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Development of Canva For Education Based Science Learning Media in Phase D of the Independent Curriculum

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ABSTRACT

The low quality of learning in schools so far requires creative learning media for students, so it is necessary to develop Canva For Education Based Science Middle School Science Learning Media in the Merdeka Curriculum Phase D Class VII at SMPN 3 Siau Timur." Where one of the main principles in implementing the independent curriculum sis the availability of various digital-based learning applications. The data analysis technique used is the validity and reliability test for the instrument questions, the average difference test in this case the paired sample test which is preceded by a normality test, the percentage of response questionnaires using a Likert scale. These data are then analyzed qualitatively descriptive and description of the learning process both before using and after using learning media based on Canva For Education. The results are based on data in large group trials, it can be concluded that students gave a positive response to the product produced in a very strong category and a percentage value of 96.6% means that this product is feasible and effective for use in

learning. So based on the results of the research, it can be concluded that the Science Learning media based on Canva For Education in Phase D of the Independent Curriculum produced is good and suitable for use in the learning process. Science Learning Media based on Canva For Education in Phase D of the Independent Curriculum can improve student learning outcomes. 6% means that this product is feasible and effective for use in learning. So based on the results of the research, it can be concluded that the Science Learning media based on Canva For Education in Phase D of the Independent Curriculum produced is good and suitable for use in the learning process. Science Learning Media based on Canva For Education in Phase D of the Independent Curriculum can improve student learning outcomes. 6% means that this product is feasible and effective for use in learning. So based on the results of the research, it can be concluded that the Science Learning media based on Canva For Education in Phase D of the Independent Curriculum produced is good and suitable for use in the learning process. Science Learning Media based on Canva For Education in Phase D of the Independent Curriculum can improve student learning outcomes.

A. Introduction

The condition of education in Indonesia before and after the pandemic required recovery in the learning process. Data obtained from the Ministry of Education, Culture, Research and Technology released in March 2022 states that learning loss has occurred for five to six months in terms of the quality of learning in schools. This data corresponds to the conditions in the field after the Minimum Competency Assessment was carried out at Junior High Schools in August which resulted in regional education report cards, especially in the Siau Tagulandang Biaro archipelago district being in the low category. The same thing was experienced by SMPN 3 Siau Timur where the researcher served as a servant of the state where the results of the National Assessment report card as a whole the quality of learning was below the minimum competency.

The government continues to make recovery efforts, one of which is by issuingDecree of the Minister of Education and Culture of the Republic of Indonesia Number 719/P/2020 concerning Guidelines for Implementing Curriculum in Education Units in Special Conditions or what is known as the Emergency Curriculum(Ministry of Education and Culture, 2020).Where the purpose of implementing the curriculum in special conditions is to provide flexibility for educational units to determine a curriculum that fits the learning needs of students. Schools are given the flexibility to regulate the curriculum independently while still guided by the national curriculum framework.

Furthermore, the continuation of the emergency curriculum intervention was the birth of an independent curriculum whose aim was none other than to restore learning, and perfect the 2013 curriculum which was no longer in accordance with the conditions of civilization. The decision regarding the independent curriculum was stated inDecree of the Minister of Education, Culture, Research and Technology of the Republic of Indonesia Number 262/M/2022 concerning Amendments to the Decree of the Minister of Education, Culture, Research and Technology Number 56/M/2022 concerning Guidelines for Implementing Curriculum in the Framework of Learning Recovery.

This confirms that the pandemic condition has had a very significant effect on reducing the quality of learning in schools. Learning recovery needs to be done through the teacher's creative efforts in designing learning that can stimulate students' interest in learning again and also improve student learning outcomes. Education will be of quality if the implementation of learning occurs efficiently which includes learning objectives, teachers and students, teaching materials, learning models as well as learning media and evaluation(Rona Taula Sari, 2018).

Another consequence of the Covid-19 pandemic is the emergence of various internet technology-based learning platforms that teachers can use according to their individual needs, in order to reach each student to provide maximum and anticipatory learning services when distance learning occurs. The use of the internet and multimedia technology can change the way knowledge is conveyed and can be an alternative to learning in traditional classrooms.(Ismail Majid, 2021).

However, in reality, there is still apathy in schools towards changing paradigms in learning, teachers tend not to want to change, even though the Ministry of Education, Culture, Research and Technology has provided a special account for teachers with the learning.id domain which can be used to access all digital platforms on the giant search engine. named google. It is obvious that many teachers underestimated this, based on the results of interviews with East Siau N 3 Middle School teachers, where during the workshop on the implementation of the independent curriculum and at that time the researcher became a resource person representing the Independent Curriculum Implementation Working Group Team of the Siau Islands District Education Office Tagulandang Biaro (Pokja SME), it was found that 30 teachers out of a total of 36 teachers at the school had not utilized learning multimedia that attracted students' learning interest, and had never even activated a studi.id account which incidentally could access various learning platforms. This indicates and gives a sign that the use of attractive digital-based learning media is underutilized.

Then based on interviews with class VII students. SMPN 3 Siau Timur as many as five people where they do not feel the use of technology in science learning even from elementary school to graduation and continuing to grade VII junior high school. The Android smartphones they have are only used to record videos or personal photos which tend not to be used for the learning process.

This reflects the need for the creativity of an educator in developing technology-based learning media, especially in picking up the independent curriculum as a new curriculum that requires a new paradigm in the learning process. Learning media that is interesting, easy to reach and has an element of novelty that is currently a good trend among educators in the country, namely Canva For Education. The Canva For Education web-based platform has a very attractive appearance for students and is unique because it has many special educational views and can only be used by teachers who have alearning.id account in learning. So in this case, to access Canva For Education, researchers use a learning account. id that has been given by Kemdikbudristek which has been activated and has unlimited cloud storage space in Google Drive. This is also a sign that the Ministry of Education and Culture has from the start prepared digital access for every teacher to pick up an independent curriculum. So that Canva for Education is very much in line with the goals of the independent curriculum which wants to change the perspective according to the development of civilization.

In science learning, especially the motion material in phase D class VII of the Independent Curriculum, it is necessary to differentiate learning that is in favor of students in achieving learning goals. So researchers need to develop digital learning media based on Canva For Education which contains videos and teaching modules, and digital teaching materials that can be accessed by students both online and offline with the different needs of each student. This digital learning media is designed to be very flexible and make it easy for every student to access both at home and at school to meet the achievement of learning objectives.

Based on the above thoughts, the researcher wants to conduct research on "Development of Canva For Education-Based Middle School Science Science Learning Media in the Independent Curriculum Phase D Class VII at SMPN 3 Siau Timur". Where one of the main principles in implementing the independent curriculum is the availability of various digital-based learning

applications. So as to maximize the principle of an independent curriculum, interesting learning media are needed that can make students achieve learning goals. The existence of interesting learning media also provides a reference for innovation and creation in supporting the learning process at school.

B. Method

This study uses the research and development method or "research and development" (R&D) following the stages of research development of the Four - D - models (Model 4D) according to Thiagarajaan and Semmel(RN Palilingan, 2014)which consists of four stages, namely define, design, develop and disseminate.

Defining stage (define)

At the research stage conducting a study of the situation in schools related to the potential and challenges that schools have, this study is carried out through observation and also interviews with teachers and students and is supported by other data such as school quality report cards which can be analyzed as part of data-based planning to support the school program, the matters studied are as follows

- Examine the curriculum used by the school
- Identify the number of students
- Conduct studies and identify the needs of students
- Conduct studies and identify participants' learning resources
- Conduct a study of learning materials
- Conduct an initial assessment (Diagnostic) to map the learning needs of students in making learning media
- Develop Canva-based materials according to students' learning needs.

An important part at this stage is diagnosing students' learning needs through non-cognitive diagnostic assessments, in particular by giving students test sheets about background, learning style or profile, learning readiness, and learning needs. The teacher then analyzes and maps the results of the non-cognitive diagnostic assessment, especially in the learning needs section, to create a lesson plan that is tailored to the individual learning needs of students.

Stages of Planning (Design)

At this stage, after analyzing the results of the diagnostic assessment, the researcher develops learning tools according to the independent curriculum used in schools, namely formulating learning objectives based on learning outcomes determined by the government, then formulating learning objectives, then compiling learning tools in the form of teaching modules combined with canva for education learning media which contains teaching materials in the form of learning videos, printable digital teaching materials.

The Canva-based learning design is implemented using a problem-based learning model so that the content contained in teaching materials, both videos and modules, and digital teaching materials can be printed and adapted to the steps of the problem-based learning model.

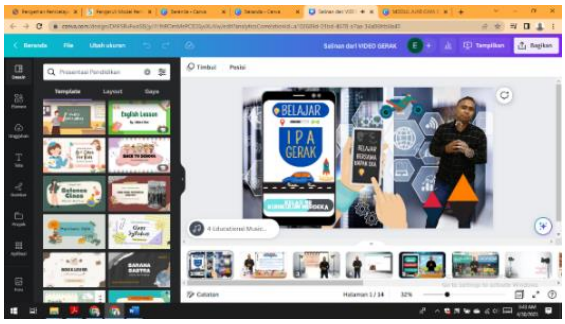

Figure 1 Display of Canva For Education Based Learning Design

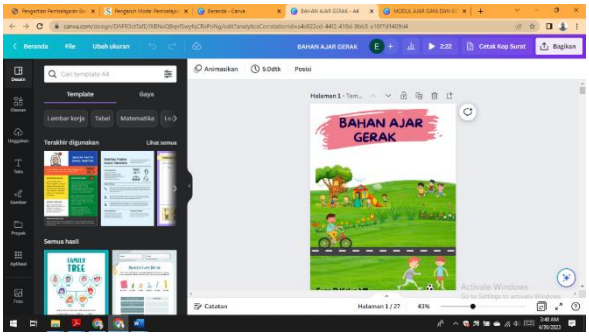

Figure 2 Display of the Canva For Education Worksheet

Then the next step is to hold discussions and consultations with supervisors and expert lecturers in science material in this case referred to as material experts and experts in the field of IT utilization in this case media experts and completed as validation using a questionnaire instrument with a Likert scale of 5-1 .

a. Learning Material Expert Validation.

Evaluation by material experts was carried out before the initial trials were carried out on small groups of students. The material expert validation instruments were as shown in Table 1 below.

Table 1 Material Expert Evaluation Instrument

No.	Indicator	Alternative Choices				
		SS	S	CS	KS	TS
		5	4	3	2	1
1	Teaching materials are in accordance with the rules of integrated science.					
2	Teaching materials have the right concept.					
3	Teaching materials contain new things					
4	The material in teaching materials is developed based on facts					
5	Teaching materials are relevant to learning objectives					
6	Teaching materials are in the school curriculum					
7	The material is presented with learning animations that are easy to understand					
8	Teaching materials include the title according to the content of the material					
9	The material in teaching materials is descriptive					
10	Teaching materials include learning objectives and learning outcomes that must be achieved that must be achieved					
11	Teaching materials use standard language that is understood					

No.	Indicator	Alternative Choices				
		SS	S	CS	KS	TS
		5	4	3	2	1
12	Practice questions, simulations and competency tests according to the indicators to be achieved					
13	Teaching materials include a list of references used					
14	The content of the material and examples of questions in teaching materials can stimulate students to develop knowledge					
15	Teaching materials include the identity of the compiler					

Evaluation format adapted from(Tambuwun, 2022)

The data obtained from the material expert evaluation instrument will be calculated by the percentage of the achievement score divided by the maximum score multiplied by 100% with the following formula:

$$\frac{Jumlah\ skor\ yang\ dicapai}{Jumlah\ skor\ maksimum} \times 100\%$$

(Arikunto, 1993)

Figures 0%-20% =Very weak
Figures 21%-40% =Weak
Figures 41%-60% =Enough
Figures 61%-80% =Strong
Figures 81%-100% =Very strong

b. Media Expert Validation

Media review validation was carried out in order to evaluate the science teaching materials provided both in the Canva design. This instrument is given to learning media experts who will later assess the feasibility of the learning tools prepared. This needs to be done before the initial trial in small groups, with an evaluation instrument as shown in Table 2 below.

Table 2 Expert Evaluation Instrument for Science Learning Media Based on Canva For Education

No.	Indicator	Alternative Choices				
		SS	S	CS	KS	TS
		5	4	3	2	1
1	Material adequacy to the achievement of goals					
2	Text is clear and legible					
3	Updating materials, videos, pictures and photos					
4	Integration of composition and color					
5	Function as a learning medium					
6	The link/navigation tools work					
7	Ease of access					
8	Image display quality					
9	Serving systematics					

No.	Indicator	Alternative Choices				
		SS	S	CS	KS	TS
		5	4	3	2	1
10	The material is easy to understand					
11	Easy to follow presentation					
12	Ease of understanding the concept					
13	Ease of installing the program					
14	Can be run on another computer					
15	Program response speed					

The format was developed from(E. Lawson, 1974)*(Formative Instructional Product Evaluation*).

The data obtained from the evaluation instrument for learning media experts will be calculated by dividing the results of the achievement score by the maximum score multiplied by 100%, with the following formula:

$$\frac{Jumlah\ skor\ yang\ dicapai}{Jumlah\ skor\ maksimum} \times 100\%$$

(Arikunto, 1993)

Figures 0%-20% =Very weak
Figures 21%-40% =Weak
Figures 41%-60% =Enough
Figures 61%-80% =Strong
Figures 81%-100% =Very strong

Stages of Development (Development)

a. Improvement of learning media

After validating, the suggestions and input from media experts for product revision and improvement became the basis for product development, the researchers made improvements to learning media,

b. Small group trial

After that, the product is tested initially on a limited scale or in small groups. This initial trial was conducted on five students based on the level of student knowledge, this initial trial was conducted to find out the deficiencies of the product being made. Initial trials were carried out to find out the deficiencies of the products made by asking for input, suggestions and criticism from students both in terms of material and media appearance based on response questionnaires. The student response questionnaire instrument is as follows.

Table 3 Student Response Instruments

No.	RATING INDICATORS	Alternative Choices				
		SS	S	CS	KS	TS
		5	4	3	2	1
Material Criteria						
1	The content is complete					
2	The material is presented with supporting pictures					
3	The material is arranged and presented systematically					
4	The material presented is in accordance with					

	the school curriculum					
5	The contents of the material and examples of questions in teaching materials can help students understand the material being taught and stimulate students to develop knowledge					
Media Criteria						
6	Product display is clear					
7	Videos/teaching materials are not interrupted					
8	Learners easily operate the product					
9	Audio sounds clear					
10	Integration of image composition and color					

Developed from(Tambuwun, 2022)

The data obtained will be calculated as a percentage by comparing the total score achieved with the maximum score multiplied by 100% and will obtain an interpretation of the achievement score in the range of 0% -100%. With the following formula:

$$\frac{Jumlah\ skor\ yang\ dicapai}{Jumlah\ skor\ maksimum} \times 100\%$$

(Arikunto, 1993)

Figures 0%-20% =Very weak
Figures 21%-40% =Weak
Figures 41%-60% =Enough
Figures 61%-80% =Strong
Figures 81%-100% =Very strong

c. Field trials

At this stage field trials were carried out on the products that had been made. Then an empirical test is carried out, namely testing the validity and reliability of the questions obtained from the learning outcomes test.

d. Operational Product Improvement

At this stage, it will be seen whether the product is in accordance with the specified goals. The data obtained from field trials are then analyzed and made improvements so that they become better.

e. Operational Trial

At this stage an empirical test is carried out to test the effectiveness of the product made. This empirical test was carried out using a quasi-experimental method which in this study used the same design as the subjects Dimitriv & Rumril; Hudock, 2005) in(RN Palilingan, 2014), as shown in Figure 3 below.

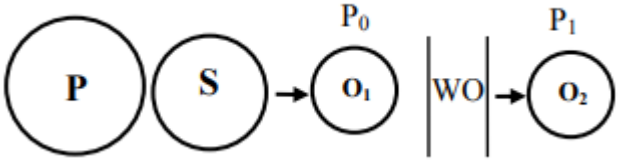

Figure 3 Same Subject Design

Information :
P:Population
S:Sample
O1 :Observation before intervention
P0 : learning activities before the intervention
WO :*washing out*(time to wear off before intervention) for 1 week
P1 : learning activities with intervention
O2 : final observation with intervention

f.Learning Procedure

In the learning process, it begins with non-cognitive and cognitive diagnostic assessments, then a mapping of student needs is carried out, then differentiation learning is carried out as a feature of the independent curriculum and uses the syntax of the problem-based learning model.

1. Product Dissemination (Disseminate)

This stage is the stage for reporting products that have been made through scientific meetings or scientific journals or through dissemination in official teacher forums at the school or district level.The data analysis technique used in this study is the validity and reliability test for the instrument questions, the average difference test in this case the paired sample test which is preceded by a normality test, the percentage of response questionnaires using a Likert scale. These data were then analyzed qualitatively and described the learning process both before using Canva-based learning media and after using Canva For Education-based learning media.

Evaluation data from material experts and media experts were analyzed using a Likert scale range with alternative respondent answers 1-5 as shown in Table 4 below:

Table 4 Material and Media Expert Validation Assessment Criteria

No.	Evaluation	Score
1	Strongly Agree (SS)	5
2	Agree (S)	4
3	Simply Agree (CS)	3
4	Disagree (KS)	2
5	Disagree (TS)	1

(Arikunto, 1993)

After obtaining the percentage results it can be seen whether it is appropriate for media and material experts or positive for student responses, then the Likert scale modified score interpretation criteria is used in Table 5 below.

Table 5 Interpretation Criteria Score Modification Likert Scale

No.	Percentage	Criteria
1.	0% - 20%	Very weak
2.	21% - 40%	Weak
3.	41% - 60%	Enough
4.	61% - 80%	Strong
5.	81% - 100%	Very strong

C. Results and Discussion

Based on the results of observations made at SMP Negeri 3 Siau Timur, some data was obtained, namely the total number of students was 60 students. There are 20 students in class VII, 15 students in class VIII and 25 students in class IX.

The Define Stage at SMP Negeri 3 Siau Timur found that there were adequate learning facilities such as LCD projectors, Ministry of Education and Culture Information Technology (TIK) assistance, namely chromebooks, implementation of the independent curriculum in class VII and the 2013 curriculum in class VIII and class IX, which were complemented by achievements learning, teaching modules, syllabus and lesson plans in each lesson. Under these conditions, it is very possible for teachers to innovate by utilizing technology in learning. So that in the defining stage the material used is about motion using the Canva for education application and combined with the problem based learning model in class VII which has implemented the independent curriculum. Why is the canva for education application used in this material, because apart from being the most recent and interesting application with very complete features, the Canva for Education application can also combine various media such as text, audio, video, music, animation and so on. Apart from that, the Ministry of

Education and Culture has facilitated the studi.id account, where the studi.id account, which is specifically for teachers in welcoming the independent curriculum, is also integrated with Canva for Education so that teachers can get the Canva application with premium facilities, which incidentally are paid, but specifically for teachers, it is free of charge with the condition of using learn.id account

So for various reasons stated that Canva for Education can make it easier for teachers to design learning in the independent curriculum of natural science subjects about motion. As for the learning syntax used is the syntax of the problem based learning model.

Design Stage (Design)

At this stage a prototype design is made Canva-based science learning media about motion. Then validated by material experts and learning media experts. Material expert validation This is done so that the teaching materials used both in the videos and teaching modules have been prepared in accordance with the rules of arrangement by containing solid and clear material. Media expert validation of teaching materials is needed for whether the product in the form of learning media contains videos and teaching materials made in teaching and learning activities in phase D of the independent curriculum with the following results.

$$\frac{Jumlah\ skor\ yang\ dicapai}{Jumlah\ skor\ maksimum} \times 100\% = \frac{70}{75} \times 100\% = 93\%$$

The material expert's assessment was at 93% with a very strong category, meaning that material about movement based on Canva for Education received a very strong assessment and was appropriate for use in the learning process. Material experts also provide suggestions that in the delivery of material you should pay attention to using learning models and appropriate technology. Furthermore, media expert validation is used to assess whether the product, in this case videos and modules which contain independent curriculum teaching materials, is appropriate for use. The substance of the assessment is the suitability of the material with the learning outcomes and learning objectives, the suitability of the teaching modules as the guidelines for the independent curriculum teaching modules. Then the media expert validation was carried out with the following results.

$$\frac{Jumlah\ skor\ yang\ dicapai}{Jumlah\ skor\ maksimum} \times 100\% = \frac{72}{75} \times 100\% = 96\%$$

The media expert's assessment showed a very strong category, namely at 96%, this confirmed that the Canva for Education-based science teaching media in Phase D of the independent curriculum was appropriate for use. This research produced a product in the form of Canva-based Science Learning Media which contains learning videos, teaching modules and teaching materials in phase D class VII of the independent curriculum, using the problem-based learning model, where the product has gone through various feasibility tests so that it can be used to improve the learning process which will then have a positive impact on student learning outcomes.Previous research also proves that the animated video media based on the Canva application can increase motivation and learning achievement and is suitable for use in the learning process (Gita Permata Puspita Hapsari, 2021)

1.1 Development Stage (Development)

At this stage input from media experts and material experts forms the basis for the development of instructional media, some of the inputs include using learning models, incorporating elements of technology and being able to improve critical reasoning abilities, then learning media is made in accordance with expert input, with the following appearance.

Then tested the validity and reliability with SPSS 22 for multiple choice questions with 20 items. tested on 10 students andThe results can be seen in Table 6 below.

Table 6 Results of the Validity of Motion Questions

No Question	*Cronbach's Alpha*	Information
1	0891	Valid
2	0.892	Valid
3	0.891	Valid

4	0.887	Valid
5	0.906	Valid
6	0.878	Valid
7	0.898	Valid
8	0.878	Valid
9	0.897	Valid
10	0.878	Valid
11	0.892	Valid
12	0.898	Valid
13	0.879	Valid
14	0.891	Valid
15	0.903	Valid
16	0.895	Valid
17	0.886	Valid
18	0.883	Valid
19	0.878	Valid
20	0.883	Valid

Price rtable is calculated with a significance level of 5% and N according to the number of students. If rcount > rtable, it can be stated that the item is valid. The value of rcount is the value of Cronbach's Alpha in the SPSS output. Based on the results of the analysis of the validity of the items, it was found that all questions were valid because the value of rcount > rtable. The rtable value with N = 10 and a significance level of 5% is 0.576.

Table 7 Table of the reliability test of temperature items and their changes

Cronbach's Alpha	rtable	Criteria
0.895	0.576	Reliable

The reliability coefficient based on statistical tests with the SPSS program is 0.895. When compared to the rtable value with N = 10 and the 5% significance level is 0.576, it can be concluded that the questions prepared are reliable.Furthermore, an initial trial was carried out in small groups consisting of 10 class VIII students at SMP Negeri 3 Siau Timur. Stages of this small group trial is very helpful to determine the quality of the product in the form of learning media, and the results are as follows.

$$\frac{Jumlah\ skor\ yang\ dicapai}{Jumlah\ skor\ maksimum} \times 100\% = \frac{242}{250} \times 100\% = 96{,}8\%$$

Data from student response questionnaires confirmed that students gave a positive response to the products produced in the very strong category with a percentage value of 96.8%, feasible and effective for use without revision in learning activities. Furthermore, trials were carried out in large groups or classes that were empirically using quasi-experimental methods with the same subject who had obtained the results of the research as described below.

Data Analysis Prerequisite Test (Normality Test)

The normality test is used as a criterion for testing the hypothesis carried out in this study, namely the paired sample t-test where the data used is normally distributed. The normality test was used to determine whether the sample data came from a normally distributed population or not, in this study using Shapiro Wilk with the help of SPSS 22. The results of the normality test for learning outcomes data can be seen in Table 8.

Table 8 Large Group Normality Test

Tests of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.

Before	.253	20	002	.870	20	012
After	.169	20	.135	.936	20	.200

If the significance value is > α 0.05, then the sample comes from a normally distributed population. If the significance value is <α, 0.05, then the sample comes from a population that is not normally distributed. Based on Table 8 testing using Shapiro Wilk, it can be seen that the significance value of the data obtained before the intervention and after the intervention is greater than 0.05 so that a decision can be made that the learning outcomes of students before and after the intervention are normally distributed, and then it can be done in pairs. sample t-test.

Hypothesis testing

The hypothesis testing carried out in this study was the paired sample t-test which aims to analyze by comparing the mean differences of the two samples. The results of hypothesis testing using SPSS 22 can be seen in Table 9 below.

Table 9 Analysis Results*Paired Sample t-test*

Paired Samples Test

		Paired Differences			
		95% Confidence Interval of the Difference			
		Upper	Q	df	Sig. (2-tailed)
Pair 1	Before after	-24.06652	-13,455	19	.000

Based on the results in Table 9 it is found that the significance value (2-tailed) of student learning outcomes is less than 0.05 (using a significance level of 0.05 for a two-tailed test) then H0 is rejected and H1 is accepted. This means that the average learning outcomes of students who are taught with Canva For Education-based science learning media are higher than the learning outcomes of students who are taught using conventional methods.

Response questionnaire data for large groups also showed significant results as shown below.

$$\frac{Jumlah\ skor\ yang\ dicapai}{Jumlah\ skor\ maksimum} \times 100\% = \frac{966}{1000} \times 100\% = 96{,}6\%$$

Based on the data in the large group trial, it can be concluded that students gave a positive response to the product produced in a very strong category and a percentage value of 96.6% means that this product is feasible and effective for use in learning. So based on the results of the research, it can be concluded that the Science Learning media based on Canva For Education in Phase D of the Independent Curriculum produced is good and suitable for use in the learning process. Science Learning Media based on Canva For Education in Phase D of the Independent Curriculum can improve student learning outcomes.

Stage of Dissemination (Disseminate)

The results of this learning product will be disseminated in scientific activities both at the school level or at the district level and more specifically at the university level as scientific accountability during the study process. Because this development product is considered novel, it would be very interesting if it could be redeveloped or replicated by fellow teachers to produce student-centered learning in an independent curriculum.

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