Development of Electronic Student Worksheet Problem Based Learning Model Based on Articulate Storyline Application in Class IV SD Negeri 043935 Simpang Katepul School Year 2020/2021

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Abstract. The problem in this research is the unavailability of Electronic Student Worksheet that is able to attract the learning interest of fourth grade elementary school students. The purpose of this study was to determine the development process, feasibility and effectiveness of the Electronic Student Worksheet Problem Based Learning Model Based on the Articulate Storyline Application which was developed on Theme 6 Ideals - My Goals, Sub-theme 1 I and My Dreams, learning 1 Class IV SD Negeri 043935 Simpang Katepul School Year 2020/ 2021, based on the Expert (Validator) and product trial results. This research is development research (R&D) using the Borg and Gall model. The steps in this study are limited to 6 stages, namely: 1) Potential and Problems, 2) Data Collection, 3) Product Design, 4) Design Validation, 5) Design Revision, 6) Product Trial. Validation was carried out by material experts, design experts, educational practitioners and field trials. Based on the results of the validation of the Electronic Student Worksheet seen in the assessment of material experts, media experts and educational practitioner experts, the feasibility percentages were 94.2%, 80% and 75%, respectively. So the Electronic Student Worksheet developed was feasible to be tested. Based on the results of product testing, it can be seen that the value of students before using the Electronic Student Worksheet Problem Based Learning Model Based on the Articulate Storyline Application was 54.3% and after using the Electronic Student Worksheet Problem Based Learning Model Based on the Articulate Storyline Application was 77.6%. The results of students' answers in using the product have an average value above the minimum completeness criteria, which is 70, so it can be categorized as "Very Good". So it can be said that the Electronic Student Worksheet Model Problem Based Learning Based on Articulate Storyline Applications is effectively used in the fourth grade of elementary school. Based on the results of the description above, it can be concluded that the Electronic Student Worksheet Model Problem Based Learning Based on the Articulate Storyline Application which was developed on Theme 6 : My Dreams, Sub-theme 1 : Me and My Dreams, First Learning is suitable for use in the learning process of fourth grade students of SD Negeri 043935 Simpang Katepul School Year 2020/2021.

Keywords: Electronic Student Worksheet, Problem Based Learning

1 Introduction

In this day and age, technological developments have an impact on various fields, especially in the field of education. The development of technology is something that cannot be avoided anymore, because the development of technology will run in accordance with the progress of science. Through the use of technology in the field of education, it can have a good impact such as making it easier for students to understand the material presented by the teacher, the number of learning resources that students can use and the learning process more enjoyable.

Learning is a process of conveying thoughts by teachers to students, it can be said that it is a combination of teaching in the context of teachers and learning in the context of students. According to Priansa [1] learning is essentially a process of interaction between teachers and students, and the environment around them, in which there are efforts to improve the quality of students themselves to be better than before. In the current condition, learning is strongly influenced by the development of technological results that can be used as learning needs. Learners are positioned as learning subjects who plays a major role so that students are required to be fully active in learning learning materials.

Development technology require the teacher Keep going create new innovations so that the learning process runs effectively, namely by utilizing technology in making learning tools including the learning implementation plan (RPP). RPP has several components and specifications, one of the elements contained in the RPP is a learning resource. Learning resources can be in the form of student worksheets. The student worksheet is a device that can facilitate teaching and learning activities so as to form an effective interaction between students and teachers.

Innovation in utilization the technology in the learning device is an electronic student worksheet. Electronic student worksheet is a student worksheet that can display simulations by combining video, images, animation, text and navigation so that learning is more interesting and fun. The existence of innovative and creative electronic student worksheet will make students curious about the contents of each the page. so that students will be addicted to learning.

In accordance with research conducted by Hidayah in 2020, it is necessary to develop teaching materials in the form of electronic student worksheet. Overall, students gave the opinion that the electronic student worksheet developed was interesting and easier to learn. Students also provide suggestions for more similar electronic student worksheet developments so that online learning can be more effective and increase students' enthusiasm for learning.

Based on an initial interview on February 1, 2021, with a fourth grade teacher at SD Negeri 043935 Simpang Katepul, the existing Student Worksheets still tend to contain only questions. Student Worksheet does not yet have interesting pictures and steps in working on assignments, so students cannot find meaningful learning experiences. The learning model in the student worksheet also has not applied the model Problem Based Learning (PBL). Model Problem Based Learning (PBL) is learning which using real (authentic) problems that are open so that students can develop new knowledge and think critically.

Based on the initial observation of the results of the daily test on Theme 6 My Dreams, Sub-theme 1 Me and my Dreams that student learning outcomes are still low can be seen from the following table.

Table 1. Students' Daily Test Values Class IV Sub-theme 1 Me and My Dreams SD Negeri 043935 Simpang Katepul

Minimum Completeness Criteria	Score	Student	Percentage
	<70	16	53,3%
	>70	14	46,7%
	Amount	**30**	**100%**

Based on the table above, it is known that the minimum completeness criteria value at SD Negeri 043935 Simpang Katepul in class IV is 70. With students who do not reach the minimum completeness criteria as many as 53.3%, while students who achieve the minimum completeness criteria are 46.7%. So it can be concluded that student learning outcomes in Sub-theme 1 me and my dreams are still low. The low student learning outcomes can occur because students do not understand the material taught by the teacher.

Online learning is also one of the factors for low student learning outcomes. This is in accordance with the researcher's initial observation that teachers still use student worksheets which only contains questions and does not have interesting pictures. So that students find it difficult to understand learning.

2 Method

The research was conducted at SD Negeri 043935 Simpang Katepul, Jalan Katepul No. 42b, Kabanjahe District, Karo Regency, North Sumatra Province. Time The research was carried out in the secound semester of the 2020/2021 academic year. Class IV SD Negeri 043935 Simpang Katepul totaling 30 students. With the number of male students 17 people and the number of female students is 13 people. Due to the current state of the Covid-19 pandemic, the subject of this study is limited to 15 students in order to comply with the applicable health protocols. This type of research is development research. The research method used is the method Research and Development (R&D).

Borg and Gall (Sugiyono [2]) say that (R&D) is a research method used to develop or validate products used in education or learning. The product to be developed is the Electronic Model Student Worksheet. Problem Based Learning Application Based Articulate Storyline and test the eligibility of the electronic student worksheet. In general (R&D) is longitudinal (some steps). For needs analysis research so as to be able to produce a product, namely the electronic student worksheet Model Problem Based Learning. Furthermore, to test the feasibility of the product that has been made, it is carried out action research. After the product testing process it can be published.

Step by step study and development (R&D) referred to from Borg and Gall (Sugiyono) there are 10 stages, namely: 1) Potential and problems, 2) Data collection, 3) Product design, 4) Design validation, 5) Design revision, 6) Product trial, 7) Product revision, 8) Usage trial, 9) Product revision, 10) Mass production.

The data collection techniques used are as follows:

a. Interview There are several techniques in data collection including interviews

According to Sugiyono as a data collection technique if the researcher wants to conduct a preliminary study to find problems that must be investigated, and also if the researcher wants to know things from respondents who are more in-depth, and the number of respondents is small. In this study, researchers conducted interviews with fourth grade teachers at SD Negeri 043935

Simpang Katepul. The aim of the researcher was to conduct interviews with fourth grade teachers to find out the learning process and the use of teaching materials in this case the student worksheet used by classroom teachers. In In the interview, the researcher also tried to find out the characteristics of the students in order to create an electronic student worksheet that was in accordance with the characteristics of students in class IV at SD Negeri 043935 Simpang Katepul.

b.   Questionnaire according to Sugiyono

Questionnaire is a data collection technique that is done by giving a set of questions or written statements to respondents to answer. Questionnaires are given to determine the needs of teachers and students on student worksheet. Also, a questionnaire will be used to determine the quality of the material that has been developed in the electronic student worksheet. With this questionnaire, researchers can get input so that they can according to Interview Sugiyono used revise the electronic student worksheet product that has been made.

c.   Test In this research will be carried out pretest and posttest which aims to measure student achievement before and after the use of the developed electronic student worksheet.

The type of test that will be used is multiple choice. The test will be used by researchers for additional information in revising the electronic student worksheet. On pretest will be given to students before using the electronic student worksheet. Whereas posttest will be given to students after using the electronic student worksheet.

The data analysis technique used in this research is in the form of quantitative data analysis and qualitative data analysis. Qualitative data analysis is data obtained from interviews, as well as validator comments from the questionnaire given. Meanwhile, quantitative data analysis is data obtained from research results using a scoring scale. The data analyzed were in the form of feasibility instrument data from material experts, design experts, education practitioners and test experts.

The technique used to analyze the validation results of the electronic student worksheet is quantitative data analysis by looking at the results of the validator questionnaire data analysis. The results of the electronic student worksheet validation data score calculated based on the Likert scale (score criteria 1 to 4) can be seen in table 2.1below:

Table 2. Item Answer Criteria Validation Instrument

No	Answer	Score
1	Very Worthy	4
2	Worthy	3
3	Decent Enough	2
4	Less Worthy	1

To increase effectiveness in data collection. First, the test instrument test results are carried out learn to know the validity of the test. According to Sugiyono, the research results are valid if there are similarities between the data collected and the data that actually occurs in the object under study.

3   Result and Discussion

This study uses development research (Research and Development) and the development model used is the Borg and Gall model in Sugiyono. The results of the development carried out are the electronic student worksheet Model Problem Based Learning Application Based Articulate Storyline on Theme 6 My Dreams, Sub-theme 1 Me and My Dreams, Learning 1 Class IV SD Negeri 043935 Simpang Katepul FY 2020/2021.

In this study, the researcher limits the steps of developing the Borg and Gall model in Sugiyono into 6 steps, namely: 1) Potential and Problems, 2) Data Collection, 3) Product Design, 4) Design Validation, 5) Design Revision, 6) Trial Product. At this stage the researchers looked for potentials and problems that occurred in SD Negeri 043935 Simpang Katepul related to the use of student worksheet in the learning process. At this stage the researchers conducted initial observations by interviewing fourth grade teachers at SD Negeri 043935 Simpang Katepul about the learning process.

Based on these initial observations, researchers found the potential that students had resources in the form of: WL android that can be used in the learning process and the problems found are related to student worksheet in learning, where student worksheet is less innovative, so it is necessary to develop student worksheet used by teachers as teaching materials. So that students find a meaningful learning experience. After finding the potential and problems that exist in the next SD researcher collect information that will used to take advantage of existing potential and overcome problems related to student worksheet in the learning process.

At this stage the researcher collects relevant theories for the student worksheet product to be developed, the technology used in making electronic student worksheet, determine material learning that will be used, interesting learning resources and making lesson plans. After gathering the required information. Next, make the initial product with the design you want to make. Products designed using various sources of books and other sources. The steps are: 1) Determining basic competencies and indicators, 2) Compiling the contents of the electronic student worksheet material, 3) Loading pictures and illustrations that match the content of the material and attract students' interest in learning, 4) making interesting activity sheets.

At the stage of compiling materials and activity sheets adjusted to the level of development of students, namely grade IV SD. The material is taken from Indonesian subjects, namely the Characteristics of Poetry and Poetry Content, Science, namely the Cycle of Living Things. The material designed is adapted to the environment around students to make it easier to understand the learning material.

Validation test assessment Electronics student worksheet for educational practitioners will be held on May 7, 2021. As for the validators for educational practitioner's electronic student worksheet is a fourth-grade teacher at SD Negeri 043935 Simpang Katepul, namely Mr. Edi Suranta Singarimbun, S.Pd. Aspects that are validated are aspects of material content, aspects of material presentation, technological aspects and language aspects.

The results of the expert validation of education practitioners can be seen as follows: 1) The aspect of material content gets a score of 12 out of a maximum score of 16, with an eligibility percentage of 75%. 2) The material presentation aspect got a score of 11 out of a maximum score of 12, with a feasibility percentage of 91.6%. 3) The technology aspect got a score of 6 out of a maximum score of 8, with a feasibility percentage of 75%. 4) The language aspect got a score of 10 out of a maximum score of 12, with an eligibility percentage of 83.3%. Based on the scores of the four aspects, a total score of 36 was obtained from a maximum score of 48, with a feasibility percentage of 75% and included the criteria for testing without revision.

Based on the assessment by experts, it can be seen that the percentage of material experts before the revision was 86.5% and after the revision was 94.2%. Design experts have a percentage of 68.3% before the revision and 80% after the revision. In expert education practitioners have a percentage of 75% without revision. Based on this information, the results after the revision of the electronic student worksheet are feasible to be tested. The following is a tabulation diagram of the expert validation results on the Electronic Student Worksheet.
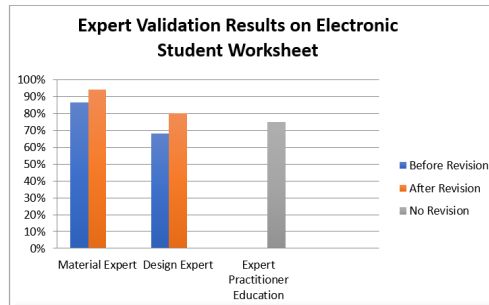
Fig 3. Tabulation Diagram of Material Experts, Design Experts and Experts Education Practitioner

4 Conclusion

The research conducted is research on the development of the electronic student worksheet model Problem Based Learning Application Based Articulate Storyline on Theme 6 My Dreams, Sub-theme 1 Me and My Dreams, learning 1, with content, namely material and activity sheets equipped with pictures and videos. So that students feel interested and easier to understand the material presented in the electronic student worksheet. Based on the results of the feasibility analysis which is known through the validation stage of material experts, design experts and educational practitioners, the percentage scores are 94.2%, 80% and 75%. The average obtained from the results of the validation of experts is 83.06% with the "Very Eligible" criteria. From the three experts, it is known that the material and design criteria are feasible used in the learning process, especially in Theme 6 of My Dreams, Sub-theme 1 of Me and My Dreams, Learning 1.

Based on the results of the analysis of the effectiveness of the electronic student worksheet conducted through product trials, it shows that the value of students before using the electronic student worksheet Model Problem Based Learning Application Based Articulate Storyline by 54.3% and after using the electronic student worksheet Model Problem Based Learning Application Based Articulate Storyline to 77.6%. The results of students' answers in using the product have an average value above the minimum completeness criteria, which is 70, so it can be categorized as "Very Good". Based on the information above, it can be said that the electronic student worksheet Model Problem Based Learning Application Based Articulate Storyline effectively used in grade IV SD.

References

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