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The Practicality of Applying Physics Learning Games with Scientific Literacy

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Abstract: Physics is part of the natural sciences which plays an essential role in life. Learning physics must be distinct from various learning environments to achieve the stated learning objectives. One of the things that play an essential role, in this case, is the learning media. One of the learning media that can be used is a game. Experts have validated this physics learning game with scientific literacy, but it has yet to be tested for practicality. This study aimed to determine the practicality of implementing physics learning games with scientific literacy for Padang City High School students. This type of research is descriptive, with a sample of students and teachers in six high schools in Padang City, which have been grouped into three levels high, medium, and low. The research instrument used a practical questionnaire with four answer choices. The data analysis used in this research is a descriptive analysis technique. The results showed that the convenience aspect obtained a practicality percentage of 76.76% according to students and 90.63% according to the teacher, the attractiveness aspect obtained a percentage of 79.10% according to students and 86.25% according to teachers, and the last aspect of efficiency obtained a percentage of 79. 43% according to students and 92.50% according to teachers. Overall, according to the students, this game is practical to use, with a percentage of 78.43%. According to the teacher, the game has a percentage of 90.63%, with a very practical category.

Keywords: Games; Physics learning; Scientific literacy

Introduction

Physics is part of the natural sciences which plays an essential role in life. One of the skills that students are expected to master after studying science is scientific literacy. Literacy is the ability to use scientific information, identify questions, and make conclusions based on facts to understand the universe and its changes caused by human activities (Rakhmawan et al., 2015).

Physics learning cannot be separated from various learning environments to achieve the stated learning objectives. Approaches, strategies, models, and media significantly impact learning. Learning models, methods, and techniques help teachers design effective and efficient learning (Djalal, 2017). Depending on the needs and characteristics of students, teachers can choose from various teaching methods, including constructivist, cognitive, and behavioristic approaches. The learning process can be strengthened, and student engagement can be increased by using learning strategies such as cooperative learning, problem-based learning, and inquiry-based learning. Teachers can help students learn in various ways by applying learning models such as project-based learning and integrated learning. Teachers can choose from various learning techniques, including lectures, discussions, simulations, and practicums, to get the most out of their educational experience. Computers, smartphones, videos, and other learning tools can all be used as interactive learning media and increase teaching effectiveness. Teachers can choose the appropriate approaches, strategies, models, methods, and learning media to achieve the success of learning objectives by paying attention to these essential components.

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Learning media are sources or instruments that make learning more accessible and more effective. Learning media is any instrument or material used to enhance learning messages so students can understand them better (Sugiyono, 2016). There are four categories of learning media: visual media, audio media, audiovisual media, and multimedia (Ryandra, 2011). A more thorough division of learning media can be divided into eight categories: people, objects, text, audio, visual, video, multimedia computers, and computer networks (Pribadi, 2011).

The use of learning media is very decisive in education and learning. The existence of learning media can assist educators in improving teaching activities, expediting the learning process, and increasing student interest in learning. Good learning media must be effective and efficient in transferring material quickly to increase students' understanding after learning. To achieve learning objectives, learning media must improve the effectiveness and efficiency of the learning process in the classroom (Magdalena et al., 2021). The successful use of media in the learning process, good learning media must be validated and evaluated for its usefulness. Didactical, construct, and technical criteria can be used to determine the validity of instructional media. The use and compatibility of learning media with user capabilities provide practical evidence of their use (Fitra & Maksum, 2021).

One of the learning media that can be used is a game. Physics learning games filled with scientific literacy have been developed since 2021 (Afrizon et al., 2021). This game is a learning medium for straight-motion material studied in class X. This game has the theme of traffic safety with ten levels. At each level, there are scientific concepts, processes, and contexts, and sample questions and quizzes at the end of the game to test students' understanding of physics concepts.

This physics learning game with scientific literacy has been validated by experts with a valid category in terms of material substance, learning design, and visual communication display. However, this game has yet to be tested for practicality according to the responses of teachers and students (Afrizon et al., 2021). The practicality of learning media is the media's ability to easily and efficiently support learning objectives. The practicality of learning media can be seen from the ease of use for students and teachers and the evaluation results of users and users. In addition, an important part of choosing media is adjusting it to learning objectives, student characteristics, and learning materials (Milala et al., 2022).

The practicality of learning media can be assessed through small group tests and field tests using teacher and student perception questionnaires. The practicality of learning media is very important to support the achievement of learning objectives. Practicality is shown by the ease of use for students and teachers and the results of user or user reviews (Irawan & Hakim, 2021). Assessment of the feasibility of learning media also includes validation by experts. Therefore, according to students and teachers, researchers want to test the practicality of physics learning games with scientific literacy.

Method

The type of research used in this research is descriptive to test the practicality of applying physics learning games with scientific literacy. The sample in this study was students and teachers. Students represented by six high schools in Padang have been grouped into high, medium, and low-level schools. Games are given to teachers and students in physics learning in the classroom, as shown in Figures 1 and 2.

Figure 1. Students are using physics learning games in class

From Figure 1, it can be seen that students are using games in learning. After completing several levels in the game, students fill out a practicality questionnaire on the Google form. Next is a picture of the teacher using physics learning games as a learning medium in the classroom.

Figure 2. Teacher is using physics learning game in class

Figure 2 shows that the teacher uses physics learning games as a medium for learning straight-motion material to students. Before the teacher uses the game, the researcher explains the game's features to the teacher so that the teacher can directly use the game in the classroom. After using the game in class, then the teacher assesses the practicality of using the game.

The data collection instrument was a practicality questionnaire. The data obtained was processed to find out the opinions of students and teachers regarding the physics learning game being developed. There are three aspects assessed in this questionnaire, namely ease of use, attractiveness, and efficiency. In each of these statements, there are four answer choices that students can fill in, namely numbers 1, 2, 3, and 4. Number 1 means strongly disagree, number 2 means disagree, number 3 means agree, and number 4 means strongly agree. Student and teacher responses were analyzed using descriptive analysis techniques with the equation 1.

$$P = \frac{R}{SM} \times 100\% \quad (1)$$

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

The practicality percentage of using the game is interpreted with the practicality category to find out how far the practicality level of the game has been developed. The first category is very practical with an achievement level of 86%-100%, second category is practical with 76%-85%, third category pretty practical with 60%-75%, fourth category is less practical with 55%-59%, and last impractical category with ≤54%(Purwanto, 2010).

Result and Discussion

From the collection of practical data on the application of physics learning games that have been carried out, the practical data on the application of physics learning games are divided into two, according to students and teachers.

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	78.43

The ease of use aspect in Table 1 obtained an average practicality value of 76.76% in the practical category. In the attractiveness aspect, the percentage is 79.10% in the practical category, and the last aspect is efficiency, which is 79.43% in the practical category. From the three aspects of the assessment, the average percentage for the practicality of learning games according to students was 78.43% in the practical category.

In line with the research that developed the Cross Puzzle Game, it sees that games are one of the solutions to overcome student interests which will impact student learning outcomes (Alika & Radia, 2021). Cross Puzzle Game is not just an ordinary game; kids can play and learn simultaneously. In addition, this game can improve students' focus, patience, and critical thinking when presenting a concept. However, in reality, in the field, the availability and use of science-based learning media still need to be improved. As a result, teachers could use the media more optimally, resulting in less than optimal student learning outcomes in classrooms where students only focus on the teacher and their own textbooks. Research on the Curious Scientist Game, an educational game incorporating technology, will motivate students to learn (Aida et al., 2022). This game is intended for fifth graders of elementary school. As a teaching medium, this game follows the 2013 curriculum, which uses a scientific approach. From this game, it can be assumed that students will eventually have a scientific mindset.

Based on the practicality data obtained, ease of use gets the lowest percentage of 76.76 because Android-based smartphones can only access this game, so students who have iOS-based smartphones cannot use it. Then followed by the attractiveness aspect with a percentage of 79.10 because games are interesting to play, but some challenges are difficult according to students. At the same time, efficiency gets the highest percentage of 79.43 because it is efficient in terms of costs and resources used. In line with previous research, mobile educational games are practical and flexible for students (RB. Hendri Kuswantoro, 2018). Games are perfect for self-study because they can be accessed anytime and anywhere (Febriani et al., 2020).

In more detail, the practical assessment of applying physics learning games with scientific literacy will be discussed based on three aspects. The first assessment aspect is the ease of use. The aspect of ease of use has eight statements that students must answer. Namely, the material is easy to learn (MEL), the scoreboard controls comprehension (SCC), games are easily accessible (GEA), the 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). The results of the ease-of-use aspect of scientifically charged physics learning games can be seen in Figure 3.

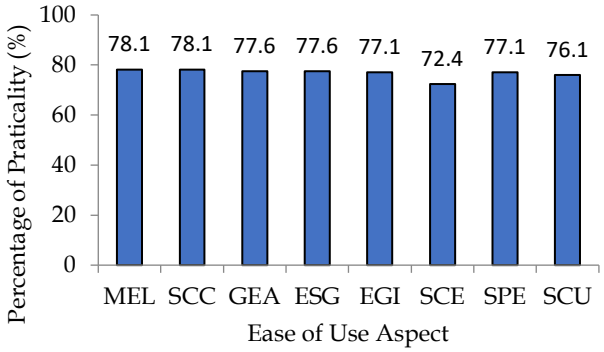

Figure 3. Practicality assessment on ease of use aspect

The statement that gets the highest percentage is the first statement, and the material is easy to learn. The link between the ease of learning materials and aspects of ease of use in practical lessons has been discussed in several studies. One is the practicality questionnaire that identifies media use practices focusing on user-friendliness (Ernica & Hardeli, 2019). Based on this research, the product developed is a colloid system e-module following the curriculum used. Videos and animations related to subject matter that can help students answer questions on e-modules are included as content components by Basic Competency (KD). The questionnaire consists of several components, including aspects of ease of use related to the ease of use of learning media. The practicality questionnaire was used to identify media usage practices that focused on ease of use. Data pertaining to ease of use can be used to increase the practicality of learning media. In this statement, the material contained in the game is easy to learn 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 then can't continue the game. So students will learn the material in this game.

The following statement that gets the highest percentage is the second statement, and the scoreboard controls understanding. The scoreboard can be classified as a control, one of the game's characteristics. With this scoreboard, students can control themselves. Hence, students with high self-control can better manage their online game behavior, such as duration, intensity of game-playing sessions, and understanding. This scoreboard has scores obtained by students at each level so that students can control their knowledge. If a student has yet to get a high score, he can repeat the level to understand better the material that was missed, as seen in Figure 4.

Figure 4. Scoreboard as comprehension controller

This score is obtained from the student's answers to the quiz questions at each level. Learning game scoreboards can greatly affect student comprehension if used correctly. Scoreboards for educational games are an efficient way to engage students and motivate them to study. By showing their scores and progress in games, students will feel motivated to achieve higher scores and overcome new challenges in learning. In addition, learning game scoreboards can also help teachers identify problems students have in education and provide additional assistance. By looking at the scoreboard, teachers can determine where students need support and provide more focused assistance to help students learn challenging topics.

The statement that gets the lowest percentage is the sixth statement; scientific context is easy to understand. The scientific context in this game is related to everyday life, such as traffic or highways. Each level provides a different mission, but each mission continues at the next level. This statement gets a low percentage because several levels contain little about the scientific context, and the scientific context that appears at the beginning of the game is only part of the process. So that students need to understand how the context in this game relates to everyday life, this can be seen in Figure 5.

Figure 5. The scientific context contained in the game

Contextual learning is an idea that assists teachers in connecting the information taught with students' real-world experiences and encourages them to draw connections between the knowledge they have and how

it can be used in everyday life. Students will learn more effectively in contextual learning because the material is related to their previous learning experiences (Afriani, 2018). Students' problem-solving ability can also be improved with contextual learning (Parhan & Sukaenah, 2020). Contextual learning can be used on both large and small scales, but small scales are easier to manage. Contextual learning is very suitable for content-based curricula. Contextual learning does not require expensive materials or special media for its use. As a result, contextual learning can be a useful substitute for improving school educational standards.

The use of media that is easy to use can have a significant positive impact on the learning process. These media can help students focus on lessons, improve memory, increase creativity, assist students in independent learning, and increase student engagement. Therefore, using media that is easy to use in learning physics is highly recommended to help students better understand physics concepts.

After the results regarding the first aspect of the assessment, the second aspect is attractiveness. In the second assessment aspect regarding attractiveness, eight statements must be answered by students, 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), and missions or adventures provide comfort in using (MPC). The results of the attractiveness aspect of physics learning games with scientific literacy can be seen in Figure 6.

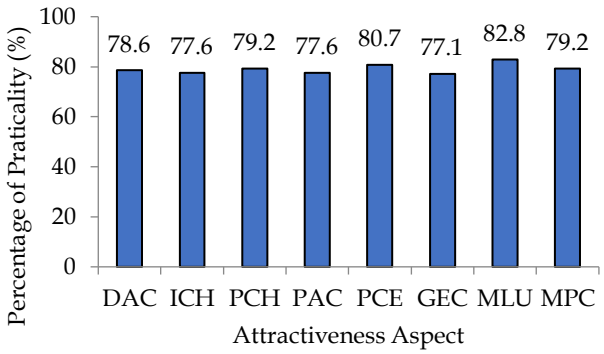

Figure 6. Practicality assessment on the aspect of attractiveness

Of the eight statements, the fifth statement is presented in context so that it is easy to use (PCE) and gets the highest percentage. The sixth statement, that games are easy to use because of challenges at each level (GEC), receives the lowest percentage.

The statement that received the highest percentage was the seventh statement, and material can lead to understanding physics. This is because at each level, students are given the basic concepts of the indicators to be achieved and then given the form of questions, sample questions, and ends with quizzes so that students can understand the material while playing games. In previous research, developing physics education games can be an effective way to convey material to students. Rolling Box (Ro-Box) is an example of an educational game designed to teach physics concepts (Ramadhani & Sugianto, 2020). In summary, game-based learning has positively affected students' understanding of physics concepts. Using traditional games, simulations, or educational games can increase students' interest and motivation and effectively convey material.

The game's attractiveness can affect the player's understanding of physics concepts. This can happen because of game elements related to the concept of physics. The following are some things in physics education games that discuss their potential to influence the understanding of physics concepts. The first is a physical simulation that deals with the technical conditions of road traffic and driving on roads in real life. In this game, the player can see how objects interact with their environment, i.e., Distance, Displacement, Velocity, Velocity, etc. By seeing how physics simulation works in games, players can better understand how physics concepts are applied in real life.

Figure 7. Challenges in physics learning games

The statement that gets the lowest percentage is the sixth statement, the game is fun to use because there are challenges at every level. This is because there are challenges that are difficult for students to complete, such as the finish line of a level is to return to where the game started, so it is rather difficult for students to

complete a level so they can proceed to the next level, can be seen in Figure 7.

Because it can increase students' attention and interest in learning, learning media is essential in teaching and learning. Attractively presenting educational material can make the information offered more attractive to students. The attractiveness of media to audiences or users can be significantly influenced by its appearance. Most media are attractive, visually appealing, and attract users. Media can appear more attractive by using attractive graphic designs, attractive colors, good layouts, and the inclusion of attractive photos or videos. In addition, media content can affect its attractiveness. Media can be more engaging when the material is educational, entertaining, and relevant. In addition, other elements, such as the size and design of the media, can affect its attractiveness. For example, large media or unusual shapes can attract users' attention. In general, visually appealing media displays can attract users more, increasing the likelihood of viewing or using the media (Nurrita, 2018).

After the results regarding the second aspect of the assessment, next is the last aspect, namely efficiency. In terms of efficiency, four statements must be answered by students, namely, games can be used by utilizing the resources students have, such as smartphones (URS), games help students to learn independently (HLI), games can save learning time (SLT), and games can save costs (GSC). The results of the efficiency aspects of physics learning games with scientific literacy can be seen in Figure 8.

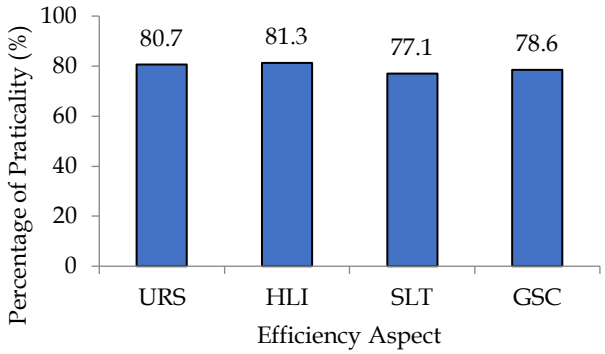

Figure 8. Practicality assessment on efficiency aspect

Of the four statements, the second statement that games help students for independent learning (HLI) gets the highest percentage, and the third statement that games can save learning time (SLT) receives the lowest percentage.

The statement that gets the highest percentage is the second statement, the game helps students to learn independently because by using this game, students can learn material independently, which will increase 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. Because games enable the audiovisual acquisition of knowledge, they facilitate independent learning by making it easier for students to understand the topics. Utilization of learning resources can encourage and motivate students to study more seriously. Learning media can also allow students to research problems on their own and inspire their creativity when learning new content. Students can use learning media to study at home or outside of scheduled classes and do it whenever they want. As a result, students can change their learning pace according to their unique talents, which allows them to study more flexibly and with greater attention. In addition, teachers can evaluate students' progress in learning new content quickly and accurately using learning media. Sample questions and quizzes in digital learning materials can support students in tracking their learning progress and identifying areas that need more focus.

In general, instructional media can offer learning experiences that are more engaging and successful, enabling students to learn on their own and succeed academically. Other researchers have already researched the use of games in learning. Research on independent student learning has found benefits from game-based learning, especially Kahoot (Prenawa & Setiawati, 2021). Everyone needs a self-directed learning mindset because it is vital for learning. Self-directed students tend to learn more, monitor and evaluate their knowledge, and manage their time well. In addition, game-based learning can support student-centered learning, where the teacher's job is to keep the learning process (Gunanto, 2021).

The statement that gets the lowest percentage is the third statement, games can save learning time. This is because some students not used to playing games have difficulty completing a level in the game, which causes the learning time to be longer. Learning using games as teaching media takes longer because some students need more time to finish the game. Learning materials must be chosen carefully to help students meet the primary proficiency and competency standards (Yustina & Yahfizham, 2023). In addition, it is essential to choose educational games carefully to avoid bored students and maintain their interest in learning (Putra et al., 2018).

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

After taking data on the practicality of using physics learning games according to high school students in Padang City who received the practical category, next is data on the practicality of using physics

learning games with scientific literacy according to the teacher. The results can be seen in Table 2.

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

Based on Table 3, it can be seen that according to this teacher, there are three aspects of taking practical questionnaires, namely, aspects of ease of use, aspects of attractiveness, and aspects of efficiency. The aspect of ease of use gets a percentage of 90.61% in the very practical category, the second aspect of ease of use gets a percentage of 86.25% in the very practical category, and the last aspect receives a percentage of 92.50% in the very practical category. Of these three aspects, the convenience aspect has the highest percentage, while the attractiveness aspect has the lowest percentage.

Of the three aspects of the assessment, the average percentage for the practicality of learning games, according to the teacher, was 90.63% in the very practical category. So using physics learning games with scientific literacy in understanding students' physics concepts, according to the teacher, is very practical to use.

Several sources talk about the practicality of game-based learning in the classroom. Game-based learning can be effective when game developers establish clear rules and students clearly understand learning objectives and assessment criteria. This research also shows that game-based learning can create a fun and interesting learning environment for students (Setyawan et al., 2019). To encourage students to be motivated to learn, learning materials and media must be attractive and easy to read so that they are clear and easy to understand (Panjaitan & Haris, 2022). The third study examines the practicality of interactive media in teaching electrical circuits to high school students. The results show that teachers and students consider interactive media useful for teaching and learning (Tri & Yanto, 2019).

After assessing the practicality of implementing physics learning games, according to the teacher, the results were in the very practical category. Next are the results regarding the percentage of practicality in each assessment aspect. In the first aspect regarding ease of use, eight statements must be answered by the teacher, namely, 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). The results of the ease of use aspect of physics learning games with scientific literacy can be seen in Figure 9.

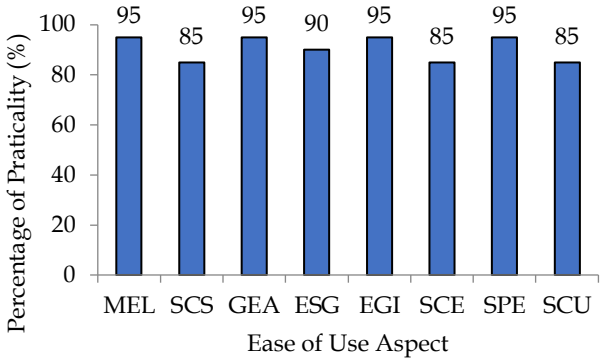

Figure 9. Practicality assessment on ease of use aspect

Of the eight statements, the first, third, fifth, and seventh (MEL, GEA, EGI, and SPE) obtained the highest percentage of 95%, while the second, sixth, and eighth (SCS, SCE, and SCU) got the lowest percentage of 85%.

The statement that gets the highest percentage is the first statement, the material is easy to learn. The link between the ease of learning material and aspects of ease of use in practical lessons is discussed in several studies. One of them is in research (Ernica & Hardeli, 2019), a practicality questionnaire is used to identify media usage practices that focus on user-friendliness. The practicality questionnaire was used to identify media usage practices that focused on ease of use. Data related to ease of use can be used to increase the practicality of learning media. In this statement, the material contained in the game is easy to learn 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 then can't continue the game. So students will learn the material in this game.

The following statement that gets the highest percentage is the third statement, the game is easy to access. This game can be accessed by students offline via the smartphone they have. The following statement that gets the highest percentage is the fifth statement, easy game instructions. This game hint appears when we have chosen the level to be played. The instructions for this game contain how to move in the game (navigation), what must be completed at the level (mission), what must be collected, and what cannot be touched in the game. The following statement that gets the highest percentage is the seventh statement. The scientific process is easy to understand. The scientific process referred to in this game is the entire game process from start to finish that must be passed by students at each

level. This scientific process gets a high percentage because it has various features, such as learning materials and sample questions.

The sixth statement that the scientific context is easy to understand gets the lowest percentage according to the student's opinions on the practicality questionnaire. This is because, according to the teacher, it will be seen which students need support, and the teacher will provide more focused assistance to help students learn challenging topics, so students who have lower scores than their other friends will feel inferior and burdened to raise their scores. The following statement that gets the lowest percentage is the eighth statement, scientific concepts are easy to understand because the scientific concepts in this game are the basic concepts of each indicator that students must achieve at each level. According to the teacher, some concepts could be more readable, so they cannot answer the quiz questions at the end of the game, which will be directed to the simulation section first.

After the results regarding the first aspect of the assessment, the second aspect is attractiveness. Eight statements must be answered by the teacher, namely, display according to the characteristics of physics subjects (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 teachers in using them as learning media (MPC)). The results of the attractiveness aspect of physics learning games with scientific literacy can be seen in Figure 10.

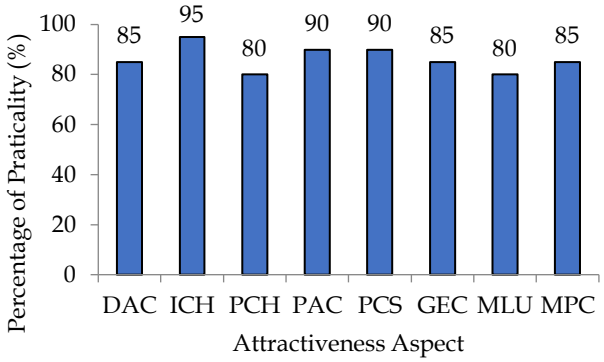

Figure 10. Practicality assessment on the aspect of attractiveness

Of the eight statements, the second statement of interesting character (ICH) obtained the highest percentage, and the statement of proportionate color harmony (PCH) and material that can lead students to understand physics correctly (MLU) got the lowest percentage.

The statement with the highest percentage is the second statement, the character of the character is interesting. The characters can also influence the attractiveness of learning games. According to research, using character traits in educational games can help students better understand the characteristics of these characters (Rabiah et al., 2021). While the statement that received the lowest percentage was the fifth statement, the material can lead students to understand physics properly. According to the teacher, there is material that must be explained first by the teacher and then understood by students, so the material cannot be understood just by reading.

After the results regarding the second aspect of the assessment, the third aspect is efficiency. The teacher must answer four statements. Namely, games can be used by utilizing the resources they have, such as smartphones (URS), games help teachers to prepare students to learn independently (GHT), games can save learning time (SLT), and games can save costs (GSC). The results of the efficiency aspects of physics learning games with scientific literacy can be seen in Figure 11.

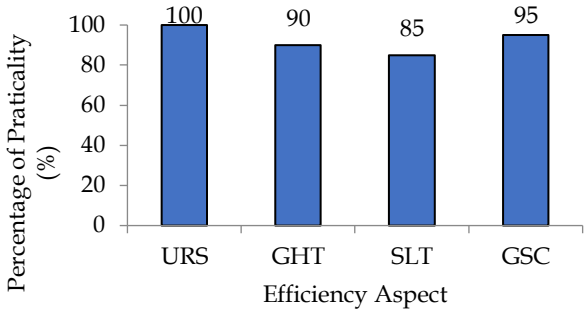

Figure 11. Practicality assessment on efficiency aspect

Of the four statements, the first statement that games can be used by utilizing available resources such as smartphones (URS) has the highest percentage. In contrast, the third statement that games can save learning time (SLT) has the lowest percentage.

The statement that obtained the highest percentage was the first statement, games can be used by utilizing their resources, such as smartphones. This is because students and teachers don't need to bother to be able to play this game, but only by using the smartphones they already have. Whereas the statement that obtained the lowest percentage was the third statement, games can save learning time. This is also following the students' opinion on the efficiency assessment aspect of the questionnaire.

Overall, this study shows that physics learning games with scientific literacy can be practical for

teaching physics concepts when game developers set clear rules, teachers actively guide student learning, and students clearly understand learning objectives and assessment criteria. In addition, interactive media can provide students with a fun and interesting way to learn physics concepts.

Conclusion

Based on the research and data analysis results, this study concludes that the practical level of practicality of physics learning games with scientific literacy, according to students at six high schools in Padang City, is in the practical category. In the first assessment aspect, the ease of use of this game gets the practical category. The second assessment aspect, the attractiveness, gets the practical category, and the third assessment aspect, efficiency, gets the highest percentage compared to the other two aspects with the practical category. As for the practical assessment of applying physics learning games with scientific literacy, according to the teacher, the students obtained results in the very practical category. The three aspects of the ease of use assessment, attractiveness, and efficiency got percentages in the very practical category. Therefore, using physics learning games with scientific literacy, according to the teacher, is very practical.

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Author Contributions

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Conflicts of Interest

The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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