QALAMUNA
JURNAL PENDIDIKAN, SOSIAL, DAN AGAMA

Power Point-Based Educational Game on Science Learning to Support Elementary School Students' Learning Activities

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| Abstract | Technological developments also have an impact on the world of education. Teachers to be able to use technology to create learning that is fun, interactive, and motivating. This study aims to determine the response of teachers and students as well as the effectiveness of interactive learning media PowerPoint games. This research uses a type of Research and Development research using the ADDIE development model. The developed interactive learning media receives high feasibility ratings, with material experts, media experts, and linguists affirming its validity and suitability for testing. Student responses indicate strong engagement and interest, while teacher feedback underscores its potential as a valuable learning tool. The method used in this research is Research and Development (R & D), which uses quantitative analysis of student learning outcomes to show a significant increase. Thus, the developed interactive learning media effectively enhances student learning outcomes. In the data collection process, the information provided by respondents through questionnaires sometimes does not show the actual opinions of respondents. This happens because sometimes there are different thoughts, assumptions, and understandings of each respondent and other factors such as honesty when filling in respondents' opinions in their questionnaires. |
| Keywords | Interactive Learning Media; PowerPoint Games; Research and Development; Elementary School |

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1. INTRODUCTION

The current education system in Indonesia still seems to have a gap between desire and reality. The government carries various programs and policies to realize quality education regarding human resources, infrastructure, facilities, management, curriculum, teaching materials, school environment, management, curriculum, teaching materials, and so on. According to (Afrianto, 2020). Educational needs are one of the most important parts of human life. Human life with higher education is expected to produce more qualified people who are more qualified. In line with this, to create quality education, one of the aspects that need to be considered and improved is the ability of human resources (Aulia, 2022). To realize quality education, one aspect that needs to be considered and improved is the ability of Human Resources, namely teachers who directly contact students related to students (Govaerts &

Gregoire, 2021). The more skills a teacher has, the more methods a teacher has, and the more interesting the method or method of educating. Of course, this is balanced with the ability or method of educating students. Balanced with the ability or method of teaching fun, B. M. Kanga (2019)revealed that elementary school teachers must provide services to help students achieve positive behavior change. Students towards positive behavior change Elementary School Teacher Education has preventive and curative goals (alleviation).

In Government Regulation No. 19 of 2005 concerning National Education Standards, article 19 paragraph (1) states that the learning process in educational units is organized in an interactive, fun, challenging, motivates students to participate actively, and provides sufficient space for initiative, creativity, and independence by the talents, interests, and physical and psychological development of students. In line with these regulations, learning media can be an alternative to organizing learning according to national standards. Media will make it easier for someone to capture and understand something, busing intermediaries or certain tools according to what is to be conveyed (Simuforosa, 2021). Media is an intermediary or link between the source and recipient of information. Media can be interpreted as a communication facility that can clarify the meaning between communicators and communicants (Hall, 2020). Media is an object manipulated, seen, heard, read, or talked about, along with instruments used properly in learning activities, which can affect the effectiveness of instructional programs (Firmansyah, 2020). Learning media is a tool to convey messages or communicate between students, teachers, and teaching materials. So, it can be said that communication cannot occur without an intermediary to convey the message. Human relationships or interactions, reality, images, moving animations, writing, and audio are forms of stimulus that can be used as media (Wati, 2020). The stimulus will help students learn the material being taught. One of the subjects closely related to learning media is Natural Science. Natural science is related to nature orature (Tarwi, 2022). Natural science can be said to be a branch of knowledge that starts from natural phenomena. Science can be defined as a set of knowledge about natural objects and phenomena obtained from the results of scientists' thoughts and investigations carried out with experimental skills. This subject can lead students to observe, classify objects, measure, conclude, predict, and communicate. In reality, in learning science, not everything revolves around experiments. In certain cases, the concept of science results from the human mind's response to symptoms that occur in nature (Gijbels, 2021). The material of living things in the surrounding environment is one of the materials that require learning media. This material discusses the types of living things. Growth and development are experienced by every living thing (Carr, 2020).

Without learning media, students will have difficulty learning the material taught because not all types of animals can be seen directly during the learning process. These living things are among the materials from natural science subjects at the elementary school level (Bryce, 2020). This subject requires interactive learning media that can facilitate students' understanding of the material without seeing it directly. Interactive learning media is a learning media that uses multimedia applications to make it. Multimedia applications are applications that can present text, images, audio, and video (Lantzy, 2021). PowerPoint is often referred to as a multimedia application. PowerPoint application is usually used to deliver information in the form of presentations. This program allows the presenter to convey material using alternating layers by including animation like a real show. For teachers and students, PowerPoint media can support the learning process through the multimedia displayed. This media can display text, images, animations, and videos (Lim Kai H, 2019). However, the use of PowerPoint in the teaching and learning process is often only in the form of presentations. Presentation of less interesting material will cause students to become bored quickly. Teachers can combine PowerPoint with gamification to create a more enjoyable learning situation.

Referring to previous research by Nur Alifa (2021), researchers used the PowerPoint application in combination with ISpring Suite to develop interactive learning media. Media validation shows a percentage of 93.42% with a very good category, material validation is 80%, which is included in the

good category, and the results of student trials assess that the media is included in the excellent category with a percentage of 89.59%. The research aims to produce interactive learning media from PowerPoint and ISpring Suite 8 applications that effectively teach Natural Sciences. The science learning in class 1 of SDN 1 Pengkolrejo that has been running so far has not been maximizing the use of technology-based learning media. The use of technology in science learning is still limited to video playback, so sometimes, it causes students to focus less on the material presented. Students who start to lose focus will choose to do things they consider fun and even invite their friends to talk so that the classroom atmosphere becomes unconducive (Benbasat, 2021).

In this regard, people's ignorance about mental health means that the negative stigma that develops cannot be avoided. This is in line with Hadi's opinion (2020). Providing education about mental health can start from the realm of education. Students can be given knowledge related to subjects packaged with fun teaching methods, such as interactive PowerPoint media. According to Abrishami (2019), Technology and information are increasingly experiencing rapid development. The presence of technology impacts all aspects of life, one of which is the world of education. Technological developments amid the Industrial Revolution 4.0 require teachers to continue updating teaching and learning activities. Until now, the world of education is required to experience many transformations through the application of digital-based learning media (Ichsan, 2021). Based on this description, learning media has great potential to improve students' understanding of the material being studied. Therefore, a teacher must be competent in using media in learning activities. Interactive PowerPoint learning media is the simplest digital-based media and can be easily used by teachers of various ages (Ismail, 2020) Ismail, S. (2020). In line with the opinion of Interactive PowerPoint, learning media can be effective if teachers can use it most effectively.

Based on the results of interviews conducted by researchers with Mrs. Sutarti, S.Pd, class 1 teacher at SDN 3 Pengkolrejo Blora, which was conducted on August 15, 2023. Researchers obtained information from the class V teacher that she had used learning media that utilized technology, namely PowerPoint and Google Forms. However, he only applied this media when he was still teaching in junior high school and had never applied it when teaching in elementary school. In his daily life, when teaching, he is only guided by the teacher's book and the student's book. The grade 1 teacher also has not been able to develop media by utilizing website-based technology. If teachers continue to teach like that, students will feel bored while learning. According to Ma (2021), teaching aids or media are important for learning because they can link the relationship between the material and the concepts in the props or media. From the student needs questionnaire results, it was found that students did not know material about the stages of human growth. Students prefer technology-based learning media equipped with pictures and colors to attract students when learning (Nurmaliah, 2020).

Therefore, this study aims to examine the implementation of interactive PowerPoint as a digital-based learning media in improving students' understanding of temperature and heat material, starting from the definition, types, and properties of animals around us (Marsela, 2021). The learning process is done by applying interactive PowerPoint media with image illustrations, videos, audio, hyperlink features, and mini-games to make it more interesting (Razali, 2020a). Using these features, students are expected to actively participate during the learning process so that learning objectives can be achieved effectively.

2. METHODS

This research is based on research and development to develop learning media that utilize PowerPoint as the main application. This research and development aims to produce learning media through PowerPoint games with material on living things in the surrounding environment for grade 1 elementary school students. This research was conducted in the odd 2022/2023 school year semester at SD N 1 Pengkolrejo.

This study and development serves to validate and improve the product. To validate can be interpreted by researchers testing the effectiveness or validity of an existing product. This research procedure in a point-based Educational Game on Science Learning to Support Elementary School Students' Learning Activities uses the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). The five stages of ADDIE are used systematically in developing learning media designs (Suryawati, 2019). This research and development serves to validate and improve the product. Validating can mean that researchers test the effectiveness or validity of an existing product. This research uses the ADDIE development model, which consists of analysis, design, development, implementation, and evaluation. This model focuses on analysis so that each component is related (Van Laar, 2020a).
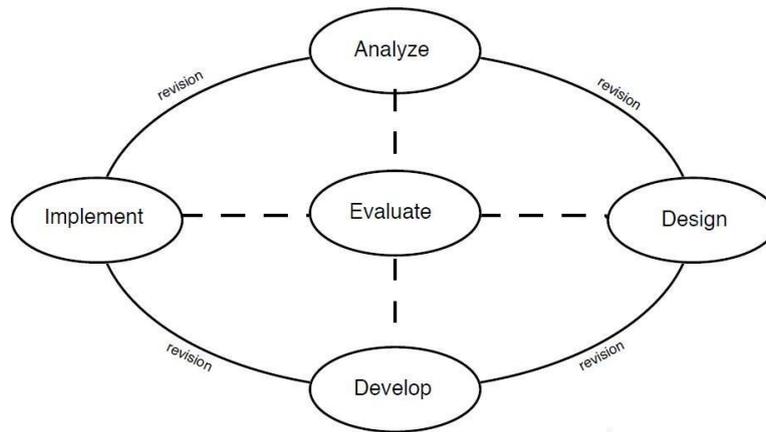

Chart 1. Steps of the ADDIE model

This research was conducted at SD N 1 Pengkolrejo, Blora Regency, Central Java, with the research subject being grade 1 students totaling 20 students. The object of research is a point-based Educational Game on Science Learning to Support Elementary School Students' Learning Activities.

According to the opinion of (Maseko, 2014). The data collection instrument used in this study is a questionnaire. The research questionnaire contains several written questions that respondents can use to obtain information related to the research that has been conducted. The research questionnaire also determines the results of media and material expert validation as well as teacher and learner responses, namely by providing a checklist in the column available on the questionnaire sheet. The Likert scale formula calculates data from media experts, material experts, teacher responses, and students. Here is the Likert scale formula:

$$\text{Percentage} = \frac{\textit{Jumlaj Skor Total}}{\textit{Jumlah Skor Ideal}} \times 100\%$$

The collected data can be analyzed by calculating the average score obtained. The score guidelines in Table 1 are as follows:

Table 1. Scoring Guidelines

Description	Score
Very Suitable (SS)	4
Conform (S)	3
No Compliant (TS)	2
Very Unsuitable (STS)	1

After the researcher got the percentage figure, it was then changed into a qualitative sentence to see the validity of the learning media that had been developed, which can be seen in Table 2 as follows:

Table 2. Percentage Range and Qualitative Criteria

Score Range	Qualification
76%-100%	Very Suitable (SS)
51%-75%	Conform (S)
26%-50%	No Compliant (TS)
0%-25%	Very Unsuitable (STS)

Based on Table 2, it can be seen that the determination of product success indicators through assessments from media and learning material experts, as well as from the responses of teachers and students, can be said to be valid or suitable for use if they get results in the percentage range of 76%-100% with the category "Very Suitable" and the range percentage of 51%-75% in the "Suitable" category.

The data collection techniques used in this research include observation, interviews, and expert validation. Observations were conducted to obtain information about learning, students, and school analysis (Razali, 2020). The interview aimed to discover the conditions and problems faced in the teaching and learning process. This study involved several respondents: material experts, media experts, and linguists. In addition, class 1 students of SDN 1 Pengkolrejo and science subject teachers were respondents in the implementation of the trial. The trial was carried out twice: small group and field trials. Validators or experts use the validation sheet to provide assessments or suggestions on developed products. The data analysis used is the analysis of validation sheets, questionnaire analysis, and quantitative data analysis (Suhaemi, 2020).

3.   FINDINGS AND DISCUSSIONS

The results of this development research are interactive learning media PowerPoint games that contain material on living things around for first-grade elementary school students. The interactive learning media PowerPoint game developed refers to the ADDIE model as the development stages. Stages of its development. The first stage in this research is analyzed. Based on the results of the analysis of the needs of the learning device curriculum learners and student analysis, problems were found related to the less than optimal use of learning media in the science learning process so that students became bored and did not focus on the material presented (Aedi, 2019). Through direct observation, students like new things and are easily attracted to something interesting. This can be seen in the learning process at the beginning of students following the teacher's instructions. But a few moments later, students get bored and invite their friends to talk. Therefore, teachers need to design learning. Therefore, teachers need to design more interesting learning by using more interesting learning media to make learning more effective and fun (Van Laar, 2020b).

The second stage is design. At this stage, the design is adjusted to the needs, starting from selecting development materials and formulating the design tailored to the needs, starting from selecting material for development, formulating the learning media development objectives, determining the test subjects, and the procedure for testing the learning media. I am learning media development objectives, determining trial subjects and development procedures, and determining product design and its use (Yetti, 2020). Development procedures, determining product design and its use. At the design stage, This stage also collects material from various sources. Furthermore, preparing the material that will be delivered starting from KI and KD, learning objectives, opening activities, core activities, closing, and

conclusions of the material that has been studied learning, core activities, closure, and conclusion of the material that has been learned (Aedi, 2021).

The third stage is development. At this stage, the learning media is developed by the designed design. Development of interactive learning media development of interactive learning media using the PowerPoint application, which is then combined with a web-based supporting application, namely Wordwall (Keshavarz, 2023). At the development stage, the thing that needs to be done is designing the background on the slide to match the theme and material. Then, it is necessary to arrange the layout of images and moving animations to add to the attractiveness of the learning media that has been developed attractiveness of the developed learning media (Mawardi, 2021). In addition, the font type, size, color, and layout of the text also need to be considered so that it can be read. The next steps are to add audio, arrange the order of slides, set hyperlinks, create quizzes on the word wall, and arrange for PowerPoint to connect to PowerPoint automatically, according to the Opinion (Oktaviana, 2022). Set the PowerPoint to connect to the Wordwall website automatically. At this stage, learning media is developed to resemble a game or game with levels. There are game levels. Each level of the game contains material based on core and basic competencies and basic competencies.

Figure 1. Product preview

Figure 2. Main menu display

Figure 3. Display of button usage instructions Navigation

Figure 4. Game level display material

Figure 5. Examples of educational games

Figure 6. Display material

After the PowerPoint game interactive learning media that has been designed and developed is complete, the next step is to validate it with experts to get criticism and suggestions regarding the products made so that they are valid before being tested. At this stage, several experts validate interactive learning media PowerPoint games: material experts, media experts, and linguists.

Table 3. Results of Validation of Interactive Learning Media PowerPoint Game

No	Validation	Average	Percentage	Category
1	Material	4,6	92%	Very good and very valid
2	Media	4,3	86%	Very good and very valid
3	Language	4,8	97,7%	Very good and very valid

The results of expert validation contained in Table 1 show that the average for material validation is 4.6, with a percentage of 92%. Then, the validation results from media experts get an average of 4.3 with a percentage of 86%, while the results of validation by linguists show an average of 4.8 with a percentage of 97.7%. When viewed from the criteria for the ideal assessment of indicators with a scale

conversion of 5 according to (Chopra, 2019). The interactive learning media PowerPoint game is included in the very good category. Meanwhile, judging from the criteria for the percentage of expert validation, according to Adi (2019, the interactive learning media for PowerPoint games developed can be categorized as very valid, so it is suitable for use but with minor revisions.

After making revisions based on the criticisms and suggestions of experts, the fourth stage is implementation. The product was tested on grade I students and science teachers at SD N 3 Pengkolrejo at the implementation stage. The trial was conducted twice, namely small group trials and field trials. The trial was conducted to determine student responses, teacher responses, and learning outcomes before and after using interactive learning media PowerPoint games. The questionnaire used to determine student and teacher responses consists of 5 rating scales.

Table 2. Results of Student Response to Interactive Learning Media PowerPoint Game

No	Trial	Average	Percentage	Criteria
1	Small group trial	4,78	95,7%	Very good
2	Field trial	4,76	95,2%	Very good

In the small group trial, student responses were obtained with an average of 4.78 and a percentage of 95.7%. In contrast, in the field trial, the results of student responses were obtained with an average of 4.74 and a percentage of 95.2%. According to Fathoni (2019), the results of student responses to interactive learning media PowerPoint games are included in very good criteria when viewed from the criteria for the percentage of student responses. Based on the analysis of the first-grade student response questionnaire at SD N 3 Pengkolrejo, it can be concluded that the interactive learning media PowerPoint game on the material of the cycle of living things is very good for learning.

In the field trial, the descriptive analysis of the pretest results showed an average of 78, while the post-test showed an average of 90.11. The normality test results on the pretest were 0.499 with normal criteria, while the posttest results were 0.554 with normal criteria. The paired sample T-test results on the small group trial showed sig. (2- tailed) 0.000 means there is a difference in the average student learning outcomes. The N-gain test results on the field trial showed an average of 60.60%, which means that the interactive learning media PowerPoint game is effective enough to improve student learning outcomes. Based on the results of quantitative data analysis that has been carried out, it can be concluded that the interactive learning media PowerPoint game on the material of the cycle of living things is effectively used in learning (Griselda, 2021).

The fifth stage, or the last stage, is the evaluation stage. Several evaluations are carried out during product development for product improvement needs, and the final stage of valuation is to assess the feasibility of the product developed (Lane, 2021).

Therefore, using interactive PowerPoint as a digital-based learning medium can help students develop their imagination and creativity, especially in online learning conditions. Elementary school-aged students are easily stimulated if new and interesting cases are displayed so that they can foster an interest in learning. Interactive PowerPoint presentations can facilitate various student learning styles, including visual, auditory, and kinesthetic learning styles (Dermawan, 2023). Based on this description, this study can prove that the use of interactive power points as a digital-based learning medium is effective in improving students' understanding, as indicated by the increase in science learning outcomes for 1-grade students, even though the learning process is carried out online (Dewi, 2021).

Constructivism learning theory is a theory that gives freedom to humans who want to learn or look for their needs with the ability to find their wants or needs with the help of others' facilitation, so this theory provides activeness for humans to learn to find their competencies, knowledge, or technology and other things needed to develop themselves (Ferdiansyah, 2020).

In the interview results, the researcher learned about the development of student learning using the Google Classroom application. Students took part in learning during the Covid-19 pandemic. On August 10, the researcher gave a questionnaire to students to find out the application of student learning using the Google Classroom application. Researchers observe the level of effectiveness of students in learning (Hur, 2020).

According to the opinion, student interest in learning was quite effective because the method given by the teacher could make students feel comfortable when using the application by combining two languages, namely English and Indonesian, in providing material so that students were not rigid in expressing their opinions as well as training students to listen and listen to the material that he teacher has provided.

Based on research results, learning media based on the Google Sites website is practical and suitable for use because it can be accessed anytime and anywhere. Namely, it can be accessed via laptop, Chromebook, or cellphone so students can easily learn (Khasanah, 2020). Through this Google Sites website-based learning media, students also understand the material better and are more thorough when working on questions given via the Google Sites website.

These results are from research conducted by (Ngurah, 2020). Regarding "Development of Google Sites Website-Based Teaching Materials on Theme 9 Sub-themes Utilization of Natural Resources in Indonesia for Class IV Elementary School Students", from the research results, it is known that the expert validity test obtained a percentage of 96.57%, learning design validation test obtained a percentage of 94%, media expert validation results obtained 98% and practical results obtained calculated that the mean observation was 170.95. So, based on the results of this percentage, teaching materials based on the Google Sites website are suitable.

The use of learning media on the Google Sites website is one of the learning media that is easy to use in the learning process of elementary school students (Rahiem, 2021). Based on the results of this analysis, it can be stated that the development of "Power Point-Based Educational Game on Science Learning to Support Elementary School Students' Learning Activities" Class 1 SDN 3 Pengkolrejo Blora" can be categorized as valid learning media and suitable for use in the learning and research process as well is by the stages of research and development procedures using the ADDIE development model.

4. CONCLUSION

Based on research conducted regarding learning media that has been developed by researchers, namely PowerPoint-based learning media which contains "learning about living things in grade 1 elementary school" which discusses material on the growth of living things in grade 1, it can be concluded as follows, Power point-based learning media that researchers have developed includes the science lesson "Growth of Living Creatures" Class 1 SDN 3 Pengkolrejo Blora, using the ADDIE development model by utilizing several software, including PowerPoint, Canva, Quizzizz, Quackit, and Google applications forms.

The validity of the Google Sites website-based learning media in the science lesson "Growth of Living Creatures" Class 1 SDN 3 Pengkolrejo Blora received an assessment from media expert validators with an average percentage score of 95% (Very Appropriate). Material experts obtained an average percentage score of 97% (Very Appropriate). Meanwhile, the teacher's assessment results obtained a percentage of 98% (Very Appropriate), and students' responses received an assessment of 90% (Very Appropriate). So, developing PowerPoint-based Learning media in the Science Lesson "Growth of Living Creatures" Class 1 SDN 3 Pengkolrejo Blora meets the criteria for being suitable for use in the learning process.

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