards can help teachers detect and manage educational challenges with their pupils. Teachers may use the scoreboard to determine which students need assistance and provide more targeted support to help pupils master challenging subjects.

The sixth assumption is given the least weight; scientific context is straightforward to grasp. The scientific environment of this game is related to everyday life, such as traffic or highways. Each level has a different aim, yet each mission progresses to the next level. This statement obtains a low percentage because many levels give little information about the scientific background, and the scientific backdrop that emerges at the start of the game is only one aspect of the process. Figure 5 depicts how students must understand how the game's environment relates to real life .



Figure 5. The scientific context contained in the game

Contextual learning is an approach that helps teachers integrate the content they teach with their students' real-world experiences and encourages them to make connections between the knowledge they have and how it may be applied in everyday life. Because the information is connected to past learning experiences, students will learn more successfully in contextual learning (Afriani, 2018). Contextual learning can also help students enhance their problem-solving skills (Parhan & Sukaenah, 2020). Contextual learning may be applied on big and small scales, with small ones being easier to handle. Contextual learning works well in content-based curriculum. Contextual learning does not necessitate the purchase of pricey materials or the usage of specialized media. As a consequence, contextual learning may be a viable alternative for raising school educational standards.

The utilization of simple media can have a substantial positive influence on the learning process. These media can help students focus on courses, improve memory, boost creativity, aid with autonomous learning, and boost student involvement. As a result, employing simple learning media in physics is highly suggested to assist students better comprehend physics principles .

Following the findings of the first component of the evaluation, the second factor is attractiveness. Students must respond to eight statements in the second assessment aspect regarding attractiveness, namely, display according to the characteristics of physics subjects (DAC), interesting character (ICH), proportionate color harmony (PCH), proportional animation composition (PAC), presentation in context so that it is easy to use (PCE), the game is easy to use because there is a challenge in every level (GEC), the material can lead to understanding physics (MLU), an interesting character (ICH), an interesting character (ICH), an interesting character (ICH), Figure 6 depicts the findings of the attractiveness aspect of physics learning games with scientific literacy .

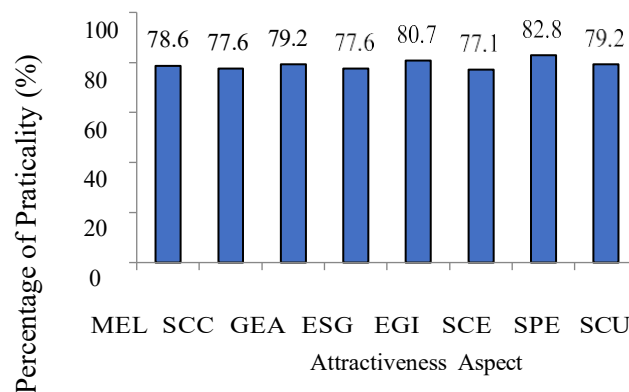


Figure 6. Practicality assessment on the aspect of attractiveness

The fifth statement is provided in context such that it is easy to utilize (PCE) and receives the highest percentage of the eight statements. The sixth assertion, that games are simple to use because

of the obstacles at each level (GEC), has the lowest proportion of support .

The eighth assertion obtained the greatest proportion, and material can lead to understanding physics. This is due to the fact that at each level, students are provided the basic principles of the indicators to be accomplished, which are then presented in the form of questions, example questions, and quizzes so that students may comprehend the content while playing games. According to prior studies, creating physics education games can be an excellent technique to teach pupils. Rolling Box (Ro-Box) is an example of a physics-teaching educational game. 2020 (Ramadhani & Sugianto) . In conclusion, game-based learning has improved students' grasp of physics fundamentals. Traditional games, simulations, and instructional games can boost students' interest and motivation while also efficiently conveying content .

The beauty of the game might influence the player's grasp of physics principles. This can occur as a result of game components relating to the idea of physics. The following are some aspects of physics education games that address their ability to affect physics concept knowledge. The first is a physical simulation that deals with the technical aspects of road traffic and driving on real-world roads. The user may witness how items interact with their surroundings in this game, such as distance, displacement, velocity, velocity, and so on. Players may better comprehend how physics ideas are implemented in real world by viewing how physics simulation works in games.



Figure 7. Challenges in physics learning games

The sixth statement receives the lowest percentage; the game is enjoyable to play since there are obstacles at every level. This is due to the fact that there are tasks that are tough for students to fulfill, such as the finish line of a level being to return to where the game began, making it fairly difficult for students to complete a level so they may progress to the next level, as seen in Figure 7 .

Learning media is vital in teaching and learning since it helps raise students' attention and enthusiasm in learning. The presentation of instructional material can make the knowledge presented more appealing to pupils. The look of media may have a considerable impact on its attraction to viewers or users. Most media is visually pleasing and enticing to users. Media may be made more appealing by employing appealing graphic designs, colors, layouts, and the addition of appealing photographs or videos. Furthermore, media content might influence its attraction. When the content in the media is informative, interesting, and relevant, it might be more engaging . Other factors, such as the size and style of the medium, can also influence its attraction. Large media or distinctive forms, for example, might catch the attention of consumers. In general, visually appealing media displays can entice people to see or utilize the media more

frequently (Nurrita, 2018).

Following the findings of the second part of the assessment, comes the last aspect, namely efficiency. Students must respond to four assertions about efficiency: games may be employed by leveraging the tools students have, such as cellphones (URS), games help students study independently (HLI), games can save learning time (SLT), and games can save money (GSC). Figure 8 depicts the outcomes of the efficiency elements of physics learning games with scientific literacy .

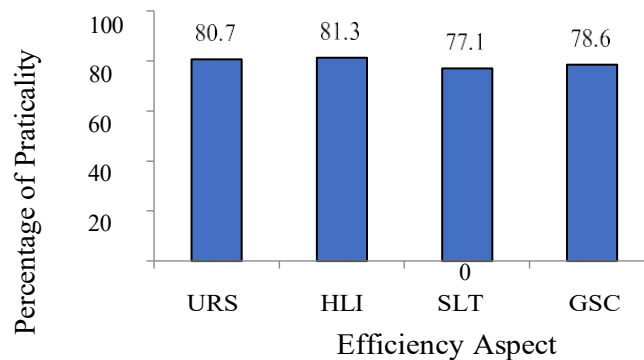


Figure 8. Practicality assessment on efficiency aspect

The second assertion, that games support students for autonomous learning (HLI), earns the greatest proportion of the four claims, while the third statement, that games can save learning time (SLT), has the lowest percentage.

The second statement, the game helps students to learn independently, receives the highest percentage because by using this game, students can learn material independently, which increases student independence in learning; they don't have to wait for the teacher to explain learning material first, but they can learn it on their own. Games encourage autonomous learning by making it easier for pupils to grasp the themes since they permit the audiovisual acquisition of knowledge. The use of learning tools can inspire and motivate students to take their studies more seriously . When studying new information, learning media can also allow students to conduct their own research and spark their creativity. Students can study using learning material at home or outside of planned lessons anytime they wish. As a consequence, students may adjust their learning rate based on their individual skills, allowing them to study more freely and attentively. Furthermore, employing learning media, teachers may rapidly and precisely assess students' progress in learning new subject. Sample questions and quizzes in digital learning resources can help students assess their learning progress and highlight areas that require more attention.

In general, instructional media may provide more interesting and beneficial learning experiences, allowing students to study on their own and achieve academically. Other scholars have previously looked into the use of games in education. Independent student learning research has revealed advantages from game-based learning, particularly Kahoot (Prenawa & Setiawati, 2021). Because it is essential for learning, everyone need a self-directed learning mentality. Students that are self-directed learn more, monitor and assess their information, and manage their time better. Furthermore, game-based learning can enhance student-centered learning, in which the teacher's duty is to keep the learning process going (Gunanto, 2021).

The third assertion, games can save learning time, receives the lowest proportion. This is because some students who are not used to playing games have difficulties finishing a level in the game, resulting in a lengthier learning time. Learning using games as a teaching medium takes longer since some students require more time to complete the game. To assist students reach the primary proficiency and competence criteria, learning materials must be properly selected (Yustina & Yahfizham, 2023). Furthermore, it is critical to carefully select educational games in order to minimize boredom and keep students interested in

learning (Putra et al., 2018)

Practical Results of the Application of Physics Learning Games with Scientific Literacy by Teachers

Following data on the practicality of using physics learning games based on high school students in Bandung City who got the practical category, data on the practicality of using physics learning games based on scientific literacy based on the instructor is shown. Table 2 displays the results

Table 2. The Practicality of the Application of Physics Learning Games According to the Teacher

Value	Questionnaire Items			Practicality
	Easy to Use	Attractiveness	Efficiency	
Average	92.71	87.50	91.67	90.63

According to this teacher, there are three characteristics of taking practical questionnaires, which may be shown in Table 3. These include features of simplicity of use, aspects of appeal, and aspects of efficiency. In the extremely practical category, the first component of ease of use obtains a percentage of 90.61%, the second aspect receives a percentage of 86.25%, and the final aspect receives a percentage of 92.50%. The convenience component has the largest proportion of these three characteristics, while the attractiveness aspect has the lowest percentage .

According to the instructor, the average percentage for the practicality of learning games was 90.63% in the highly practical category out of the three components of the evaluation. According to the instructor, utilizing physics learning games with scientific literacy in comprehending pupils' physics topics is highly practical .

Several publications discuss the usefulness of game-based learning in the classroom. When game creators provide clear rules and students clearly grasp learning objectives and assessment criteria, game-based learning may be beneficial. This study also suggests that game-based learning may provide students with an enjoyable and fascinating learning environment (Setyawan et al., 2019). To inspire pupils to study, learning materials and media must be appealing and simple to read, as well as clear and easy to understand (Panjaitan & Haris, 2022). The third research looks at the effectiveness of interactive media in educating high school pupils about electrical circuits. The findings suggest that both instructors and students value interactive media for teaching and learning (Tri & Yanto, 2019).

According to the instructor, the results of measuring the practicality of applying physics learning games were in the extremely practical category. The proportion of practicality in each assessment aspect is shown below. The material is easy to learn (MEL), the scoreboard makes it easier for the teacher to control student understanding (SCS), games are easily accessible (GEA), easy study guide (ESG), easy game instructions (EGI), the scientific context is easy to understand (SCE), the scientific process is easy to understand (SPE), and scientific concepts are easy to understand (SCU) are the eight statements that the teacher must answer in the first aspect of ease of use. Figure 9 depicts the results of the ease of use aspect of physics learning games with scientific literacy.

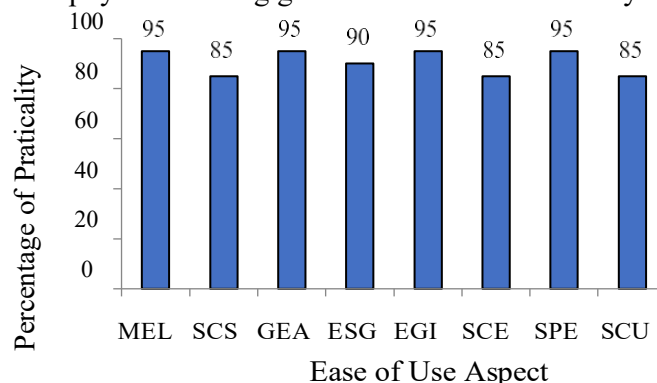


Figure 9. Practicality assessment on ease of use aspect

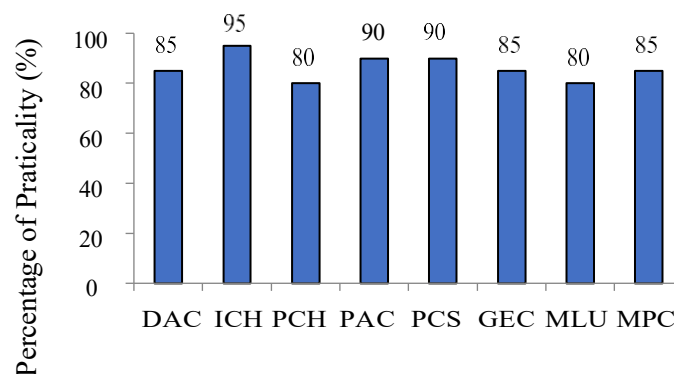
The first, third, fifth, and seventh statements (MEL, GEA, EGI, and SPE) received the greatest percentage of 95%, while the second, sixth, and eighth (SCS, SCE, and SCU) received the lowest proportion of 85%.

The first statement, "the material is easy to learn," receives the greatest proportion. Several research have examined the relationship between the ease of learning content and features of ease of use in practical sessions. In one study (Ernica & Hardeli, 2019), a practicality questionnaire is used to determine media consumption patterns that are user-friendly. The practicality questionnaire was designed to identify media using behaviors that prioritized usability. Data on ease of use may be utilized to improve the usability of learning material. The material in the game is easy to learn, according to this statement, because there is material, sample questions, quizzes, simulations, material summaries, and basic concepts at the beginning of each level, and these concepts are also asked in quiz questions; if students answer this quiz incorrectly, they will be unable to continue the game. As a result, pupils will learn the subject in this game..

The third statement, "the game is easy to access," receives the largest percentage of votes. Students can access this game offline using their smartphones. The sixth statement, easy game instructions, receives the largest proportion of votes. This game suggestion displays once we've selected the level to play. This game's instructions include how to travel about the game (navigation), what must be performed at each level (mission), what must be gathered, and what cannot be touched. The seventh assertion is the one that receives the greatest percentage. The scientific method is simple to grasp. The scientific method alluded to in this game is the full gaming procedure from start to finish that students at each level must complete. This scientific approach has a good rating since it includes several elements such as study materials and example questions.

According to the student responses on the practicality questionnaire, the sixth statement, "the scientific context is easy to understand," receives the lowest proportion. This is because, according to the instructor, it will be determined which students require aid, and the teacher will offer more concentrated assistance to help students understand difficult topics, thus students with lower scores than their peers would feel inferior and burdened to increase their scores. The eighth assertion, scientific ideas are easy to comprehend, receives the lowest percentage since the scientific concepts in this game are the foundational principles of each indication that students must accomplish at each level. According to the teacher, some ideas may be more understandable, thus they will be guided to the simulation part first before answering the exam questions at the conclusion of the game.

Following the findings of the first component of the evaluation, the second factor is attractiveness. The teacher must respond to eight statements: display according to physics subject characteristics (DAC), interesting character (ICH), proportionate color harmony (PCH), proportional animation composition (PAC), presentation in context to build students' knowledge (PCS), the game is easy to use because there is a challenge at every level (GEC), the material can lead to understanding physics (MLU), and missions or adventures provide comfort for teacher. Figure 10 depicts the findings of the attractiveness aspect of physics learning games with scientific literacy.



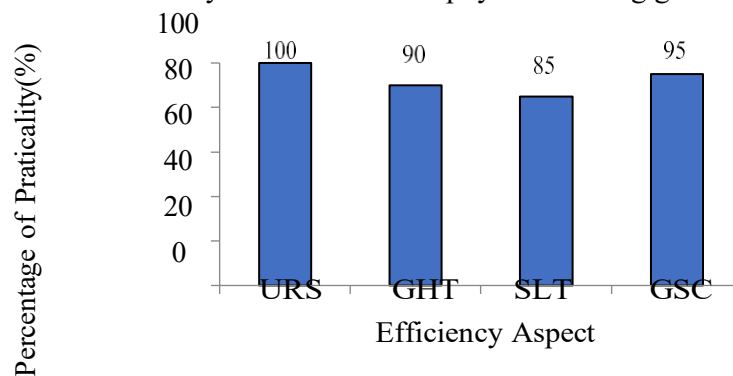
Attractiveness Aspect

Figure 10. Practicality assessment on the aspect of attractiveness

The second statement of intriguing character (ICH) received the greatest percentage of the eight statements, while the statements of proportional color harmony (PCH) and information that can assist students to correctly comprehend physics (MLU) received the lowest percentages .

The second statement, the character of the character is fascinating, has the greatest proportion. The attraction of learning games may also be influenced by the characters. Using character qualities in educational games, according to studies, can assist students better comprehend the features of these characters (Rabiah et al., 2021). While the fifth assertion obtained the lowest score, the content can help students grasp physics properly. According to the teacher, there is content that must be explained by the teacher before pupils can understand it, thus the material cannot be grasped just by reading.

Following the outcomes of the second component of the evaluation, the third element is efficiency. The teacher must respond to four statements. Specifically, games may be employed by exploiting resources such as smartphones (URS), games can assist instructors prepare students to learn independently (GHT), games can reduce learning time (SLT), and games can save money (GSC). Figure 11 depicts the efficiency characteristics of physics learning games with scientific literacy.

**Figure 11.** Practicality assessment on efficiency aspect

The first assertion, that games may be employed by exploiting accessible resources such as smartphones (URS), had the greatest proportion of the four claims. The final assertion, however, that games can save learning time (SLT), has the lowest proportion .

The first statement, games may be employed by exploiting their resources, such as cellphones, received the greatest proportion. This is because students and instructors do not need to go out of their way to play this game; they can do so simply by utilizing the cellphones they already own. Games can save learning time, as opposed to the third statement, which received the lowest proportion. This is also in response to the students' feedback on the questionnaire's efficiency rating.

Overall, this study demonstrates that physics learning games with scientific literacy may be useful for teaching physics topics when game creators establish explicit rules, teachers actively support student learning, and students grasp learning objectives and evaluation criteria. Furthermore, interactive media may provide students a pleasant and engaging approach to understand physics principles.

Conclusion

Based on the findings of the research and data analysis, this study finds that the practical degree of practicality of physics learning games with scientific literacy is in the practical category, according to students from six high schools in Bandung City. The game's simplicity of use receives the practical category in the first assessment. The second evaluation aspect, beauty, receives the practical category, and the third assessment aspect, efficiency, receives the greatest proportion when compared to the other two. According

to the teacher, the students performed extremely well in the practical evaluation of using physics learning games with scientific literacy. The three criteria of the ease of use rating, beauty, and efficiency received highly practical percentages. According to the teacher, mixing physics learning games with scientific literacy is highly useful.

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