



Analysis of Teaching Material Needs for Electronic Student Worksheets for Middle School Science Learning

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ARTICLE INFO

Article history:

Received: 20 Aug 2023

Revised: 20 Sept 2023

Accepted: 22 Sept 2023

Published online: 24 Oct 2023

Keywords:

Teaching Materials;

Electronic Student Worksheets;

Science Process Skills

ABSTRACT

The development of teaching materials for Electronic Student Worksheets (E-LKPD) is one of the developments of teaching materials in Natural Sciences for Junior High Schools (SMP) which can facilitate students to have high-level thinking abilities, science process skills, as well as the development of interaction. social. This research aims to analyze the need for electronic student worksheets (E-LKPD) in junior high school science learning. Data collection in this research used a questionnaire with qualitative data types to improve students' abilities in using electronic teaching materials with valid, practical and effective live worksheets. The development model used is the Hannafin and Peck development model which consists of needs analysis, development, design and implementation stages, accompanied by Tessmer evaluation. The evaluations used are expert evaluations, one to one, small group and field tests. The characteristic of E-LKPD is that it has an attractive design containing videos, pictures and colors and is multimedia in nature, so it is hoped that it can make students enthusiastic in carrying out learning activities which will have implications for increasing learning outcomes and science process skills.

1. Introduction

Currently Natural Sciences has various alternative learning models that can improve students' knowledge and skills. Learning is a process of interaction between students and educators or learning resources at school or other places in the learning environment. The main key in learning is being willing to learn and being able to learn. Wanting to learn means that students have the desire or motivation within themselves to learn, and being able to learn means that students can participate in learning well. Learning can be carried out well, if the interaction

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Doi: <https://doi.org/10.31258/jes.7.4.p.699-708>

process between students and educators or learning resources is well established, in the entire educational process, learning is the most important activity.

In conventional learning, the teacher has a central role (teacher centered) so that students only act as recipients of the material. The impact will not be to explore all the potential that students have and the thinking skills of students with a high level of Higher Order Thinking Skills (HOTS) in Natural Sciences (IPA) subjects are difficult to develop. In line with the characteristics of the learning process in the 2013 curriculum, science is not only based on theoretical abilities but also how information or knowledge is obtained systematically from experience to concrete things.

Risdyanti (2019) explained that science learning in implementing the 2013 curriculum is not just about introducing concepts to students but also to develop skills in the learning process so that it can increase students' sense of understanding and competence by providing students with experiences that are directly related to learning activities. thus making learning more meaningful. Reflectively, active observation, conceptualization and experimentation processes are carried out. All paths follow a cycle that must be repeated so that learning will be more interesting, meaningful and concrete, and not only centered on the teacher.

So that all the demands and expectations of 21st century education can be achieved, learning must be carried out through innovative approaches, strategies, models and teaching materials that are different from conventional learning as stated by Atep (2020). One of the innovations in the field of education is the existence of digital books or electronic books, which are a more practical form of book because they can be used using equipment such as a laptop, personal computer or smartphone, as stated by Francisca (2022). One form of teaching technology that can actively encourage and build students' understanding of concepts during the learning process is Student Worksheets (LKPD), Prabowo (2015).

Student Worksheets (LKPD) are printed teaching materials in the form of sheets of paper containing material, summaries and instructions for implementing learning tasks as stated by Prastowo, (2015). Meanwhile, Sari (2018) LKPD can facilitate students to have high-level thinking skills and develop social interaction. As technology develops, LKPD has begun to be converted into digital form which can be run using computers, mobile phones or smartphones. However, the problem is the lack of availability of LKPD that meets standards at low prices and can be reached by the wider community (Andikaningrum, 2014).

The increasing number of students who have mobile devices can be used as an alternative media that helps them increase their mastery of lesson material. By including multimedia aspects in the LKPD, it is hoped that it can provide value to the LKPD and increase students' interest in learning. In a preliminary study regarding Electronic Student Worksheets (E-LKPD), students stated that in the Digestive System material, teachers had not used LKPD as teaching material that

could help students understand the material and science teachers confirmed this.

The teacher also stated that the assignments given to students in learning the digestive system were not optimal, so teachers and students wanted LKPD that could help students' understanding in learning. Several previous research results regarding the development of Problem Based Learning-based LKPD in Biology learning that are valid, practical and effective, such as (Fitriasari et al., Hali et al., Pratiwi et al. 2021). Furthermore, Novianti (2014) developed a Problem Based Learning LKP based on the human digestive system as material, producing a very feasible LKPD. As stated by Farman (2021), LKPD has innovated based on technology or also known as E-LKPD.

Kurniawati (2021) defines E-LKPD as software which is an application in the form of student worksheets with the tools used in the form of laptops, cellphones and computers so that they can be used anytime and anywhere. Pratiwi (2021) revealed that E-LKPD, based on its method of use in interactive digital form, is more effective and efficient in applying it to students' learning. E-LKPD was chosen as a varied teaching material used in implementing online learning. In line with the opinion of Apriliyani (2021) that E-LKPD is a student worksheet in electronic form as an interesting and practical teaching material.

Online learning is a learning system that is influenced by the rapid pace of technological development so that it will certainly influence learning planning. In a short time, this technology has been widely used to facilitate learning and create E-LKPD teaching materials, one of which is Liveworksheet. As stated in (Liveworksheet), liveworksheet is an application that is connected to the internet, changing the form of a Portable Document Format or Joint Photographic Expert Group or a conventional worksheet in the form of a printed document into an electronic worksheet.

The e-LKPD is interactive and we can also include images, audio and video according to the design we want. Online learning is a learning activity that is assisted by using the help of the internet network with accessibility, connectivity, flexibility, and the ability to generate learning interactions, Sadikin, (2020). In line with the explanation by Deviana (2021) that learning outcomes can be said to be students' mastery of the results of learning activities that have been carried out by carrying out evaluations which are used as a means of improving the learning process as a benchmark for student abilities.

According to Widiyanti (2021) that E - LKPD can be used by educators in their learning process as optional or alternative teaching materials. This is because it is more efficient not to use paper and there are many forms of practice such as descriptions, multiple choice, matching, videos, animations and images that can be embedded. Teaching materials in the form of images are a tool for conveying messages in the form of subject matter which is applied in the form of visual communication symbols which are two-dimensional images which can be created and designed by education so that they can adapt to the learning material being implemented (Elpis, 2017) . In this way, students are interested and not bored in

learning. One of the subject matter discussed in class VIII is the digestive system. Learning videos are a way to create a learning atmosphere that makes students interested when the material is delivered by the teacher so that it can help students' learning outcomes improve. Learning video songs make learning less boring because there are variations in the activities, Kurniawan (2018).

The subject matter used by researchers is in KD 3.5 Analyzing the digestive system in humans and understanding disorders related to the digestive system, as well as efforts to maintain the health of the digestive system and 4.5. Presents the results of research on mechanical and chemical digestion. KD is the application of concepts originating from KD so that students find it difficult to understand and lack understanding when carrying out practical work performance in experiments, so with this E-LKPD, there are clear work instructions and practice questions to stimulate creativity. students to be more creative and independent.

Apart from that, the characteristics of E-LKPD with an attractive design display containing videos, images and colors and being multimedia are expected to make students motivated and enthusiastic in carrying out learning activities which will have implications for increasing learning outcomes and science process skills. The teaching materials used by researchers using E-LKPD will help the science learning process in class so that it is more valid, practical and effective. Safitri (2022) further stated that students' KPS increased after being used in E-LKPD so that it could be used as a solution in choosing to deliver lesson material in science learning during a pandemic.

Based on this description, it is very important and necessary to immediately carry out research aimed at analyzing the need for electronic student worksheets (E-LKPD) in junior high school science learning, in order to facilitate students to have high-level thinking abilities, science process skills, as well as development social interaction.

2. Methodology

The type of research used in this research is development research. According to Agustin (2020), design or development research is not aimed at testing a theory, but is research to find certain methods or procedures that will be used to develop products, processes, systems through validation tests so that their effectiveness is found.

This development research determines the validity of the E-LKPD, so at the review stage by experts consisting of three validity tests, namely experts in the field of language, experts in design and experts in the field of materials will carry out testing of the E-LKPD by providing a review or in the form of a review containing suggestions. used as a reference by researchers to carry out revisions or improvements to the development of research results in the form of E-LKPD so that a valid product is obtained. Later there will be responses containing views so

that they can make updates based on the review until the E-LKPD developed is declared valid so that it can be tested as explained in Table 1.

Table 1. Validation Instrument Assessment Level

Category	Value
Very good	5
Good	4
Enough	3
Not enough	2
Very less	1

(Sugiyono, 2013)

For product assessment, a Likert scale is used. The validation instrument assessment is then analyzed using the formula :

$$\text{Validation Value} = \frac{\text{Obtained Value}}{\text{Total Value}} \times 100\%$$

Next, the validation values obtained are adjusted to the level of validity as in Table 2.

Table 2. Instrument Validity Level

Average (%)	Category
0 - 20	Very Invalid
21 - 40	Invalid
41 - 60	Fairly Valid
61 - 80	Valid
81 - 100	Very Valid

(Riduan, 2017)

In this research, electronic teaching material products were produced, namely in the form of Electronic Student Worksheets (E-LKPD) using valid, practical and effective live worksheets, in junior high schools with the Tessmer formative evaluation used, the Hannafin and Peck development model. The evaluations used are expert evaluations, one to one, small group and field tests. The subjects in this research were Bina Ilmi Lemabang Middle School Class VIII students with a total of 18 students. The location of the research was SIT Bina Ilmi Lemabang Jl. RE Martadinata No 6 RT 30/RW 13, 2 Ilir, Ilir Timur 2 Palembang City. Data collection in this research used a questionnaire with qualitative data type and distributed using a questionnaire so that respondents could fill out the questionnaire.

3. Results and Discussion

The following are the results of the needs analysis obtained by filling out a questionnaire with a total number of respondents of 18 students and examples of images of the E-LKPD that will be developed. In the presentation and findings of this research, we will examine the students' opinions are that they experience

more difficulty in understanding the digestive system material in Class VIII Middle School Science as seen in Figure 1.

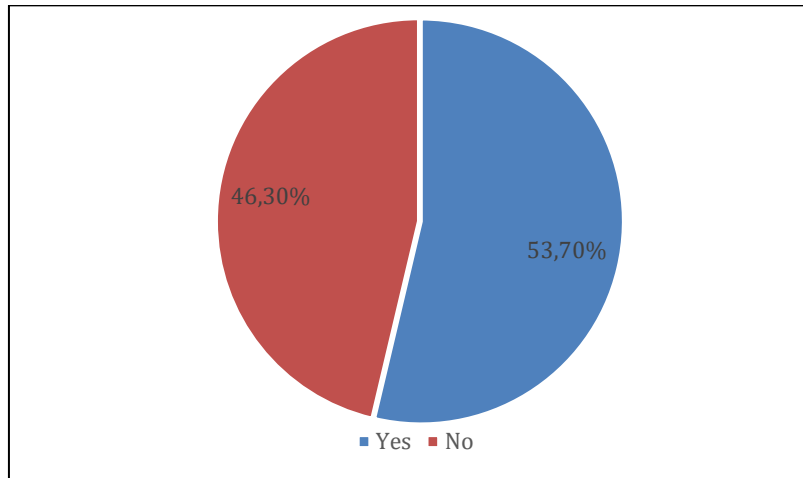


Figure 1. The Level of Difficulty of Students in Understanding The Digestive System Material in Class VIII SMP

Based on the data Figure 1 almost half of all students, namely 46,30 % known that the students' opinions are that they experience more difficulty in understanding the digestive system material in Class VIII Middle School Science, so that educators know the needs of students to increase students' understanding of the digestive system material.

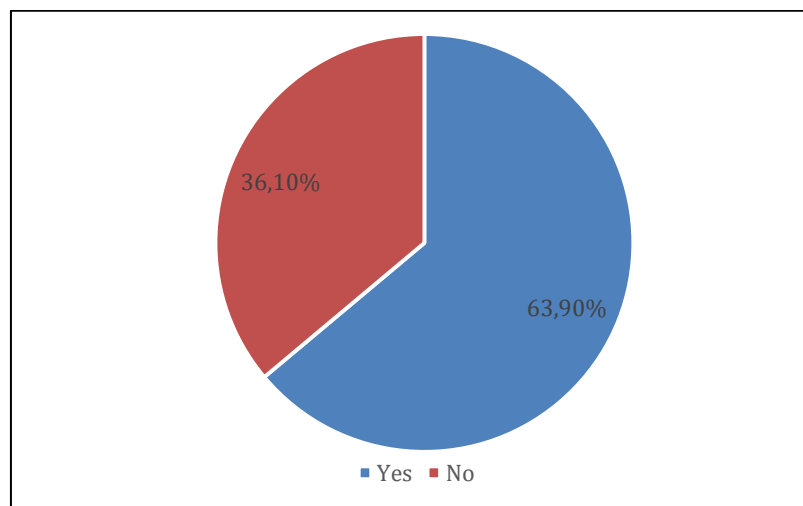


Figure 2. Reasons Why it is Difficult for Students to Understand The Digestive System Material in Class VIII Middle School Science

Based on the data Figure 2 by 36,10% known that the cause of students' difficulties in understanding the digestive system material in Class VIII Middle School Science is largely due to the limited availability of interesting teaching materials so that educators know the needs of students to create and prepare interesting teaching materials for students in the digestive system material.

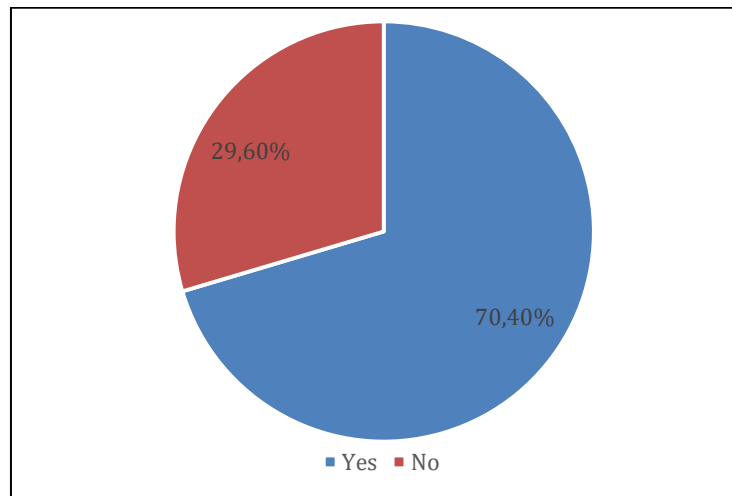


Figure 3. Students' Needs for Interesting Teaching Materials in Understanding The Digestive System Material in Class VIII Middle School Science

Based on the data Figure 3, it is known that the cause of students' difficulties in understanding the digestive system material in Class VIII Middle School Science is largely by 70,40 % due to the limited availability of interesting teaching materials so that educators know the needs of students to create and prepare interesting teaching materials for students in the digestive system material. In the presentation and findings of this research, we will examine E-LKPD Design on The Digestive System Material for Class VIII Junior High School as seen in Figure 4.



Figure 4. E-LKPD Design on The Digestive System Material for Class VIII Junior High School

In Figure 4 above is on the front page (cover) there is the title of the material, identity and a picture of the digestive system.



Figure 5. E-LKPD Design on the Digestive System Material for Class VIII Junior High School

In Figure 5 above is the second page there are basic competencies and learning indicators as well as photos or videos of learning.



Figure 6. E-LKPD Design on the Digestive System Material for Class VIII Junior High School

In Figure 6 above is the third page there are practice questions in the form of practice questions that students work on directly using online student activities.

4. Conclusion

Based on the research results above, it can be concluded that students think that the digestive system material is material that is difficult to understand. The reason why students stated this was because there were limited interesting teaching materials that were easy for students to understand. For this reason, interesting teaching materials have been developed in the form of electronic student worksheets (E-LKPD) containing images, text, video, color photos and audio or sound in order to make students motivated and enthusiastic in carrying out learning activities which will have implications for increasing learning outcomes and science process skills.

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How to cite this article:

Fardinelly, S., Slamet, A., & Susanti, R. (2023). Analysis of Teaching Material Needs for Electronic Student Worksheets for Middle School Science Learning. *Journal of Educational Sciences*, 7(4), 699-708.