

Development of Electronic Student Worksheets for Fifth Grade Elementary School Students

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Abstract: This study aims to (1) analyze the need for the development of E-worksheet for fifth-grade elementary school students, (2) analyze the design of E-worksheet for fifth-grade elementary school students, (3) analyze the feasibility of E-worksheet for fifth-grade elementary school students, (4) analyze the effectiveness of E-worksheet in improving the ability of learning outcomes for fifth-grade elementary school students. This research is development research using the ADDIE development method. The research was conducted on fifth-grade students at SDN 2 Jojo, SDN 1 Jojo, SDN 3 Adiwarno, and SDN 3 Jojo. Qualitative data collection techniques through documentation, interviews, and observations, while quantitative data collection techniques through tests and questionnaires. Data analysis techniques used validity test, reliability test, normality test, homogeneity test, n-gain test, independent t-test. E-LKPD material Pancasila in my life contains CP, TP, instructions for use, apperception, material, video, practice questions, evaluation, and developer profile. The results of media expert validation obtained a score of 3.39 with very feasible criteria, material experts obtained a score of 3.55 with very feasible criteria, and linguists obtained a score of 3.88 with very feasible criteria.. The n-gain result of the experimental class is 0.64 while the control class is 0.49 so that the learning outcomes of the experimental class have increased higher than the control class. The conclusion in this study is that the E-worksheet of Pancasila material in my life is effectively used in fifth grade elementary school students in the Ki Hajar Dewantara.

Keywords: Teaching Materials, E-Worksheets, Pancasila in my life

1. Introductions

Education is a learning process that aims to develop the potential of students, therefore it is the duty of an educator to help the understanding of each student to achieve quality results. Learning in this modern era demands students' activeness and critical thinking skills. Learning is no longer teacher-centered but learner-centered. Learner-centered learning makes learning more meaningful and fun. The character of learning in the 21st century commonly called 4C consists of critical thinking, creativity, collaboration and communication. Through the learning process at school, it is expected to train students to explore their abilities and skills in searching, processing, and assessing various information critically (Susanti, 2019).

The problem that occurs in the Pancasila Education learning process is that during learning students use worksheets obtained from school but the worksheets used have not optimally developed students' critical thinking. A teacher plays an important role in forming learners to plan, complete and initiate learning (Shokib, 2022). This can be seen from every time the teacher explains during learning, students do not feel motivated or have no interest in the material being taught, so they tend to passively listen to the teacher's explanation and take notes. Teaching materials used by teachers are only in the form of package books and Worksheet modules, lack of availability of teaching materials that support learning, teachers have never developed interactive teaching materials especially for learning Pancasila Education, students have difficulty in understanding and developing the concept of Pancasila Education learning material due to lack of teaching materials, the completeness of student learning outcomes in Pancasila Education learning is relatively low. Based on these observations, teachers must design an interesting and meaningful learning to solve problems related to the difficulty of students in understanding and practicing Pancasila material in my life. One thing that can be done is to use teaching materials in the form of Student worksheets. Student worksheets that are generally used in schools are printed Student worksheets Kholifahtus et al., (2021).

Facts in the field, student worksheets used so far have not been presented innovatively. Usually, many students' worksheets are monotonous and unattractive because there are no pictures and colors so that students' desire to learn is lacking (Wulandari et al., 2021). To increase students' interest in learning, teachers must be more creative in designing student worksheets. Therefore, there is a need for innovation by changing printed student worksheet products into electronic student worksheets. Electronic student worksheets are in the form of learner practice sheets that are done digitally within a certain time span (N. Yulaika et al., 2022). The advantages of electronic learner worksheets are that they can simplify and narrow space and time so that learning becomes more effective. In addition, electronic student worksheets can be an interesting tool when students' interest in learning decreases Suryaningsih et al., (2021).

Research on electronic student worksheets has been conducted by several previous researchers. Research conducted by (Pribadi et al., 2021) showed significant results in achieving understanding of fraction material so that the GEBEKA Electronic-Learners' Worksheet is suitable for use as a medium for learning fractions for grade IV elementary schools. Research conducted by (Kholifahtus et al., 2021) shows that HOTS-based E-LKPD is feasible and has met the criteria for use in learning. In line with (Shalahuddin, 2022) shows that the development of contextual-based E-LKPD with liveworksheets media on class VIII circle material is valid and feasible to use as a learning media that can be used to develop students' concept understanding.

Research conducted by (Fitriyah, 2021) shows the results of student responses to the use of this android-based electronic student worksheets show very good criteria. The development of HOTS-based electronic student worksheets using Quizziz conducted by (Baihaki et al., 2021) shows that the validity test of the development of electronic student worksheets obtained an average value of all aspects (V_a) of 3.28 which meets the valid criteria. Research conducted by (Nursyamsiana, 2023) shows the results of Problem Based Learning-based electronic student worksheets research are considered very feasible so that they can be used by students as one of the electronic teaching materials in studying the material of obligations and rights towards living things and the environment. Meanwhile, research conducted by (Agustin et al., 2023) shows the results that Pear Deck-based Google Slide E-LKPD is feasible to use in learning mathematics and can make students' learning activities fun.

Based on the above background, the researcher is interested in conducting development research with the title "Development of Electronic Student Worksheets for Fifth Grade Elementary School Students".

1.1 Conceptual Framework

There are several teaching materials that can be used in the learning process, one of which is by using Learner Worksheets. One of them is by using the Learner Worksheet. Learner Worksheet is a learning resources in the form of sheets of tasks, instructions, learning evaluations that must be done by participants. instructions, learning evaluations that must be done by students (Pawestri, 2020).

According to (Andriyani et al., 2020), student worksheet are sheets containing tasks that must be done by students, usually containing instructions or steps to complete a task. student worksheet that are prepared can be designed and developed in accordance with the conditions and situations of learning activities that will be faced. According to (Khairunisa et al., 2020) Learner Worksheets contain a set of basic activities that must be carried out by students to maximize understanding in an effort to form basic abilities in accordance with the achievement indicators taken. Meanwhile, according to (Andriana et al., 2020) Learner Worksheets are part of the teaching materials used by teachers and students in teaching and learning activities. Through the use of student worksheet, students will get direct experience through their practical activities. Providing direct experience to students will make it easier for students to understand and remember material.

Electronic student worksheets is in the form of student practice sheets that are done digitally within a certain time span (N. Yulaika et al., 2022). According to (Kholifahtus et al., 2021) Electronic Learner Worksheets are internet-assisted learning tools (student worksheets) that are systematically arranged in certain learning units presented in an electronic format that can display videos, images, text and questions that can be automatically assessed.

Liveworksheet is a medium that can be designed by teachers that functions as a worksheet or student exercise by utilizing the features in the liveworksheet application such as video, MP3, images that can increase student attractiveness when learning or doing assignments or exercises (Yulisma, 2023). According to (Annida et al., 2022) the liveworksheet application is an application that is served by the Google search engine for free. This application makes it easy for teachers to create interactive online exercises, which initially the worksheet is in traditional printable form (document, pdf, jpg, or PNG), as well as automatic correction. Learners can work on their worksheets and send their answers to the teacher online.

(Hariyati, 2022) argues that liveworksheet is a site that can be used by teachers to apply various types of problems using varied videos, images, audio. Electronic student worksheet using the liveworksheet website is one of the electronic assisted media in which there are text, images, animations, and videos that are more effective so that students do not get bored quickly and the learning process becomes more interesting (Khikmiyah, 2021).

Liveworksheet is one of the websites that can be used to create and use E-LKPD for free. The use of the liveworksheet website is very beneficial, because with liveworksheet teachers can create their own interactive electronic student worksheet. In addition, liveworksheet is also easy to use for students. Learners can work directly on the electronic student worksheet on their respective cellphones and the score of the students' work will automatically appear on the students' worksheets (Supriatna et al., 2022). Based on the opinions expressed, it can be concluded that liveworksheet is a service provided by Google in the form of a website that can be accessed for free and allows teachers to design their own electronic student worksheet according to the needs of their students.

Learning outcomes can be explained by understanding the two words that make up them, namely "results" and "learning". The notion of result (product) refers to an acquisition resulting from the implementation of an activity or process and produces functional changes. Learning is carried out to seek changes in behavior in individuals who learn. Changes in behavior obtained by students are a form of learning outcomes. According to Winkel in Purwanto, (2013: 45) explains that learning outcomes are changes that result in humans changing in their attitudes and behavior.

Nitko and Brookhart (2011: 497) state that learning outcomes are the results of student learning in the form of knowledge, skills and abilities. (Nizoloman, 2013) adds learning outcomes as the end result of students' learning experience. Tomal (2010: 82) explains "Achievement tests are standardized tests constructed by state or professional agencies" which means, learning outcome tests are standardized tests made by state or professional agencies.

1.2 Research Objectives

This study aims to (1) to analyze the need for the development of electronic student worksheets on the material of Pancasila in my life for fifth grade elementary school students in Gugus Ki Hajar Dewantara, (2) to develop the design of electronic student worksheets on the material of Pancasila in my life for fifth grade elementary school students in Gugus Ki Hajar Dewantara, (3) to analyze the feasibility of electronic student worksheets on the material of Pancasila in my life for fifth grade elementary school students in the Ki Hajar Dewantara, (4) to analyze the effectiveness of electronic student worksheets in improving the ability of learning outcomes of Pancasila material in my life for fifth grade elementary school students in the Ki Hajar Dewantara Cluster, Mejubo Kudus District.

2. Methodology

The development of electronic student worksheets material on Pancasila in my life uses research and development methods. Research and development method. The product developed in this research is electronic student worksheets. This research was conducted from April to August 2024. Observations were conducted from April to July 2024. Data collection activities were carried out from July to August 2014. This research and development uses the ADDIE method (Analysis Design Development Implementation Evaluations) method. The research was conducted on fifth grade students at SDN 2 Jojo, SDN 1 Jojo, SDN 3 Adiwarno, and SDN 3 Jojo. Data collection observation, while quantitative data collection techniques quantitative data collection techniques through tests and questionnaires. The research instruments used were interview guidelines, documentation, observation, validity questionnaire, student response questionnaire, and tests. student response questionnaire, and tests. The data analysis technique used validity test, reliability test, normality test, homogeneity test, n-gain test, independent t-test.

3. Findings and Discussion

Electronic student worksheets needs analysis was conducted through two activities, namely field studies and literature studies. Field studies were conducted by collecting data through interviews and electronic student worksheets needs questionnaires conducted with fifth grade teachers at SDN 2 Jojo, SDN 1 Jojo, SDN 3 Adiwarno, SDN 3 Jojo and fifth grade students of SDN 2 Jojo totaling 22 students and SD 1 Jojo totaling 12 students. The results of interviews with grade V elementary school teachers in the Ki Hajar Dewantara Mejubo Cluster, obtained the results that teachers in carrying out independent curriculum learning are still monotonous, meaning that they often use the lecture method and assignments. Teachers more often use printed student worksheets books as teaching materials rather than videos or powerpoints with LCD projector rocks. Even interactive electronic student worksheets have never been used. The student worksheets used by teachers is in accordance with the learning outcomes but not yet varied. Teachers are very enthusiastic if there are electronic student worksheets that can be used in learning. Most students experience difficulties in Pancasila Education subjects. One of the materials that are considered difficult in the material of Pancasila in my life, some students seem to have difficulty in understanding the historical chronology of the birth of Pancasila and the meaning of Pancasila values.

In addition to conducting interviews, researchers also conducted a needs analysis through a questionnaire. Based on the results of the questionnaire analysis of students' needs for electronic student worksheets, it states that the scope of Pancasila material in my life is too broad to be taught so that the material is difficult for students to understand, besides that the content of Pancasila Education is considered difficult by students. Students need electronic student worksheets in the material of Pancasila in my life, electronic student worksheets needed by students is electronic student worksheets that can be used independently by students and can be used through cell phones or laptops. Students also need electronic student worksheets that contain material accompanied by images, sounds, and videos so that students are interested in learning.

As another consideration, the researcher also distributed a needs questionnaire to teachers regarding the electronic student worksheets of Pancasila material in my life. Based on the teacher's needs questionnaire, it can be concluded that students still have difficulty in learning the material of Pancasila in my life, the teacher has used student worksheets in the material of Pancasila in my life but it does not motivate students to learn, the teacher also still relies on printed student worksheets, the teacher needs electronic student worksheets that can be accessed independently by students, in electronic student worksheets the teacher wants if it is presented coherently in which there are CP, TP, practice questions, evaluation. In addition, electronic student worksheets must also be inserted with images and videos that are relevant to the material presented and have bright colors.

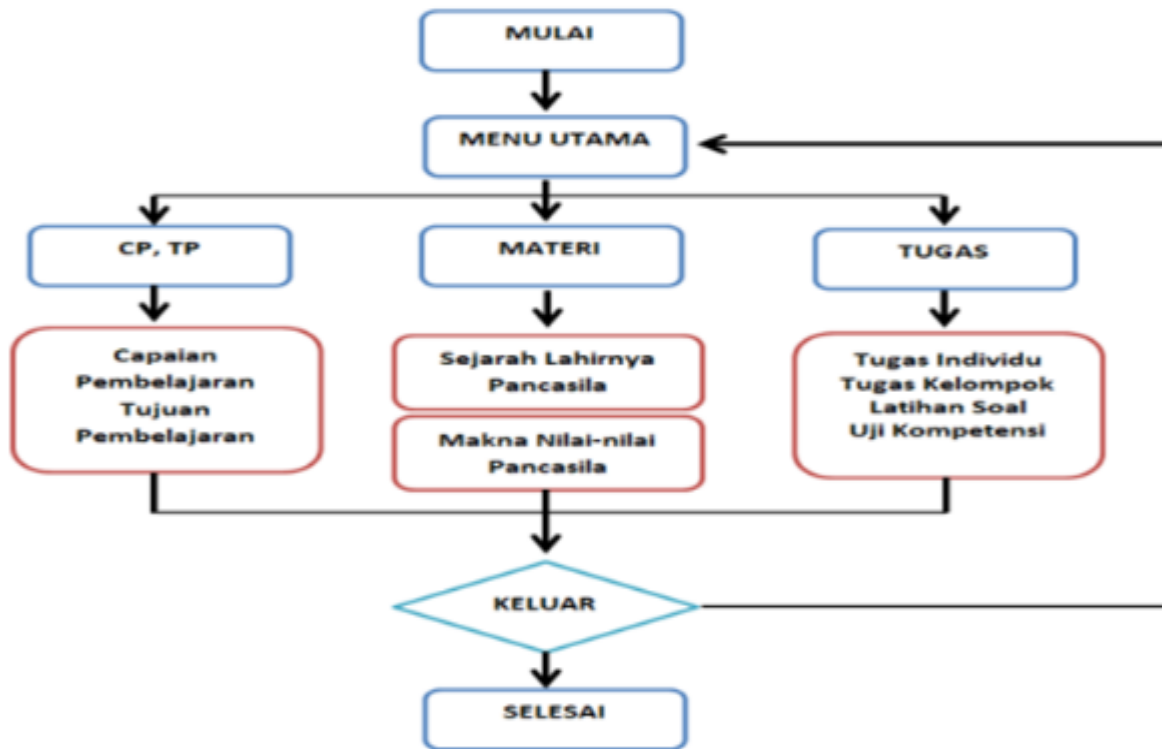


Figure 1. Flowchart electronic student worksheets

Next is making a media flow chart in the form of a flowchart. The flowchart-shaped electronic student worksheets flowchart was made to make it easier to design the electronic student worksheets. Flowchart or process flow is used by researchers to describe how the electronic student worksheets display flows from one scene to another.

The design stage is the third stage carried out by the researcher. At this stage, researchers developed the electronic student worksheets based on the flowchart that had been designed previously. The electronic student worksheets display and other image designs were made using Canva. Electronic student worksheets development is processed using liveworksheet.



Figure 2. Electronic student worksheets

The feasibility of electronic student worksheets of Pancasila material in my life that has been designed is then validated by experts to determine the feasibility of interactive media. designed is then validated by experts to determine the feasibility of interactive media. In this study, expert validators consisted of media experts, material experts, and linguists who were lecturers of Master of Basic Education at Muria Kudus University. lecturers of the Master of Basic Education at Muria Kudus University.

From the results of the validation, quantitative data is obtained, namely the average score from the validation sheet assessment and qualitative data in the form of expert comments and suggestions. and suggestions. Media expert validation obtained a score of 3.46 with very feasible criteria, material expert validation scored 3.55 with decent criteria, and linguist validation scored 3.88 with very decent criteria. linguists obtained a score of 3.88 with very decent criteria. This is supported by student response questionnaires that The student response questionnaire that gave an overall average score in the field trial was 3.68 with very decent criteria, and the teacher response questionnaire gave a score of 3.88 with very decent criteria. worthy, and the teacher response questionnaire gave an overall average score in the field trial of 3.67 with very feasible criteria. So, it can be concluded that the E-LKPD for Pancasila material in my life is feasible to use to improve student learning outcomes of fifth-grade elementary school students in Gugus Ki Hajar Dewantara Mejobo.

The results of this study are supported by Rahmi et al., (2023) getting an average validity test result of 0.79 with the category “Valid”, the effectiveness aspect with a value of 0.57 with the category “Moderate”, and the practicality test results with a value of 0.77 with the category “Practical”.

Testing the effectiveness of electronic student worksheets was conducted by conducting field trials in the control and experimental groups. Field trials were carried out in August 2024 at Gugus Ki Hajar Dewantara Elementary School. After carrying out field trials of electronic student worksheets in fifth-grade elementary school students in the Ki Hajar Dewantara Mejobo cluster, researchers obtained pre-test and post-test results for normality tests, homogeneity tests, n-gain, and t-tests to answer the hypothesis study.

The results of the normality test show that the sig value is > 0.05. From the criteria found, the pre-test and post-test value data in the control and experimental classes were declared normally distributed. The homogeneity test results were 0.556. The significance value is more significant than 0.05, so it can be concluded that the population has a homogeneous variant or the data comes from a population with the same variance.

Table 1. The results of the n-gain test of learning achievement tests

No	Class	Average		N-Gain	Category
		Pre Test	Post Test		
1.	Experimental	48,53	80,88	0,64	Medium
2.	Control	49,84	74,38	0,49	Medium

The n-gain for the control class was 0.49 in the medium category, while the n-gain for the experimental class was 0.64 in the medium category. From the n-gain results obtained, it can be seen that the n-gain in the experimental class is greater than the control class. So it can be stated that the learning achievement of students' Pancasila in my life material in the experimental class experienced a higher increase compared to the control class.

Table 2. Independent Samples Test

	Levene's Test for Equality of Variances		t-test for Equality of Means		Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% CI Lower	95% CI Upper
	F	Sig.	t	df					
Learning outcomes (Equal variances assumed)	.000	.995	-2.376	64	.020	-6.507	2.738	-11.978	-1.037

The significance value of the independent t-test for learning outcomes is less than 0.05, which is 0.020. This, it can be concluded that H_a is accepted and H_o is rejected, which means that there are differences in learning outcomes between students who take part in learning activities using electronic student worksheets compared to students who do not use electronic student worksheets.

This is in accordance with the research of Siregar, (2023) entitled “Development of Electronic Student Worksheets Based on A Scientific Approach for Students of MAN 2 Model Medan” which states that electronic student worksheets has been declared effective for improving student learning outcomes. This is reinforced by research Ni'mah et al., (2024) with the title “Electronic Learner Worksheet Based On Articulate Storyline 3 Place Value Material For Grade Ii Elementary School Learners” states that the use of electronic student worksheets in learning is said to be effective with the average post test produced, namely 92 and known N-gain (g) obtained from the average pre test and post test results of 0.79 in the >0.7 category with a “high” classification, so that the results of students' pre and post tests have increased significantly.

4. Conclusions and Recommendations

The study results show that electronic student worksheets are very much needed in learning. Electronic student worksheets contains learning outcomes, learning objectives, instructions for use, apperceptions, Pancasila material in my life, videos, practice questions, competency tests, and developer profiles. The validation results of media experts obtained a score of 3.46 with very feasible criteria, material experts got a score of 3.55 with very feasible criteria, and linguists got a score of 3.88 with very feasible criteria. Student and teacher response questionnaires obtained scores of 3.68 and 3.67, with all very feasible criteria. The n-gain result of the experimental class was 0.64, while that of the control class was 0.49, so the practical class's learning achievement experienced a higher increase compared to the control class. The significance value of the independent test is less than 0.05, which is equal to 0.020, meaning that there is a difference between students who take part in learning activities using electronic student worksheets compared to students who do not use it. This study concludes that fifth-grade elementary school students in the Ki Hajar Dewantara Mejobo cluster used electronic student worksheets Pancasila in my life material effectively. This study suggests that students and teachers can use electronic student worksheets interactive teaching materials products.

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Conflict of Interest

The authors declare there is no conflict of interest.

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