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Literature Study: Liveworksheet as a Science Learning Media Electronic Student Worksheet in The Merdeka Curriculum

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ABSTRACT
Liveworksheet is a web-based application that can be used in the merdeka curriculum. The use of technology in the merdeka curriculum is very necessary because requires liberating teachers and students in exploring information. The purpose of this research is to examine the use of liveworksheets as an innovative electronic student worksheet learning media in the merdeka curriculum. This research is descriptive research with a literature review. The liveworksheets platform is a learning medium that can be used at all levels of education and in all subjects. The forms of questions in liveworksheets are varied, namely multiple choice, essay, join arrow, drop-down, drag and drop, check box, word search, listening and speaking, this is what makes the liveworksheet have an attractive appearance like an educational game so that it can give a new feel that is not boring. The use of liveworksheets has many benefits including making students more challenged and active thereby increasing learning motivation. This increase in motivation has an impact on student learning outcomes. The effectiveness of using liveworksheets has been widely studied so that the use of liveworksheets can be used in the learning process, especially in the era of independent learning.

Keywords: *Liveworksheets, Learning Media, Elektronik Student Worksheet, Merdeka Curriculum, Science.*

1. INTRODUCTION

The development of the times and technology is closely related to education, this is in line with the Industrial Revolution 4.0 where the development of science has an impact on innovation in the field of technology. Education is one of the efforts to improve the quality of human resources. So the learning process must adapt to the times and technology. The use of technology can help the learning process to become more innovative [1]. The development of science and technology is also one of the factors of change in the reconstruction of the curriculum.

The merdeka curriculum gives teachers the freedom to be creative in realizing quality learning. An independent curriculum is one way that can be used to restore learning in education units [2]. The merdeka curriculum also gives freedom to students to explore and optimize their potential. The essence of the independent curriculum is to provide. freedom in developing students' interests and talents so that all potential, both academic and non-academic, can develop optimally.

Optimizing the learning process is essentially making students understand a concept. The process of understanding the concept requires learning media so that students more easily understand the concept. Learning media in the merdeka curriculum are media that can support the implementation in schools. Good learning media must be adapted to the conditions of the background and environment in which students learn. This means that the use of learning media is very important as an intermediary in achieving learning objectives. Learning media has many benefits, namely increasing concentration, providing motivation, increasing learning effectiveness and adapting to student development.

One of the media that can be used in the merdeka curriculum is the use of technology-based media. The millennial generation, starting from elementary school students to university level, is very close to technological developments. The development of

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science and technology provides convenience in various aspects, including education. Technological advances are undeniably influencing the application of learning media. Innovative, creative and fun learning is needed. One way is to use liveworksheets media in the learning process.

Liveworksheets is a free website-based educational platform. The use of platforms really helps teachers in the learning process. This platform is suitable for students' learning styles, namely visual, auditory, and kinesthetic. Liveworksheets are equipped with video displays, sound, images, text, and various forms of questions. Liveworksheets are known as electronic student worksheets which contain practice questions and material summaries. On this platform, apart from teachers being able to create their own questions, teachers can also easily utilize liveworksheets media. If the teacher wants to use the questions that are already available in the liveworksheets, you can do this by copying the link and sending it via WhatsApp or Google Classroom [3].

Science is an interesting subject to develop. Teachers need to innovate so that science learning is more attractive. One of the characteristics of learning science is that students can think critically in developing their knowledge in understanding the environment so that it can be applied in everyday life. These characteristics require students to actively seek references in independent learning so that they can reconstruct their knowledge. Science learning that is packaged in an interesting and good way can provide new enthusiasm and foster high curiosity in the hearts of students. Learning challenges in the era of independent learning encourage teachers to take advantage of the use of technology in developing creative, innovative, effective, and efficient media [4].

Therefore, the adaptation of technology for teachers is needed, especially in science learning. Teachers must have the ability to make electronic student worksheets interesting so that students can be enthusiastic in learning on liveworksheets. Educators need to improve their ability to master developing technology. This is in line with Habeahan & Sumanik explaining that teachers need to understand learning media that utilize technology, to improve pedagogical competence [5]. Researchers are interested in using the literature study method to obtain information on the use of liveworksheets as an electronic learning medium for students' worksheets in the independent curriculum, especially in science subjects. This is based on not many articles explaining liveworksheets media that can be utilized in the independent learning era.

2. METHODE

The research method applied is descriptive qualitative with library research [6]. This study aims to provide an overview of the phenomena that occur, are ongoing, or have taken place. The purpose of this literature study research is to examine the use of liveworksheets for electronic learning media. Innovative students' worksheets in the independence era study science subjects. This research was carried out through several steps, namely reading, reviewing books, journals, literature, reports et al., then examining important matters relating to the problem which is the research topic. The data that has been collected is then carried out for content analysis. Content analysis is an in-depth discussion of information obtained from sources or literature [7].

This article is the result of a literature study from several previous studies. Sources of data were obtained through library research by examining 20 journal articles that were used as references and 18 articles that met the criteria. The technique in collecting data used in this study is a library technique by collecting and compiling data by searching for relevant references. Articles were obtained from online journals through searches on Google Scholar. The keywords used were liveworksheets, learning media, electronic student worksheets, science, and the merdeka curriculum.

3. RESULTS AND DISCUSSION

3.1. The Merdeka Curriculum

We are experiencing the the merdeka curriculum now. Nadiem Makarim is the originator of the idea of merdeka curriculum, he is Indonesia's minister of Education, Culture, Research and Technology in 2019. He emphasized that the merdeka curriculum provides independent learning [8]. This means that teachers and students have freedom or freedom of thought, so they can explore and develop their own potential in achieving educational goals. The scope of the independent learning era is achieving learning objectives, methods, materials and evaluation [9].

The the merdeka curriculum learning gives students the freedom to explore information, both from formal and informal education. Achievement of learning objectives in the merdeka curriculum became a bridge for teachers to increase teacher competence in managing classes. This becomes a challenge for teachers to become professional teachers. The teacher acts as a facilitator as well as a motivator in directing students to explore the potential that lies within them in achieving good performance [10]. This is also in line with the research of Arviansyah & Shagena which states that the

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teacher is the driving force for independent learning , so teachers are required to be active, creative and innovative and skilled because the teacher is a facilitator driving change in the school environment [11].

Learning in the merdeka curriculum era needs to be carried out actively, creatively, and innovatively so that students are challenged so that the atmosphere in the classroom comes alive. This is because all students are involved in the learning process. The merdeka curriculum makes very real changes, where there is freedom for students to explore their abilities and interests. The teaching process in the era of independent learning refers to the profile of Pancasila students, with the aim of graduates who have competence and uphold character values [12]. The application of the merdeka curriculum is more relevant to learning, namely project-based learning will provide a platform for students to be active in exploring contemporary and factual issues. Therefore it is important for teachers to be able to develop their potential in exploring innovative learning media so that they can arouse students' learning enthusiasm.

3.2. The Merdeka Curriculum on Science Material

A good understanding of science will benefit the patterns and behavior of a person and the environment. This is related to quality science education, because it will have an impact on students in overcoming and contributing to various kinds of science problems. Freedom of learning and the nature of learning science is very relevant in the implementation of independent learning. Science learning is not only content-centered but rather on the processes and skills acquired during learning. Based on scientific work, students can discover scientific concepts [13].

Students in science learning are independent learners, because in science learning students can explore information and find solutions from ideas through critical thinking. Ideally, science learning can create a sense of fun while learning, so that the goal of independent learning can be realized. So it can be concluded that learning science aims so that students can develop their competencies, which can be used in providing solutions to problems that occur around the environment using scientific concepts. This is what we understand as scientific literacy.

Scientific literacy is indispensable for students in responding to global challenges. A person's scientific literacy is said to be good, if he can understand science and apply that knowledge in solving various problems in the environment. Based on the 2018 PISA results, Indonesia is classified as low. This proves that the understanding of science is still lacking.

Improvements are very much needed for the smooth running of science learning, there are 2 important things in improvement, namely science content that is too dense and subsequent improvements to the competence of science teachers. Many science learning models have been developed which are integrated in multidisciplinary sciences. Through this integrated learning can help students to better understand the importance of science in everyday life. For example learning using STEM (Science, Technology, Engineering, and Mathematics), SSI (Socio-Scientific Issue), STS (Science, Technology and Society) which is packaged in the PBL (Problem Based Learning) or PjBL (Project Based Learning) model is learning science that combines multidisciplinary science. The point is that even though there is integration of other sciences, science remains the main subject of other sciences as a support.

Designing innovative, creative learning will provide refreshment in the learning process and explore the potential and enthusiasm of students. In fact, science learning does not run optimally, learning is not optimal, one of which is due to still using conventional methods and the lack of teacher innovation in learning [14]. Not only that, teachers also experience problems in developing student worksheets [15]. On the other hand, the need for learning media assistance, to foster the activity of students so that science learning becomes more exciting and fun. Teachers need to design learning tools that are adapted to the material and conditions of students, one of which is the e-LKPD through liveworksheets. The use of liveworksheets learning media can also be integrated into the learning model. Research by Srikawati & Suarjana explains that electronic worksheets using liveworksheets and the use of project based learning in the learning process have a positive impact on the learning process and learning outcomes. [16]. This provides another alternative in learning using liveworksheets.

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3.3. Liveworksheets Learning Media

Learning media student worksheets contain task sheets and material that has been summarized, these tasks must be carried out by students with competencies adjusted according to learning outcomes. The use of conventional student worksheets itself has drawbacks including (1) monotonous questions and assignments do not vary; (2) student worksheet published by publishers tend not to be in accordance with the concepts being taught; (3) students focus only on answering questions; (4) less effective if it is not balanced with the correct understanding of the concept; (5) the manual assessment process takes a long time (6) student worksheets are also boring. Liveworksheets learning media is a solution to overcome deficiencies in student worksheets. Liveworksheets is a free web-based platform that has been widely used by educators. Liveworksheets is the transformation of conventional student worksheets into online ones known as electronic student worksheets.

Therefore the use of live worksheets as electronic student worksheets is an innovation from the media. The electronic student worksheets in question are learning media containing material with systematic work steps in achieving learning objectives using the internet or online. The steps for registering an account (Teacher) on the liveworksheets platform are as follows:

1. Open the browser application on your PC/laptop/smartphone, then type www.liveworksheets.com.
2. View the liveworksheet after that

Figure 1 Aplication Liveworksheets

3. How to register a liveworksheets account click "teacher access" then click "register"

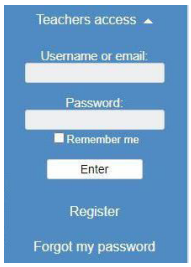

Figure 2 Register Liveworksheets

4. Please fill in the registration fields with your username, password, e-mail, country, full name and so on. Then click "I am not a robot" after that click "I've read and accept the terms of use" then click "Register" then there is a notification in the email used when registering.

Figure 3 Column For Filling in the Register as a Teacher

5. How to activate a liveworksheets account, then click on the link sent via email.

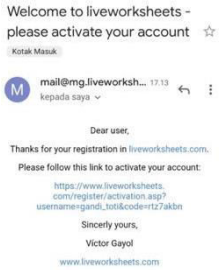

Figure 4 Account Activation Notification

There are several types of questions to create electronic student worksheets using liveworksheets. The nine types of questions that can be used include multiple choice, essay, join arrow, drop down, drag and drop, check box, word search, listening and speaking [17]. The various forms of questions make students excited because the work on questions is like an educational game. Making questions in liveworksheets must include language commands or in applications called scripts. The purpose of entering commands is so that the questions can function when processing. Writing commands or scripts for each form of questions can be seen in table 1.

New worksheets via the liveworksheets platform require Microsoft Word or Power Point media and must be adapted to the form of the questions available on liveworksheets. After adjustment, it can be uploaded to the liveworksheets platform in the form of pdf, jpg and png files. The upload process is complete, then proceed with the editing process, namely entering commands in the form of scripts. The script is used to enter the correct answer key by making a box and entering the answer script.

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Table 1. Script Writing on Liveworksheets

Stages of uploading questions on liveworksheets

1. After registration click make interactive worksheet on the menu section then click get started

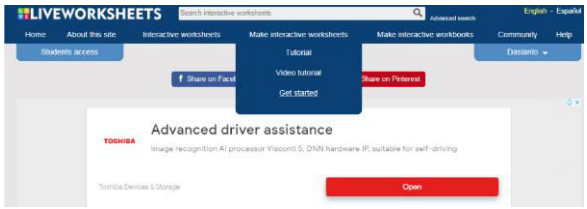

Figure 5 Column Create Questions on Liveworksheets

2. After that we will be directed to the upload file that we have prepared. Then select a file (Choose file) and upload.

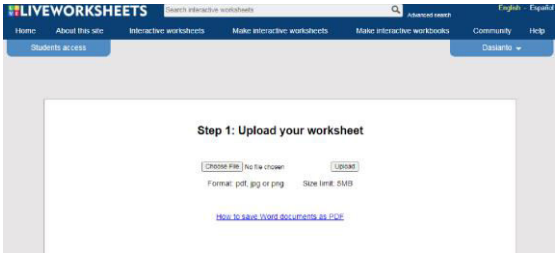

Figure 6 Upload Files

3. The editing process by entering the script. After all coding is entered and correct, the next step is to save the file, click Save. If you click save, a notification will appear as follows:

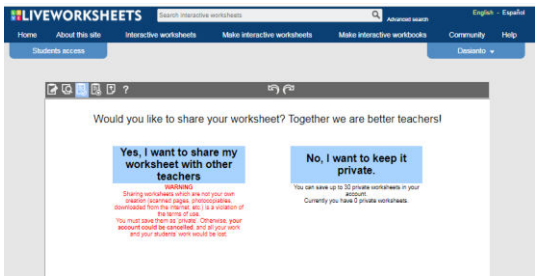

Figure 7 How to Share Liveworksheets

There are 2 options for saving it, namely saving and sharing student worksheets publicly, or only for students to save and use. If we want to save and share it publicly, we are asked to complete data related to subjects, material topics, classes, estimated ages, and types of student worksheets, then save.

The liveworksheets platform has the convenience of distributing it to students by copying the available links, then custom links can be distributed directly to students. On the other hand, the use of live worksheets also greatly facilitates the teacher because there are many electronic student worksheets available with a variety of materials that have been developed by other teachers [18].

3.4. Utilization of Liveworksheets Media as Electronic Student Worksheets

The use of the liveworksheets platform for electronic student worksheets in learning has many benefits. The advantages of liveworksheets are as follows:

- Easy to access
- Viewing liveworksheets is attractive to inspire and motivate
- The practice questions on the liveworksheet have a variety of questions (multiple choice, essay, join arrow, drop down, drag and drop, check box, word search, listening and speaking).
- No need to download an application because it is web-based
- Electronic student worksheets using liveworksheets can be shared easily in the form of a link.

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- Make it easier for teachers to summarize because it is automatically corrected by the system
- Save costs, because it is not printed, so the use of the liveworksheet application can limit paper usage.
- Save time because it can be accessed anywhere and anytime
- Provide space for teachers to be creative in making electronic student worksheets tailored to the needs of students.
- The liveworksheets platform can add images, video, and audio
- Using liveworksheets can help convey material and questions to students independently.
- Learners are more active in responding to questions because they are wrapped in interactive questions.
- Teachers can use questions from the available liveworksheets collection.
- The deficiencies that need to be considered in the use of electronic student worksheets are as follows:
- In making learning media such as electronic worksheets, students are only limited to 9 pages/sheet.
- File size is limited to 5 MB.
- The score summary obtained by students has a time limit of 30 days, if it is more than the specified time limit, the value summary results will automatically be deleted.
- Unable to edit the material text in the liveworksheet application, so that in making it in Microsoft word it is necessary to be more careful.
- Teachers need to be given training or outreach

Liveworksheets display that is attractive and easy to use is an attraction in learning. So the teacher needs to give a design touch that fits the material to make it more attractive by using other media such as Canva, Photoshop and others. The function of the e-worksheet for students is as a liaison for teaching and learning activities so that effective interactions occur between teachers and students [19].

The liveworksheets platform has been widely used in various subjects. Research by Wulandari, et al explains that scientifically oriented student worksheets using liveworksheets are effective for use at the elementary level [20]. Based on research Rohmah's, explained that liveworksheets can improve learning outcomes in science material for junior high school students [21]. According to Morena, et all student worksheets with liveworksheets are suitable for use in economics subjects at the high school level. According to Rumadan et al, explained that the worksheets of development students using the liveworksheets application on contextual chemistry material at the university level are valid and practical [22]. In line with that Sihombing et al, explained that the use of liveworksheets is suitable for use in hydrostatic physics material with categories suitable for use in the learning process [23]. This is reinforced by the opinion of Indriani et al, which explains that the use of electronic student worksheets in mathematics material makes learning fun and not boring [24]. Liveworksheets are also very suitable for use in language learning, this is in accordance with the opinion of Hidayah & Asari the use of liveworksheets helps students listen and helps their listening skills [25].

So it can be concluded that this liveworksheet platform is suitable for use at all levels of school, both elementary school and university level. On the other hand, the use of liveworksheets as a learning medium is not only suitable for science learning but is also suitable for all material. So that teachers can develop and use liveworksheets according to the subjects being taught.

3.4. Learning Using the Liveworksheets Platform

The use of liveworksheets in making electronic interactive student worksheets provides a fun and interesting atmosphere in learning, this can improve student achievement. It is evident from previous research which explains that liveworksheets can improve learning outcomes. Based on research by Mispa et al, states that the use of liveworksheets in biology material can improve cognitive learning outcomes, so that they can be used in the learning process [26]. Furthermore, Arisandi explained that liveworksheets can improve learning outcomes in chemistry, namely the concept of moles [27]. This statement is also supported by the research of Lailiah, et al explaining that the use of electronic student worksheets has an effect on learning outcomes because an attractive appearance keeps students motivated [28].

On the other hand, the effectiveness of learning using liveworksheets can be seen from how well students understand the material being taught. Basically effectiveness measures success in achieving the goals set. This is also supported by the research of Alvioniyati & Pujosusanto, explaining that liveworksheets are effectively used in language learning [29]. As expressed by Hurrahma & Sylvia explained that the use of liveworksheet-based student worksheets is effective and triggers student motivation in sociology learning subjects [30].

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So it can be concluded that by selecting appropriate, effective and efficient learning media, it can improve student learning outcomes. In the era of independent learning, students are given freedom in independent learning, so that electronic student worksheets assisted by liveworksheets are very suitable for application. Increasing student learning outcomes because students feel comfortable, happy and active so that they are motivated in working on questions. Moreover, students immediately know the value obtained after the end of work on the liveworksheets. The increase in student learning outcomes is also due to a good understanding of the material, as well as the enthusiasm and confidence of students in answering with the knowledge they have understood.

4. CONCLUSION

The results of this study concluded that the use of liveworksheets learning media in the merdeka curriculum is very suitable for use. Electronic product worksheets for students assisted by liveworksheets have many advantages that can be used as learning media in the era of independent learning, especially in science learning. The liveworksheets platform can be used at all levels of education and in all subjects. The main obstacle to learning science in independent learning is that science material is too dense and the science teacher's competence is low. The science learning model can be integrated into multidisciplinary disciplines because it can help students to better understand the importance of science in everyday life. For example, learning uses STEM (Science, Technology, Engineering, and Mathematics), SSI (Socio-Scientific Issue), and STS (Science, Technology, and Society) packaged in a PBL (Problem-Based Learning) or PjBL (Project Based Learning) model.

The teacher's role as a facilitator and motivator in the independent curriculum is to direct students to explore their potential. Therefore teachers must be creative, active, and innovative in developing competencies, especially in technology, for example in the application of liveworksheets. On the other hand, the various forms of liveworksheets questions are multiple-choice, essay, join arrow, drop-down, drag and drop, check box, word search, listening, and speaking. This variation of questions keeps students from getting bored because it is more interesting and motivates students to learn because it is wrapped like an educational game. The use of liveworksheets can help achieve learning objectives, and their reinforcement can improve student learning outcomes in the era of independent learning.

Suggestions for teachers are to be able to make the electronic design of student worksheets as attractive as possible by modifying liveworksheets with Canva media or the like to make it more attractive. This aims to arouse the enthusiasm of students in learning. Teachers should be able to adapt to the times by training skills in the IT field. There is a need for educator training in practicing skills using liveworksheets.

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