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The Effect Of Interactive E-Booklets On Students Digital Literacy

Resti Fitriati ✉
STAIN Majene
Ikbal
STAIN Majene
Mikyal Hardiyati
UNU Purwokerto
resti.fitriati@gmail.com

Abstract

The aim of this scientific article research is to develop digital-based learning media in the form of an interactive e-booklet on the diversity of fish species and to determine the effect of using e-booklet learning media on the digital literacy of students at SMA Al Fattah Terboyo Semarang. This type of research is Research and Development (RnD). The author used a quasi-experimental method with a one-group pretest-posttest design to identify the effect of treatment involving one group of subjects, namely the tenth-grade students of SMA Al Fattah Terboyo Semarang. Data were collected through digital literacy tests related to biology material and linked to digital literacy. The results of the study indicate that the use of e-booklets as learning media has a positive effect on improving students' digital literacy, as seen from the average pretest and posttest scores of the students, which increased from 65.83 to 81.50.

Keywords

Teaching Effectiveness; Interactive booklets, Digital Literacy.

Introduction

1.1 Introduce the Problem

Current techonolgical advances have brought about major changes, particularly in the world of education. Students are required not only to master learning materials, but also to have good digital literacy skills. Digital literacy is one of the important skills that students must have in order to adapt to technlological developments in the 21st century. However, in reality, the level of digital literacy among students is still relatively low. Most students only use smartphones for entertainment and social media, not for learning activities. This condition can be seen at Al Fattah Terboyo High School in Semarang, where the use of digital learning media is still very minimal, thus limiting students' digital literacy skills. This is in line with the research by Rah,await & Ananda (2021), which states that the low digital literacy of students is often caused by the use of technology that is not directed towards academic interests in the learning process. This shows the need for innovative learning strategies and learning media that can improve students' digital literacy skills.

One relevant learning media alternative that can be used by teachers is the e-booklet. An e-booklet is a digital teaching material that contains various information about subjects in a concise, informative, and systematic manner. This learning media is in electronic form, making it easily accessible via smartphones or laptops. Research shows that using e-booklets can have an impact on students' learning outcomes and digital literacy skills. For example, research by Fajrin & Setiawan (2020) found that local science-based e-booklets can improve science concept understanding and digital literacy skills. Similarly, research conducted by Wijayanti et al (2021) states that the integration of digital-based e-booklets can encourage students to be more critical in evaluating information and more independent in learning.

According to the author, the low level of digital literacy among students can be overcome by utilizing learning media that is easily accessible visually and contextually. The material on fish diversity is considered appropriate and relevant to biology learning at the high school level, especially in the Semarang area, which has potential in terms of water resources and fisheries. By using ebooklets accompanied by pictures, scientific descriptions, and interactive links, students will learn biology contextually and be encouraged to develop their digital skills.

To overcome these problems, this study will develop and implement an e-booklet on fish diversity as a learning media for biology lessons at Al Fattah Terboyo in Semarang. With the development of this e-booklet, it is hoped that it will have a positive impact on improving students' digital literacy and the quality of biology learning in schools.

Method

This study used one group and did not use a control group. The method used was a quasi-experiment with a one group pretest posttest design. This design was used to determine the effect of treatment involving one group of subjects. In this design, a pretest was given to one class group, and a posttest was conducted after treatment (use e-booklets).According to Sugiyono (2017), the one group pretest posttest design can be described as follows:

$$O_1 \; X \; O_2$$

O1 : pretest score (before treatment) O2 : posttest score (after treatment)

X : treatment given (use of e-booklet)

The effect of the treatment in this design is (O2 – O1). The difference between O2 and O1 will be tested. Interactive e-booklets have an impact on improving students' digital literacy if there is a difference between O2 and O1. Furthermore, hypothesis testing is carried out to determine whether there is a significant difference between the pretest and posttest results using the Paired Sample T-Test. This is done with a decision criterion only if the significance value is less than 0.05.

Result and Discussion

The digital literacy test consisted of pretest and posttest questions, comprising 20 multiple choice questions discussing the use of interactive e-booklets on fish diversity and digital literacy. The results of the students. The results of the students digital literacy tests before and after using the e-booklet are shown in Table 1 below.

Table 1 Pretest and Posttest Results Data

No	Data Source	Average
1	Pretest	65,83
2	Posttest	81,50

Based on Table 1, it is known that the students' pretest score was 65.83 and their posttest score was 81.50. This shows that after using the interactive e-booklet, the students experienced an improvement in digital literacy. Furthermore, a hypothesis test (Paired Sample T-test) was conducted to determine whether there was a significant difference between the pretest and posttest results. The results of this test are as follows:

		Sig. (2-tailed)
Pair 1	Pretest Literasi Digital - Posttest Literasi Digital	,000

Based on the t-test output table, a sig value of 0.000 was obtained, which is less than 0.05. In a paired sample t-test. Ho is rejected and Ha is accepted if the significance value (Sig. 2-tailed) is less than 0.05. Thus, Ho is rejected and Ha is accepted. Ho means that there is no difference in students digital literacy before and after the implementation of learning with e- booklets, and Ha means that there is a diference in students digital literacy before and after the implementation of learning with e- booklets.

Discussion

Level of digital literacyof students before using e-booklets

Based on results of the pretest and observations conducted by students before using the e-booklet, it was found that students digital literacy was still low to moderate, with an average pretest score of 65.83. students abilities were still limited in searching for and evaluating scientific information sources online, as well as in using digital media in their learning activities.

Most students stated that they are more accustomed to using smartphones for entertainment activities such as social media, playing games, and watching videos, rather than to support learning activities. This is in line with the research by Rahmawati

& Ananda (2021), which states that low digital literacy is often caused by the use of technology that is not directed towards academic purposes. Students still need further guidance and direction to be able to utilize technology for more beneficial learning activities. In addition, students skills in accessing and understanding information obtained through digital sources are still limited. Many students still find it difficult to distinguish between real and fake (hoax) information on the internet. This shows the importance of learning media that can teach digital literacy skills in a contextual, interesting, and easily accessible manner anywhere and anytime.

Students digital literacy levels after using the e-booklet

The use of interactive e-booklet learning media on fish diversity had a significant effect on students. The average post-test score reached 81.50, which is categorized as good to very good in digital literacy skills.

Students showed an increase in digital literacy skills. Through e-booklet content containing text, images, videos, and interactive links relevant to biology material, students were trained to access and understand digital information. In addition, students were also trained to evaluate and interpret information based on contextual content in the e-booklet, for example, connecting biological concepts of genetic diversity, species, and ecosystems based on the surrounding environment (the environment around Tambaklorok, Semarang, Central Java). Students are also trained to create and share information digitally, for example by making digital summaries, online discussions, and filling out learning reflections through Google Form links in the e-booklet using their own devices.

Another study by Fajrin & Setiawan (2020) found that interactive digital e-booklets help students improve their critical thinking and digital literacy skills. With attractive visuals, easy to understand language, and ease of use, e-booklets enable students to be more active and independent when using other digital resources.

By using e-booklets in biology lessons, students will better understand the relationship between technology and the environmental context. This is in line with he research by Wijayanti et al (2021), which found that digital e-books can help students learn independently and improve their ability to access and select information from digital media.

The effect of e-booklet use on digital literacy

The results of the study show that the use of interactive e-booklet learning media on fish diversity has a positive effect on the digital literacy of students at Al Fattah Terboyo High School in Semarang. This effect can be seen from the increase in the average pretest and posttest scores of students digital literacy after participating in learning using e-booklets.

Before using e-booklets, students were still unable to utilize digital technology for learning activities. Most students only used it for entertainment/playing games and social media. This condition resulted resulted in low skills among students in accessing, understanding, and evaluating digital information sourced from the internet. After using e-booklets in learning there was a significant increase in students skills in accessing scientific information, using digital media for learning, and evaluating the validity of scientific information.

This is because the e-booklet is designed with attractive visuals, communicative language tailored to the students level of

thinking, and content relevant to their daily lives. The e-booklet contains information in the form of text, images, videos, and interactive link that encourage students to actively explore other digital sources

The improvement in digital literacy was also evident in the students ability to collaborate and communicate using digital platforms. They became more accustomed to online discussions, downloading and reading digital materials, and making digital summaries. This shows that e-booklet based learning not only strengthens cognitive aspects but also shapes learning habits that are adaptive to technological developments. The findings of this study support the results of a study by Fajrin & Setiawan (2020), which states that the use of local science based e-booklets can improve students conceptual understanding and digital literacy skills. Similarly, WIjayanti et al (2021) found that the integration of digital based e-booklets encourages students to be more critical and independent in evaluating information.

Pedagogically, constructivism theory can be used to explain the influence of e- booklets on digital literacy, which emphasizes that students build their knowledge through experience and interaction with learning resources. E-booklets provide opportunities for students to learn independently, participate actively in information seeking, and gain better understanding based on their own natural contexts.

Furthermore, from a 21st century learning perspective, improving digital literacy is an indicator of the success of technology based learning. Learners with high digital literacy will be able to think critically, communicate effectively, collaborate, and create using digital media. The use of e- booklets in biology learning, especially in the material on fish diversity, has helped learners develop these skills in an integrated manner.

Thus, it can be concluded that the use of e-booklets has a positive and significant effect on improving students digital literacy. This medium not only improves students cognitive learning outcomes but also helps them acquire digital skills. These digital skills are important for students to face the challenges of the digital era.

Conclusion

Based on the results of the research conducted, it can be concluded that the use of e-booklets as a learning medium has a positive effect on improving students digital literacy. E-booklets that are designed to be interactive, interesting, and contextual help students learn more independently, think critically, and actively participate in digital based learning. Thus, e- booklets media not only play a role in improving understanding of biological concepts, but also strengthen digital literacy competencies, which are important skills in the 21st century learning era. It is hoped that future researchers will further develop learning media such as e- booklets and test their effect on other subjects with a larger sample size and more in depth analysis of other aspects.

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