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Scientific Literacy Skill Through Digital Media Professional Pdf Flip Based Book in Elementary School

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Abstract: This study aims to determine the effect and how much of a professional flip pdf-based digital book media on science literacy skills in elementary schools. This research method uses descriptive quantitative research with the type of Pre-Experimental Design and the form of design used is one group pretest-posttest design. The instrument used in this study was a scientific literacy test sheet. The results showed that to test the hypothesis and answer the problem formulation, the data analysis techniques used were Eta squared and paired samples correlation. From the results of the Eta squared value, it was obtained at 0.850, which means that there is a big influence between professional flip pdf-based digital book media on scientific literacy skills, while if viewed from the *paired samples correlation output* above, it can be seen that the Sig (2-tailed) value is 0.000 which means more smaller than 0.05 means that there is a positive effect of *professional flip pdf* -based *digital book* media on the scientific literacy skills of elementary school students. The conclusion in this study is that the professional flip pdf-based digital book media has a positive and significant impact on the scientific literacy abilities of fourth grade students so that it can be used as a solution in elementary school learning.

Keywords: Science Literacy Ability; Digital Book; Professional Flip PDF

Introduction

In the 21st century, the development of science and technology is so rapid in various aspects of human life. No exception to bring influence in the world of education. This factor is the cause of various countries trying and competing to improve the quality of their human resources. In this era, human resources need quality human resources, with character, and can compete with the outside world, both from a mindset of intelligence or skill. Education is the spearhead in achieving quality human resources, with character and being able to compete (Purwanto et al., 2020).

Availability of quality human resources, character and can compete with the world Outside, the current educational process should lead to a process of activities that will shape the characteristics of students to be able to face all the challenges in the development of science and technology (Rohmawati et al., 2014; Pantiwati & Husamah, 2016).

The use of technology as a transformation has the potential to provide innovative education with learning materials whose delivery can be repeated to students, thus facilitating the process of cognitive transfer of knowledge in the realm of problem solving activities around students. The ability to take advantage of the existence of information and technology in the use of work tools that will experience continuous change will be the basis for developing skills multiculturalism and awareness of the importance of technology (Rohmawati et al., 2014). Characteristics that must be possessed by students include the ability to think creatively, have good communication and collaboration skills and be able to master media, information and technology which will become inseparable needs at this time (Yuliati, 2017).

Indonesia, which is a big country, should be able to improve and develop a literacy culture as one of the conditions that must be mastered in the 21st century. According to (Dwisetiarezi & Fitria, 2021) the purpose of education is through literacy. In the 2013 curriculum, literacy is seen in content standards, process standards, assessment standards and graduation standards. The development of literacy in learning is needed so that literacy can be achieved optimally. Literally, scientific literacy consists of literatus which means literacy and

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science which means having knowledge (Sunarwan, 2018); (Pantiwati & Husamah, 2016).

Scientific literacy is a person's scientific literacy ability to understand science and relate science. Scientific literacy can be interpreted as an understanding of science and its processes, as well as its application to the needs of society (Jamaluddin et al., 2019), then scientific literacy ability can be explained as the ability to solve problems and make decisions with the knowledge they have according to their level and be able to utilize technology in the field. surrounding areas (Gormally et al., 2012; Lestari et al., 2019).

At the elementary school level, science subjects are the main learning that forms the basis for various themes in learning materials so that when they occupy a role that cannot be underestimated because science is a provision that students should master in order to be able to answer challenges and exams today. One of the steps that can be taken is through developing the competence of a subject while still paying attention to scientific literacy indicators (Yuliati, 2017).

Indicators of scientific literacy in the domain of knowledge, namely students are able to remember, recognize, describe and provide examples of facts, concepts and procedures needed to form a strong foundation in science (Mullis & Martin, 2017; Colis, 2021; Delil et al., 2020). There are indicators of student scientific literacy where information such as:

Table 1: Indicator of Scientific Literacy Ability

No	Indicator of Scientific Literacy Ability
1	Identify valid scientific opinions
2	Conduct an effective literature search
3	Understanding the elements in research design
4	Precisely graphing from data
5	Solve problems using quantitative skills, including basic statistics
6	Understand and interpret basic statistics (interpret errors)
7	Perform inferences, predictions, and draw conclusions based on quantitative data

(Gormally et al., 2012)

According to the scientific literacy ability test conducted by researchers in class IV at SDN Sukoanyar, 15 students in the skill aspect obtained a percentage of 15% in the low category. This is evidenced by the criteria for assessing scientific literacy ability according to Sugiyono if the value is in the range of 0% - 33%, it is considered low. Based on the average scientific literacy ability of students at SDN Sukoanyar class IV, which is in the low category, it indicates that students do not have the readiness to take part in science learning which includes problem solving processes and science interactions. This happens because the learning process is still sourced from educators while students are still less active in learning. Therefore, an educator is equipped with the ability to choose interactive, innovative, and creative learning methods (Sunarwan, 2018).

In our country, scientific literacy in thematic learning is still widely found, most of which are still limited to textbooks or texts rather than direct learning (Asyhari, 2015; Rusilowati et al., 2018). Textbooks used by schools also have not been able to help develop scientific literacy skills (Sari et al., 2017). So that science literacy learning is more centered on educators and the methods used by educators are also not far from the lecture method (Dwisetiarezi & Fitria, 2021). This is because learning science feels heavy and boring so that in the end students do not understand learning. Knowledge and application of scientific literacy skills that only use textbooks or texts have not fully touched the souls of students. The lecture method is not right on target, causing students to only become passive listeners (Prasetyo et al., 2021).

According to the results of observations and interviews of researchers with fourth grade educators at SDN Sukoanyar - Mojokerto so far fourth grade educators only use the lecture method in science learning, with that researchers want to make updates in learning by applying a model in learning using the PBL model and analyzing the improvement of literacy skills students' science literacy skills by comparing students' scientific literacy skills between those taught using the PBL model, and those not using the PBL model. The reason researchers use the Problem Based Learning learning model is to make students able to apply their knowledge in dealing with problems in everyday life. Observations were made by asking questions about scientific literacy skills, totaling seven questions consisting of description questions. For questions number 1, 5, 6 and 7, the correlation value is above 0.700 which means it can be interpreted as having high validity, then questions 2,3 and 4 are below 0.700 which means it has moderate validity. The indicator on reasoning was found to be very low because most students did not answer correctly. This states that the scientific literacy ability at SDN Sukoanyar is in the low category, which is in accordance with the results of PISA and TIMSS in 2018 that the literacy level of Indonesian students is still low (Winata et al., 2018).

Digital book media based on Flip PDF Professional is a publication of writing, images, video or sound in an electronic system that is useful for obtaining information for updating traditional paper books using digital flipping and can insert information on various types of facilities, namely sound, animation, writing, video, and computer flash which we can use as a pdf change and introduced in the form of electronic flipping book sheets that are made with the aim of making learning information using a number of helpful devices (Nisa et al., 2020). Researchers use digital media based

on professional flip pdf books because with the times, increasingly rapid technology and information guides the world of education to update the way it works (Vinet & Zhedanov, 2011). One way that educators can do in applying scientific literacy skills in learning is by using a professional flip pdf-based digital book media, which is essentially a variation and combination that combines several components in the form of digital graphics, recorded voice narrations, text, video and video. music that is able to convey information on a topic. In learning the use of professional flip pdf-based digital book media, it is very flexible because it can be adjusted to the material, image or sound (Istyadji et al., 2021).

Method

This research is a type of descriptive quantitative research to describe an event carefully, regularly and based on reality. In a study the aim is to calculate independent variables from one or more variables without carrying out a difference or connecting with other variables (Sugiyono, 2010).

The design of this study took the research of One-Group Pretest-Posttest Design is a type of research that provides a pretest before being given treatment, the results of the treatment will be known in a more careful way. This can be known by knowing a comparison through the condition before being treated with the condition after being treated. This design can be described as follows:

$$O_1 \; X \; O_2 \qquad (1)$$

Description :
O1 : Pretest value (before treatment) O2 : Posttest value (after treatment) X : Treatment

Population is an area consisting of objects with certain numbers and characteristics that are determined to be studied. The population in this study were fourth grade students at SDN Sukoanyar with a population of 15 students. The sample is part of the number and characteristics possessed by the population. In this study, the sample will be all fourth grade students at SDN Sukoanyar with a total of 15 students with details of 9 women and 6 men. In this study using a saturated sampling technique. Saturated sampling is a way of determining a sample which takes all members of the population without exception with 15 students consisting of 9 women and men.

After analyzing the validity of the scientific literacy ability of the fourth grade students of SDN Sukoanyar. The results show that all questions already have a significance value below 0.05. So it can be interpreted that all questions have been declared valid. Furthermore, questions number 1, 5,6 and 7 have a correlation value above 0.700 which means it can be interpreted as having high validity, then questions numbers 2,3 and 4 are below 0.700 which means having moderate validity. The validity of the fourth grade scientific literacy ability instrument at SDN Sukoanyar was reached through two stages of validity, namely construct validity and content validity.

After analyzing the reliability of the scientific literacy abilities of fourth grade students at SDN Sukoanyar. The results show that the reliability coefficient is 0.00 to 0.19, so the criteria are classified as very low criteria. If the reliability coefficient is 0.20 to 0.39 then the criteria are classified as low. If the reliability coefficient is 0.40 to 0.59, then the criteria are classified as moderate or sufficient. If the reliability coefficient is 0.60 to 0.79 then the criteria are classified as high criteria. And if the reliability coefficient is 0.80 to 1.00 then it is classified as high criteria. The reliability of scientific literacy skills for grade IV SDN Sukoanyar is achieved through several stages, namely first, 0.00-0.19 is at a very low level of determination. Second, 0.20-0.39 is at a low fixity level. Third, 0.40-0.59 is at a moderate or sufficient level of determination. Fourth, 0.60-0.79 is at a high level of determination. Fifth, 0.80- 1.00 is at a very high level of determination.

Result and Discussion

This research was conducted on science learning materials, namely applying the properties of sound and their relationship to the sense of hearing with professional flip pdf-based digital book media. Learning begins with activities to solve a problem. After solving a problem, students describe a material problem about the properties of sound and its relationship to the sense of hearing. After that, students can conduct an effective literature search with educators through several groups that are carried out directly. In the next lesson, students can compile a report of several problem issues regarding the properties of sound. In the last learning, students can exchange information they get and give each other positive comments and suggestions for improvement. Showing that the use of professional flip pdf-based digital book media is, first, professional flip pdf-based digital book media can be flipped over like a real book. When turning the page, the file opens like turning a book, giving rise to a different and more interesting sensation. Second, in each page of the professional flip pdf-based digital book media, animations can be inserted that support learning materials, as well as videos. Third, the professional flip pdf-based digital book media is an interactive learning medium in delivering information because it can display multimedia illustrations. The results showed that the professional flip pdf-based digital book media could improve students' scientific literacy skills in the learning

carried out in the research sample class (Windyariani, 2018); (Huryah et al., 2017).

The research data is the result of the students' scientific literacy ability scores. The value of students' scientific literacy skills was obtained based on the results of the pretest and posttest scores. Data analysis of students' pretest and posttest scientific literacy skills showed a difference, namely an increase in scores between before and after using a professional flip pdf-based digital book (Sriwahyuni et al., 2019; Putri et al., 2022).

The average data obtained from students' scientific literacy skills, before and after using professional flip pdf-based digital book media can be seen in Figure 1.

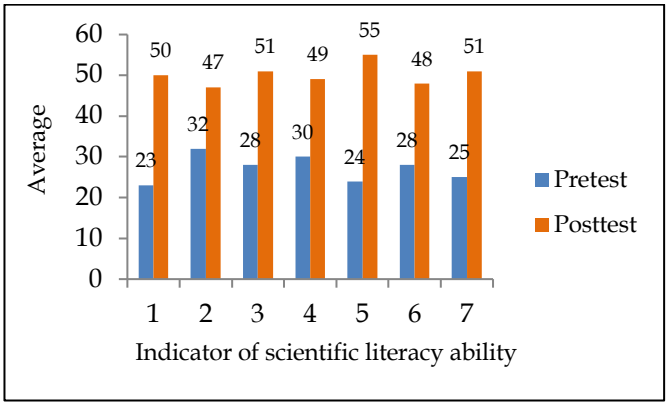

Figure 1. Graph of scientific literacy ability indicators

Table 1: Average Student Literacy Ability Score for Each Indicator

Indicator	Average
Understand and interpret basic statistics	8.34
Solve problems using quantitative skills	8.34
Identify valid scientific opinions	7.82
Inference, prediction and conclusion based on quantitative data	7.68
Creating graphics	6.92
Understanding the elements in research design	6.62
Effective literature search	6.43

According to the graph above, it shows that all questions already have a significance value below 0.05. So it can be interpreted that all questions have been declared valid. Furthermore, questions number 1, 5,6 and 7 have a correlation value above 0.700 which means it can be interpreted as having high validity, then questions number 2, 3 and 4 are below 0.700 which means having moderate validity.

Based on the table above, it shows that indicator 1, namely identifying valid scientific opinions, has an average value of 7.82. In indicator 2, the effective literature search has decreased by 1.39 which has an average value of 6.43. In indicator 3, namely understanding the elements in the research design, it has increased by 0.19 which has an average value of 6.62. In indicator 4, which is making graphs, it has increased by 0.3 which has an average value of 6.92. In indicator 5, which is solving problems using quantitative skills, it has increased by 1.42 which has an average value of 8.34. The 6th indicator is understanding and interpreting basic statistics, the result is still at 8.34. The 7th indicator, namely inference, prediction, and conclusion based on quantitative data, decreased by 0.66 with an average value of 7.68.

Table 2: Paired Samples Statistic

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pre	14.2667	15	2.73774	.70688
	Post	24.2000	15	2.73078	.70508

Based on table two above, it can be seen that the Pretest score has an average value of 14.26. Meanwhile, the posttest score has an average value of 24.20. Because the average pretest score is 14.26 < posttest 24.20, it means that descriptively there is a difference in the average pretest and posttest scores.

Table 3: Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre & Post	15	.246	.376

Based on the three output table above, it shows that the results of the correlation test or the influence between the two data or the influence between the pretest and posttest are 0.246 with a significance value of 0.376 which means greater than 0.05. So it can be concluded that there is no effect between the pretest variable and the posttest variable.

The output above can be seen that the value of Sig (2-tailed) is 0.000, which means it is smaller than 0.05. So it can be concluded that the average pretest score with the posttest there is a significant difference. This means that there is a positive influence from professional flip pdf-based digital book media on the scientific literacy skills of fourth graders at SDN Sukoanyar. After that, in testing the influence of the digital book media variable based on professional flip pdf on the scientific literacy ability of fourth grade students at SDN Sukoanyar, it can be calculated using the eta squared formula.

Table 4: Eta Squared Test

Number of Samples	t^2 (t-test)	Eta Squared	Description
15	8.911	0.850	very influential

Based on table four above, the results of calculations using the Eta Squared formula obtained results of 0.850. From the calculation results, it is adjusted to the interpretation criteria of the Eta Squared test results, and it can be explained that there is a big

influence between professional flip pdf-based digital book media on the scientific literacy skills of fourth grade students at SDN Sukoanyar.

Conclusion

In this study, it can be concluded that the professional flip pdf-based digital book media has increased scientific literacy skills in science learning materials, namely applying the properties of sound and their relationship to the sense of hearing. The results of these scores, the achievement of students' scientific literacy skills is included in the high category. The conclusions in this study indicate that (1) there is a positive effect of professional flip pdf-based digital book media on the scientific literacy skills of fourth grade students at SDN Sukoanyar. (2) there is a big influence of professional flip pdf-based digital book media on the scientific literacy skills of fourth graders at SDN Sukoanyar.

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