Development of Digital Student Worksheets to Improve Self Learning Students in History Subjects for Class X SMA Negeri 5 Binjai

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Abstract. This research is motivated by the lack of self learning student and low learning outcomes in history learning at school. The purpose of this research is to produce a digital student worksheet that is feasible and effective to improve self learning students in history subjects for class X SMA Negeri 5 Binjai. The development procedure used in this research is the development model from Borg and Gall and the instructional design step from Dick and Carey which is divided into 4 stages including the needs analysis stage, product design stage, validation and evaluation stage, and the final product stage. To see the effectiveness of the digital Student Worksheet, it can be analyzed through normality tests, homogeneity tests and hypothesis testing. The results of product validation show a percentage score of 90% for media expert validation, 98% for material expert validation and 96.18% for student response results. The results of the normality and homogeneity test showed that the research data had been declared normal and homogeneous. The results of the hypothesis test show that the t_{count} value is 3.03 and the t_{table} value is 1.99, where the $t_{count} > t_{table}$. The results of this study indicate that the Digital Student Worksheets is effective to improve self learning students for class X SMA Negeri 5 Binjai.

Keywords: digital worksheets, self learning, history subject.

1 Introduction

The development of science and technology today has become an inseparable unit. All areas of life in this world are directly affected by this change, including the field of education. Education is a pioneer in realizing human resources according to the progress of the times. In learning history at school, the same thing applies, where this learning contains meaningful value for students in responding to everyday life in society and the future.

Learning the history component with a stimulus in the form of history teaching materials can foster student motivation in learning and create responses in the form of expertise in conducting research and describing history in written form. The ability to research and describe history in written form can be seen by measuring cognitive aspects which include multiple choice tests and historical research assignments. Measurement of historical research consists of aspects of knowledge, aspects of theoretical understanding, and implementation of historical

ICoSTA 2022, November 01-02, Medan, Indonesia

DOI 10.4108/eai.1-11-2022.2326187

methods.[1] Good interpretive ability includes learning concepts and material components will also help the success of implementing the 2013 Curriculum. Therefore, professional educators are required to be able to determine teaching materials that can trigger motivation, learning independence and student understanding in teaching and learning activities.

Student Worksheets are one of the choices of teaching materials that can be used by students because they can increase student's information about the concepts of the material to be studied and have been structured in a structured manner. The role of the Student Worksheet is that it can reduce the teacher's role in teaching but does not eliminate the activity of students.[2] Therefore, to encourage students interest in learning, teachers can design and produce worksheets that are more systematic, visually graphic, and contain good material to attract students attention in learning history in class.[3]

Based on the results of observations at SMA Negeri 5 Binjai, the student worksheet currently circulating is still simple in the sense that it does not lead to the student's work process. This causes the use of student worksheet at SMA Negeri 5 Binjai to decrease and the impact on self learning and student learning outcomes also decreases. In improving learning outcomes, it is necessary to be independent in learning so that students can face problems both inside and outside the classroom.

However, these different characteristics make them have a different enthusiasm for learning. To overcome these differences, it is recommended to use the correct learning method in order to increase student learning motivation. One of the characters that can be generated from using the right method is the creation of independence in students. Self learning is a process that supports students with the aim of organizing student's thoughts, emotions and behavior in guiding the learning experience. This occurs when the intended behavior of students leads to information that has been obtained or the expertise possessed. [4]

Therefore, digital Student Worksheets are provided as a solution to these problems. Digital teaching materials are teaching materials that contain content that includes in the form of audio, audio-visual, or interactive multimedia. Examples of electronic teaching materials are digital worksheets, e-books, e-magazines, interactive multimedia, and others. Digital Student Worksheets are teaching materials in electronic form that are enjoyed by teachers through tools such as computers, cellphones, etc. that can access PDF programs and can allow teachers to design very interesting teaching materials without considering the cost. Digital Student Worksheets are worksheets that are designed to suit student's personalities, can be accessed offline or online by students and their components are similar to the Student Worksheets display design in general. [5]

Digital worksheet uses the discovery learning method in its teaching and learning activities. Discovery learning is teaching that emphasizes situational concepts. The discovery learning process includes the information process, the transformation process and the evaluation process.

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[1] Maposa, M., & Wassermann, J. Conceptualising historical literacy-a review of the literature. *Yesterday and Today*, (2009), 4:41-66.

[2] Anggraini, R., Wahyuni, S., & Lesmono, A. D. Development of Process Skills-Based Student Worksheets at SMAN 4 Jember. *Physics learning journal*, (2016), 4(4):350-365.

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[4] Roberts, E. D., Tadlock, J., & Zumbrunn, S. Encouraging self-regulated learning in the classroom: a review of the literature. (*Metropolitan Educational Research Consortium*, 2011)., pp. 4

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During the information processing phase, students receive knowledge about the content to be studied. In this session, students encode the information they receive. [6] Discovery learning is a learning process in which the presentation of the material is incomplete and requires the active participation of students in obtaining concepts or methods that have never been discovered. [7]

Discovery learning can familiarize students with being active and able to think innovatively and creatively, so that learning in class is not only based on the teacher, but also on student activity.[8] The advantage of discovery learning is that it arouses students' curiosity and is not fixated on memorizing because in its application it directly practices the existing concepts and principles, so that students are easier to understand and remember learning in the long term.[9] Meanwhile, the weakness of the discovery learning method is that it requires students to be mentally prepared and mature, because students must have the ability and ambition to study their environment.[10]

Based on the above background, the authors are interested in conducting a research entitled "Development of Digital Student Worksheets to Improve Self Learning Students in History Subjects for Class X SMA Negeri 5 Binjai".

2 Research Methods

The research method used in this study is the Research and Development method. The purpose of this research method is to create a product, validate its feasibility and see the effectiveness of the product being developed. The development procedure used in this research is the procedural steps that must be taken in developing and creating a product. There are 4 stages of development in this research. The researcher adjusted the Borg and Gall development model and the instructional design steps of Dick and Carey as follows:

1. Needs analysis phase. This stage contains a review of the objectives of the digital student worksheets product that has been created. In addition, this stage also contains the process of analyzing the existing curriculum in schools in order to determine products that are in line with the applicable curriculum.
2. Product design stage. The design of this product is displayed in the form of a picture or chart, it aims to be a guide for measuring and making it.
3. Validation and Evaluation Phase. This stage contains a series of product development validation processes that have been developed. The validation process in the initial design is carried out by asking experts who are already competent in their fields to assess the products that have been made. While the results of the evaluation, namely

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[6] Suprijono. *Model-model Pembelajaran*. (Jakarta: Gramedia, 2011), pp. 12

[7] Salmi, S. Penerapan Model Pembelajaran Discovery Learning Dalam Meningkatkan Hasil Belajar Ekonomi Peserta Didik Kelas XII IPS 2 SMA Negeri 13 Palembang. *Jurnal PROFIT: Kajian Pendidikan Ekonomi dan Ilmu Ekonomi*, (2019), 6(1):1-16.

[8] Qodariyah, L., & Hendriana, H. Mengembangkan Komunikasi dan Disposisi Matematik Siswa SMP melalui Discovery Learning. *Edusentris*, (2015), 2(3):241-252.

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expert advice is used to improve products that have been validated. After this process, the product testing phase is carried out.

4. Final Product Stage. This stage aims to create a final product in the form of a revised Digital Student Worksheets based on suggestions from the expert validation stage or student responses.

3 Results and Discussion

3.1 Result and Discussion of Feasibility Test Assessment

This development research has the ultimate goal of creating a product in the form of a digital Student Worksheet that can be used as teaching material for Indonesian history in class X SMA. The development of this learning product includes the validation stage of material experts, media experts and student responses.

Table 1 . Results evaluation validator Theory

No	Components Rating	Score (%) _
1.	Content Aspect	98.57%
2.	Language Aspect	96.66%
	Score total (∑)	98%

Based on the data in table 1, it was found that the material expert's assessment of this Digital Student Worksheets from the aspect of content feasibility obtained a percentage score is 98.57%. Then from the language aspect, the percentage score is 96.66%. The percentage of the average score from the material expert's assessment in terms of all aspects is 98%.

Table 2 . Results evaluation validator media

No	Component Evaluation	Score (%)
1.	Display Aspect	96.66%
2.	Aspects of Ease of Use	94%
3.	Graphic Aspect	73.33%
4.	Serving Aspect	92.5%
5.	Aspects of Student Worksheets Content Design	90%
	Score total (∑)	90%

Based on the data in table 2, it was found that the media expert's assessment of this Digital Student Worksheets from the aspect of display feasibility obtained a percentage score of 96.66%. The ease of use aspect obtained a percentage score of 94%. Aspect of graphics obtained percentage score that is 73.33%. The aspect of serving is obtained by a percentage score of 92.5%. Then the design aspect of the Student Worksheets content obtained a percentage score of 90%. The percentage of the average score from the assessment of media experts in terms of all aspects is 90% which belongs to the "very good" criteria.

Table 3 . Results evaluation student feedback

No	Component Evaluation	Score (%)
1.	Content Aspect	93.33%
2.	Aspects of Media Use	96.69%
	Score total (∑)	96.18%

Based on the data in table 3, it is found that the results of the limited field trial assessment of this Digital Student Worksheets from the aspect of content feasibility, the percentage score is 93.33%. Then the aspect of using the media obtained a percentage score of 96.69%. The percentage of the average score from individual trials in terms of all aspects is 96.18% which belongs to the "very good" criteria.

Figure 1. Cover and Contents of Digital Student Worksheets

3.2 Result of Product Effectiveness

1. Normality test

This normality test phase is carried out with the aim of determining whether the research data that has been obtained can be declared normally distributed or not normally distributed. This test uses the Liliefors test, namely L_{count} and L_{table}. The results of this normality test can be seen in table 4 as follows:

Table 4 . Normality Test Results

No.	Data	Class	L_{count}	L_{table}	Conclusion
1	Pretest	Experiment	0.119	0.157	Normal
2	Pretest	Control	0.096	0.157	Normal
3	Posttest	Experiment	0.112	0.157	Normal
4	Posttest	Control	0.107	0.157	Normal

2. Homogeneity Test

This homogeneity test phase is carried out with the aim of determining whether the research data that has been obtained has a homogeneous or non-homogeneous variance. This test uses the F test, namely F_{count} and F_{table}. The results of this homogeneity test can be seen in table 5 as follows:

Table 5 . Results Test Homogeneity

No.	Data	Class	F_{count}	F_{table}	Conclusion
1	Pretest	Experiment	1.11	1.84	Homogeneous
2	Pretest	Control			
3	Posttest	Experiment	1.08	1.84	Homogeneous
4	Posttest	Control			

3. Hypothesis testing

Digital Student Worksheets can be said to be effective if student learning outcomes have increased. The effectiveness of the Digital Student Worksheet can be seen from the t-test on the pretest and posttest scores and is also guided by the predetermined minimum completeness criteria value. If there is an influence on the results of the t test, both pretest scores and posttest scores, it can be stated that Digital Student Worksheets are considered effective or the use of Digital Student Worksheets in Indonesian history subjects is effective in improving Indonesian history learning outcomes in class X SMA. After being declared normal and homogeneous, a similarity test of the two averages (t test) is carried out, as shown in table 6 as follows:

Table 6 . Hypothesis Test Results

Test	t count	t table	Information
Pretest Stage	3.03	1,99	There is a difference
Posttest Stage			

4 Conclusion

Based on the research data above, the authors can conclude that the Digital Student Worksheet can be said to be feasible and effective in improve self learning and learning outcomes for history subject in class X SMA Negeri 5 Binjai. The results of the feasibility are shown by the assessment of the validation questionnaire, namely the validation questionnaire by material experts who scored 98%, media expert validation got a score of 90%, and student response questionnaires scored 96.18%. As for the effectiveness, the results of the hypothesis test show the acquisition of the value of t_{count} that is 3.03 and the value of t_{table} that is 1.99, where the value of $t_{count} > t_{table}$. The results of this study show that Digital Student Worksheet effective in improving student learning outcomes in class X SMA Negeri 5 Binjai.

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