

Development of Electronic Student Work Sheet Learning Media (E-LKPD) Web Based Liveworksheet Atmosphere Material Class X.E.4 SHS 3 Painan

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ABSTRACT

This study aims to develop geography learning media in the form of electronic student worksheets (E-LKPD) web-based live worksheets on Atmosphere material in class X.E.4 SHS 3 Painan. The method in this study uses research and development, namely the ADDIE development model with five stages including Analysis, Design, Development, Implementation, and Evaluation. The reason for using this development model is because it has a workflow related to the Research and Development (R&D) stage, but makes it easier and more systematic to create a more effective product. One of the causes of students having difficulty understanding the teaching and learning process is due to the unavailability of teaching materials/interactive learning media. This result illustrates that the increase in the initial to the final stage was 14.7% by the expert. The results of developed E-LKPD product obtained the results of a student response questionnaire from 28 students with a final result of 95% with the criteria of "very strong" then the product is declared practical. Web-Based E-LKPD. The Liveworksheet on Atmosphere Material can be used in the teaching and learning process in class and outside the classroom because it is easy to access anytime and anywhere as long as the internet network is active. With the development of E-LKPD learning media, it is hoped that it can be utilized by all parties in increasing interest, learning outcomes, and learning activities in schools.

Keywords: E-LKPD, Liveworksheet, ADDIE Development Model, Atmosphere.



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INTRODUCTION

The Ministry of Education and Culture's Merdeka Learning-Independent Campus Program is regulated in the Regulation of the Minister of Education and Culture of the Republic of Indonesia No. 3/2020 concerning "National Higher Education Standards" (State Gazette of the Republic of Indonesia of 2020 No. 47). This program should also be developed concerning educational theory based on standards or achievement-based education and competency-based curriculum, furthermore the implementation of the Independent Curriculum is contained in the annex to Kepmendikbudristek NUMBER 008/H/KR/2022 regarding Learning Outcomes in Early Childhood Education, Elementary Education Levels, and Secondary Education. As a stage of achieving learning objectives based on the learning outcomes of independent curriculum implementation, learning activities need to be designed and implemented effectively and efficiently to obtain maximum results. To support the smoothness and meaningfulness of learning activities, there are many ways that educators can do in the Industrial Revolution 4.0 era. With the implementation of e-learning as one of the current learning alternatives, educators must

develop learning media that motivate students to be more active and creative.

Utilization of technology and information can make learning more innovative and creative with learning media. Learning media according to Ashar (2021) suggests that learning media can be understood as anything that can convey messages from sources in a planned manner, resulting in a conducive learning environment where recipients can carry out the learning process efficiently and effectively. The definition of interactive learning media according to (Darnawati et al., 2009) states that interactive learning media is learning media in which there is a combination of text, graphics, images, and sound. The definition of media according to Arsyad (2014), educational media is a component of learning resources or physical vehicles that contain instructional material in the student's environment that can stimulate students to learn. In England of com Lee (2010) defines media literacy as "The ability to access, understand, and make communications in a variety of contexts". In the United States, media education is commonly called media literacy education. Media has a close relationship with technology used in education. According to Kozma (1991), Media is an intermediary or messenger, one of which is applied to the application and use of methods, and media is anything that can be used to convey a message from the sender to the recipient. so that it can stimulate thoughts, attention, and interest, resulting in a learning process.

Along with the development of technology, interactive learning media innovations are now starting to be carried out in LKPD, namely those that are usually in print form into digital forms that can be run using a computer or smartphone. Electronic LKPD can be made with the help of various applications, one of which is a live worksheet. The application can be run online so students can access it easily, anytime and anywhere.

Benefits of Interactive LKPD According to Darusman (2008), namely 1) For teachers, interactive LKPD is useful in increasing teacher creativity. Especially in presenting various forms of interesting assessment for students. In addition, interactive LKPD also makes it easier for teachers to involve students in the learning process. This LKPD is also very helpful for teachers because it can reduce the teacher's burden such as correcting students' grades one by one; 2) For students, interactive LKPD is useful in increasing the ability of participants to utilize Information and Communication Technology students. Interactive LKPD also makes students independent and creates high curiosity. This LKPD is also useful in increasing students' interest and desire in the teaching and learning process because this LKPD is not boring but this LKPD attracts students to learn with the features in it. According to Arianty (2020), the application of the PBL learning model assisted by live worksheets can increase the activity of students. Students are more enthusiastic about participating in learning, independent in working on LKPD, confident in expressing opinions, and students' curiosity is getting higher. Interactive e-worksheets are online learning media that teachers can design themselves to support the development of students' thinking skills at a high level, including analytical thinking skills (Puspitasari, 2020). According to WitaHarahap & Surya (2017), the benefits of using instructional media in the teaching and learning process are that learning media can support the learning process that can increase understanding and learning outcomes achieved, the material is clearer and not verbalized, provides motivation (students are motivated to learn), and provide a more meaningful learning experience. Hamid et al (2020) also conclude that "learning media can be created and adapted to student learning styles so that it can provide opportunities and choices for students according to their learning style, with learning media it becomes more

varied and not monotonous". With the use of interactive learning media, it is hoped that teachers can display learning media that are not only seen but also get responses and increase learning outcomes. Liveworksheet learning media in learning becomes more interesting, innovative, and interactive to produce satisfying learning outcomes. get motivation to learn geography.

Based on interview data with teachers and students of SHS 3 Painan, it can be seen that one of the causes of students having difficulty understanding the teaching and learning process is due to the unavailability of teaching materials/interactive learning media. Teachers tend to be monotonous in giving assignments according to textbooks, without any innovation in developing interesting interactive student worksheets. Some material in geography is directly sourced from nature that can be reached or not reached, so the role of the media is needed to make it easier for students to learn the material. The teacher has explained the material through PPT with the lecture method and divided group assignments in an unstructured manner and has not used the E-LKPD interactive learning media so interest, enthusiasm, and activity in the learning process is still low.

Seeing this phenomenon, researchers see the need to develop learning media in the form of web-based live worksheet E-LKPD in schools to support the active learning process. By making student worksheets for interactive online exercises/assignments that can be printed for offline learning. Based on the problems that have been mentioned, it can be seen that the E-LKPD can be developed as a learning tool. Therefore, the researchers developed an E-LKPD product with the title "Development of E-LKPD Liveworksheet on Atmosphere Material for Class X.E.4 at SHS 3 Painan". To develop a valid and practical live worksheet web-based E-LKPD media use the ADDIE development mode Based on the problems that have been mentioned, it can be seen that the E-LKPD can be developed as a learning tool. Therefore, the researchers developed an E-LKPD product with the title "Development of E-LKPD Liveworksheet on Atmosphere Material for Class X.E.4 at SHS 3 Painan". To develop a valid and practical live worksheet web-based E-LKPD media use the ADDIE development mode.

METHODS

The method in this study uses research and development, namely the ADDIE development model. This model has several systematic and organized frameworks. According to Rusdi (2018), the ADDIE framework has five stages including Analysis, Design, Development, Implementation, and Evaluation. ADDIE appeared in the 1990s developed by Dick and Carry. According Sugiyono (2019) states that "research and development is a process or method used to validate and develop products". The reason for using this development model is because it has a workflow related to the R&D stage, but makes it easier and more systematic to create a more effective product. So that it is not difficult for researchers to use this model, the explanation of the research stages is as follows:

2.1 Analysis phase

The analysis is the process of identifying problems in the survey-sampled locations. In

the analysis phase, data will be collected about learning problems and identified as problem-solving through an analysis of the needs of students according to the problems found. The knowledge gained by the teacher can be applied in learning with active learning media that can support the learning process and meet the current needs of students. Especially regarding the evaluation of special students on the atmosphere material.

2.2 Design stage

Design is product design according to what is needed at the analysis stage. This stage aims to design an E-LKPD learning media based on a web live worksheet on the subject of Atmospheric Geography of SHS Class X Phase E.

2.3 Development stage

Development is the stage of making media according to the media design at the design stage. This development stage aims to produce a valid product by testing the feasibility of the product until the product is produced according to the validation results of the experts. To produce a feasible product through revised input from experts. At the trial stage, validation was only carried out by experts, namely material experts, media experts, and linguists. Material expert with Geography subject teacher at SHS 2 Bayang, namely Mrs. Winda Melandari, M.Pd, media expert with Informatics subject teacher at SHS 3 Painan Mr. Joni Andra, S.Pd.M.T and linguist with Indonesian teacher Mrs. Ermaweni, S.Pd.

2.4 Implementation stage

Implementation is a real step towards implementing ELKPD as a geography learning medium based on expert validation. At this stage, it was tried out in small groups, namely students in class X.E.4 at SHS 3 Painan, a total of 28 students in the Even Semester of the 2022/2024 Academic Year.

2.5 Evaluation stage

The Evaluation Stage is the improvement stage after the student trials are carried out to perfect the ELKPD. The development research phase that was carried out only reached the product implementation stage, this was because the researchers developed the product until it was valid and practical. So it didn't reach the evaluation stage due to time constraints and did not measure the effectiveness of this product. This research data collection instrument uses interviews, questionnaires, and documentation. The data obtained is used to determine the validity and practicality of the product being developed. Criteria for data collection instruments According to Sugiyono (2013), the Likert scale is a measurement scale that combines a score/value that represents individual characteristics in knowledge, attitudes, and behavior. There are assessment categories used, namely Strongly Agree (SS), Agree (S), Enough (C), Disagree (TS), and Strongly Disagree (STS) with scores of 5, 4, 3, 2, 1. The questionnaire calculation uses the formula of Riduwan & Akdon (2013) as follows.

$$AP = \frac{\sum \text{given score}}{\sum \text{maximum score}} \times 100\%$$

The E-LKPD Assessment Sheet in the assessment instrument by Material Experts According to the BSNP Lesson Textbook Assessment Standards (2012) consists of content

feasibility and presentation feasibility. The media expert's assessment instrument consists of graphic feasibility and electronic media feasibility. Assessment instruments by linguists are related to linguistic aspects. Questionnaire instrument The response questionnaire consisted of material, presentation, graphics, and linguistic aspects. The valuation instrument questionnaire can be calculated using the following percentage criteria formula.

Table 1. Questionnaire percentage criteria

No	Average internal-rating average	Criteria
1	$81\% \leq \text{score} \leq 100\%$	Very strong
2	$61\% \leq \text{score} \leq 80\%$	Strong
3	$41\% \leq \text{score} \leq 60\%$	Strong
4	$21\% \leq \text{score} \leq 40\%$	Weak
5	$0\% \leq \text{score} \leq 20\%$	Very weak

Source: Riduan & Akdon (2013).

Based on these criteria, indicators of success and development of E-LKPD learning media are declared suitable for use if the assessment of respondents is $81\% \leq \text{score} \leq 100\%$ and $61\% \leq \text{score} \leq 80\%$ with the criteria of "very strong" and "strong".

RESULTS

Researchers carried out development research at SHS 3 Painan Class X.E.4 on the material Atmosphere. Learning is carried out face-to-face in 4 x meetings within the time duration (3x45 minutes) for each face-to-face meeting. In the process of learning exercises and assignments using Electronic Student Worksheets. The response of students to the E-LKPD learning media is good, because the media is interesting, and practical, can be done anytime, anywhere, and is not bound by face-to-face class hours. The limitation of presenting the E-LKPD is that you need a good internet network to access E-Class media. Support for electronic communication facilities in the form of Internet/Wifi networks is needed in this learning process.

In addition, electronic teaching materials and textbooks are needed that can assist in the learning process using this E-LKPD, so that students' learning needs are met. Electronic learning media, facilitates evaluation work, especially in student learning assignment exercises. The product resulting from this research is the E-LKPD in learning. The development of learning media went through two stages, namely the validation stage by experts and the product trial stage for small group students in class X.E.4 SHS 3 Painan. Each validator will fill out a questionnaire provided by the researcher. Products that are declared valid are then tested in small groups to find out the practicality of the product from students. With the existence of electronic learning media, it is hoped that it can assist teachers in carrying out active learning for students. E-LKPD is an interesting, innovative, practical learning medium for students. The teacher can find out which students have or have not done the E-LKPD learning assignment by opening the teacher's account on the Web Liveworksheet. Notifications that enter the teacher's account can be known and monitored directly. Evaluation of learning can be completed automatically because it has been inputted by the teacher on the web.

With the ADDIE Model research development stages, researchers carry out: 1) the analysis stage so that the teacher can map the knowledge of students at the beginning of learning in the form of a diagnostic test analysis related to student profiles as a basis for analyzing the needs of students in the independent curriculum, 2) Design Stage, the teacher makes a design interesting learning according to the learning styles of students in the form of Electronic Student Worksheets. The E-LKPD is created in a Word file document after which it is converted to a PDF file and then ready to be input into the web liveworksheet. 3) Development Stage, researchers make media according to the media design at the design stage. 4) The Implementation Stage is a concrete step towards implementing the E-LKPD as a geography learning medium based on expert validation. 5) Evaluation Phase, namely improvements after the student trials are carried out to perfect the ELKPD, but researchers only get to the product implementation stage, this is because researchers develop products until they are valid and practical.

Based on data analysis by researchers, Web-Based E-LKPD learning media Liveworksheet obtained the final results of the early stages with an average percentage of 80.1%. With the responses of material experts, media experts, and linguists, the researchers made product improvements based on expert advice and input so that they obtained an average percentage increase of 94.8%, which was declared a very feasible product. This result illustrates that the increase in the initial to the final stage was 14.7% by the expert. With validation by material experts, the material is feasible in the Liveworksheet Web-Based E-LKPD that has been developed. In the early stages, it showed an average percentage of 80%. Then the researchers made product improvements based on expert advice and input related to the material presented in the E-LKPD, thus obtaining an increase to 96.7%, which was stated to be a very strong product. The increase in the initial to the final stage was 16.7% from material experts. The results of the material expert validation are in the "very strong" criteria. With validation by media experts, there is media eligibility in the Liveworksheet Web-Based E-LKPD. In the early stages, it showed an average percentage of 77.1%. Then the researchers made product improvements based on expert advice and input related to media design in the E-LKPD, thus obtaining an increase to 94.3%, which was stated to be a very strong product. The increase in the initial to the final stage was 17.2% from media experts. The results of the media expert validation are in the "very strong" criteria. According to Riduwan & Akdon (2013) is included in the "very strong" criteria. The final results of the Liveworksheet Web-Based E-LKPD by material, media, linguists, and student responses are presented in the following Fig 1 below.

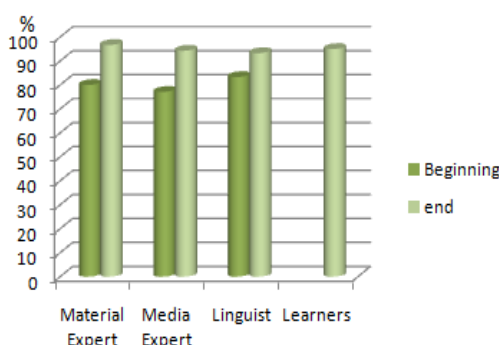


Figure 1. The results of the assessment of the percentage of media experts, material experts, and student responses

There was an increase in the percentage of validation from material experts, media experts, and linguists from the initial stage to the final stage. The researcher followed the advice of the validator with improvements to the live worksheet web-based E-LKPD related to atmospheric material in geography subject at SHS 3 Painan class X.E.4. The suggestions for improvement from the validator are 1) the need for material adjustments based on learning outcomes, indicators of achievement of learning objectives, competencies and the level of students' critical thinking skills in the independent curriculum; 2) It is necessary to improve the media for the feasibility of clear and interesting pictures, tables, work activities, and ease of use of the E-LKPD in learning; and 3) Improvement of the language used in the E-LKPD according to the rules of the Indonesian language, punctuation, clear task instructions, communicative, interactive, and language supports the suitability of the material with the development of students. From material experts, media experts, and linguists, it can be concluded that the electronic student worksheets developed by researchers have met the criteria of being very feasible to use. And the responses of students are very practical to use.

The feasibility of the live worksheet web-based E-LKPD learning media was obtained based on the results of the expert test, then researchers developed it with various inputs and improvements. The advice given by the expert is to improve the Liveworksheet Web-Based E-LKPD Learning Media so that it is better, more meaningful, and interesting for students' active learning. Suggestions and input from material experts are as follows:

- Addition of material adjustments to Learning Outcomes, Indicators of achievement of learning objectives, teaching materials, and assignments in E-LKPD.



Figure 1. Addition of High School geography Learning Outcomes and Indicators of Achievement of Learning Objectives according to Atmosfegr material on E-LKPD)

- Advice from media experts, adding pictures, clear and interesting activities, in E-LKPD



Figure 2, Adding pictures and study instructions

- Suggestions from linguists, clear assignment instructions, communicative language, improvement of questions according to language rules.

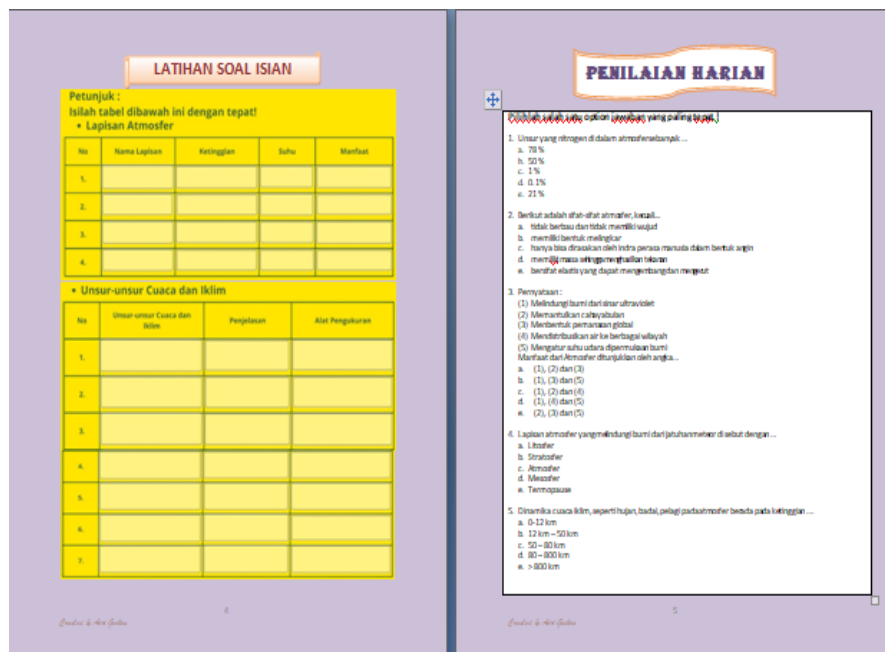


Figure 3, Addition of task instructions, questions according to language differences

Based on the suggestions and input from experts, there were mistakes and shortcomings of researchers in making this interactive learning media development product, but improvements were made first so that it could be tested on small group students. Learning Media Web-Based E-LKPD Liveworksheets are equipped with a wide selection of images,

tables, atmospheric material, study guides, and practice questions. Learning media can be used anytime and anywhere because it is portable. The process of using it is quite easy, that is, it can be sent via WhatsApp in the form of a link and can be accessed directly with a good internet network. The address for the existence of the Liveworksheet Web-Based E-LKPD Learning Media product is in the form of a link that can be opened on mobile browsers, computers, and laptops. Media links are: <https://www.liveworksheets.com/jd3452243vj>

CONCLUSIONS

Development of E-LKPD on Class X.E.4 Geography Atmospheric materials at SHS 3 Painan, it is known that suggestions for input from experts, starting from the initial design stage, repair, and produce products that are valid and practical. Products that have been declared valid by the validator can be tested on students to find out the practicality of the product being developed. With the recapitulation of student response questionnaires, it can be seen that the development of learning media in the form of Liveworksheet Web-Based E-LKPD is in a very strong category. Development of Liveworksheet Web-Based E-LKPD Learning Media that the researchers designed was declared valid, feasible, and practical to use after material, media, and language validation by validators Winda Melandari, M.Pd, Joni Andra, S.Pd.M.T and Ermaweni, S.Pd, with the initial results of an average percentage of 80.1%. Then, they made product improvements based on expert advice and input, thus obtaining an average percentage increase of 94.8%, which means it is very valid/proper. This result illustrates that the increase in the initial to the final stage was 14.7% by the expert. The results of the E-LKPD product that was developed, obtained the results of a student response questionnaire from 28 students with a final result of 95% with the criteria of "very strong" so the product was declared practical.

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