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THE DEVELOPMENT OF PROBLEM BASED LEARNING GOOGLE SITES-ASSISTED DIGITAL TEACHING MATERIALS TO IMPROVE STUDENTS' MATHEMATICAL CRITICAL THINKING ABILITY

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ABSTRACT

Mathematics learning has a very important role in the educational environment. That one of the competency standards for graduates of the mathematics subject for elementary to secondary education units is so that students have the skills to think and act creatively, productively, critically, independently, collaboratively and communicatively. Based on these graduate competencies, it is clear that one of the thinking skills that students must have is critical thinking. The purpose of this study was to look at students' mathematical critical thinking skills whose learning used the Problem Based Learning (PBL) model through digital teaching materials . This study uses the Research and Development (R&D) method with the ADDIE development model which consists of 5 (five) stages, namely: Analysis , Design , and Development , Implementation and Evaluation . on MTs . The research subjects were 20 students of class VI I I MTS (twenty) students. Data collection techniques used were walkthroughs, questionnaires, questionnaires, interviews, and tests. Research data were analyzed quantitatively and qualitatively. The results of data analysis are known that this research produces students' critical thinking mathematics for digital teaching materials through a problem-based learning model in a flat sided geometric content that is valid and has potential effects. In this case, mathematics teaching materials that are presented digitally with a problem-based learning approach model are obtained from the results of one-to-one revisions , expert revision, small group trials and large group trials . Furthermore, the prototype of digital teaching materials is in the form of Google sites This is in addition to being effective, efficient, valid and practical, it also has a potential effect to improve students' critical thinking skills in mathematics.

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INTRODUCTION

The ability to think critically is very important for students to have, because the more students are accustomed to critical thinking, the easier it will be for students to solve a problem. According to (Ennis, 1996) . "Critical thinking is a process in expressing goals that are equipped with firm reasons about a belief and activities that have been carried out." Meanwhile (Beyer, 1995) offers the simplest definition: "Thinking critically means making reasonable judgments". Beyer views critical thinking as using criteria to judge the quality of something, from the simplest activities such as normal daily activities to drawing conclusions from a piece of writing that one uses to evaluate the validity of something (statements, ideas, arguments, research). , and others). Screven and Paul and Angelo (Filsaime, 2008) view critical thinking as an intelligent disciplinary process of conceptualization, application, analysis, synthesis and active and skilled evaluation gathered from, or generated by observation, experience, reflection, reasoning, or communication as a guide toward belief and action.

The ability to think critically is an important thing, but the reality on the ground is not as expected. Students' critical thinking skills in Indonesia are still relatively low. This is based on a four-year International *Trends in International Mathematics and Science Study* (TIMSS) study conducted on junior high school students with the characteristics of high cognitive level questions that can measure students' critical thinking abilities, showing that Indonesian students are consistently ranked lower (Karim , 2015) . In the 2018 Program for International Student Assessment (PISA) survey results published in March 2019 in the mathematics category, Indonesia was ranked 7th from bottom (73) with an average score of 379. Down from 63rd place in 2015. While in the 2015 category In science performance, Indonesia is ranked 9th from the bottom (71), with an average score of 396. Down from 62nd place in 2015 (Kaselin, Sukestiyarno, & Waluya, 2013) . Based on a report from an international agency, the level of competitiveness of Indonesia's human resources is not encouraging. According to the UNDP version of *the Human Development Report* for 2022, the HDI (*Human Development Index*) ranking or the quality of Indonesia's human resources is at number 116 (*Human Development Report* , 2022) .

TABLE 1

Human Development Index and its components

		Human Development Index (HDI)	SDG 3 Life expectancy at birth	SDG 4.3 Expected years of schooling	SDG 4.4 Mean years of schooling	SDG 8.5 Gross national income (GNI) per capita	GNI per capita rank minus HDI rank	HDI rank
		Value	(years)	(years)	(years)	(2017 PPP $)		
HDI RANK		2021	2021	2021[b]	2021[a]	2021	2021[b]	2020
Very high human development								
1	Switzerland	0.962	84.0	16.5	13.9	66,933	5	3
108	Guyana	0.714	65.7	12.5 *	8.6	22,465	-47	107
109	South Africa	0.713	62.3	13.6	11.4	12,948	-17	102
110	Jamaica	0.709	70.5	13.4 [m]	9.2 *	8,834	4	110
111	Samoa	0.707	72.8	12.4	11.4	5,308	24	112
112	Gabon	0.706	65.8	13.0 [c]	9.4	13,367	-25	113
112	Lebanon	0.706	75.0	11.3 *	8.7 [c]	9,526	-1	103
114	Indonesia	0.705	67.6	13.7 *	8.6	11,466	-11	116
115	Viet Nam	0.703	73.6	13.0 [c]	8.4	7,867	6	113
Medium human development								
116	Philippines	0.699	69.3	13.1	9.0	8,920	-3	113
117	Botswana	0.693	61.1	12.3 *	10.3	16,198	-43	110

Figure 1. *Human Development Index*

The progress of a nation is determined by the quality of human resources. The quality of human resources depends on the quality of education. Teaching students to think critically is one of the main goals of education (Kazempour, 2013) (Kalelioğlu & Gülbahar, 2014).

Learning mathematics emphasizes students' ability to think (*National Council of Teachers of Mathematics* (Principles, 2000) . The ability to think logically, rationally, critically and creatively is included in the ability to think at a higher level which cannot occur by itself, but is obtained through an educational process, especially education mathematics in schools.Until

now attention to developing the ability to think critically is still relatively low so there are still opportunities to explore critical thinking skills and their development.Active, creative, effective and fun learning mathematics is a learning that is expected by students, so that learning in the classroom can be implemented well (Wahyuni & Efuansyah, 2018) This is in accordance with the characteristics of *Problem Based Learning* , namely as a constructivist learning model oriented towards *student centered learning* which is able to foster a creative, collaborative spirit, think metacognition, develop high-level thinking skills, increase understanding of meaning, increasing independence, facilitating problem solving, and building *teamwork* (Sofyan & Komariah, 2016) . Furthermore, material for flat sided spaces (BRSD) can be presented using the *Problem Based Learning learning model* , because *the PBL model* presents problems contextually and can make students conclude or solve problems related to the daily lives experienced by students. *Problem Based Learning* has advantages in its use in the learning process. The advantage is that using problem solving techniques can make learning more meaningful (Dewi, Khoiri, & Kaltsum, 2017) (Hendriana, Johanto & Sumarmo, 2018).

Materials are all forms of materials used by teachers in the learning process that can assist teachers in the teaching and learning process (Maskur, Permatasari, & Rakhmawati, 2020). Teaching materials are very important in learning. The types of teaching materials can be in the form of print media (articles, comics, infographics) or non- media print (audio and video). Teaching materials that are arranged systematically can make it easier for students to understand learning material and improve the quality of good knowledge for students (Asrial, Syahrial, Maison, Kurniawan & Piyana, 2020) (Noroozi & Mulder, 2017) (Sitorus, 2019). Teaching materials have an important role, namely as a learning center that is useful for strategic learning tools used by teachers and students, the development of teaching materials is needed so that learning continuity is created in innovative, creative activities, and attracts students' interest in learning a concept of mathematical material (Mukhtar, Maimunah & Yuanita, 2022).

Material teach which developed in study this is digital teaching materials are documents created using certain applications to be read using digital devices. An example is using smartphones, cellphones, laptops or others to create digital teaching materials in the form of DOC, PDF, XLS, PNJG, JPG files and the like by utilizing technology so that teaching materials are varied, interesting and interactive. The use of technology can support the development of digital-based teaching materials. Digital teaching material is a book that is displayed in digital form and is able to provide an attractive appearance because it is equipped with text, images, sound, animation and video. (Mastroleo, Humm, Williams, Kiluk, Hoadley & Magill, 2020) (Tambunan & Sundari, 2020) .

The purpose of this research namely the development of interesting and interactive *Google Sites*- assisted digital teaching materials is also supported by the selection of *problem based learning* model learning techniques to improve students' critical thinking in mathematics.

METHODS

This research focuses on the development of digital teaching materials assisted by *Google sites* with a *problem based learning model* to improve students' critical thinking skills in mathematics. This research uses the *Research and Development (R* & D *) method* with the ADDIE development model which consists of 5 *(* five) stages, namely: Analysis , Design , and *Development* , Implementation and Evaluation . (E valuation) (Dick, Carey & Carey, 1996) .

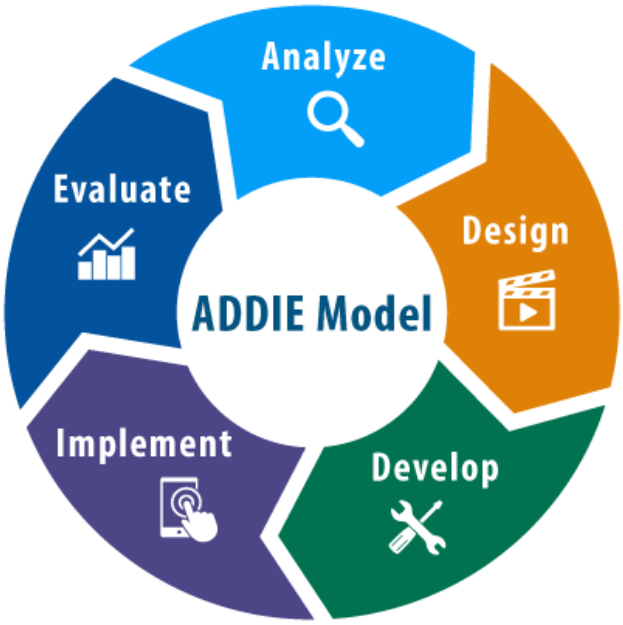

Figure 2. Stages of the ADDIE Model

The ADDIE model is a descriptive procedural model, showing clear and careful steps to produce a product, the development stages in this model are the same as the standard development stages, it has also been used widely and is proven to give good results (Umami, Rusdi & Kamid , 2021).

***Analysis* Phase** ; carried out student character analysis, needs analysis, competency analysis and student instructional analysis.
***Design* Stage** ; in this stage the activity is to determine a systematic process starting from setting learning objectives, learning scenarios, designing learning tools, designing learning materials and learning outcomes evaluation tools.
***Development* Stage** ; at this stage contains the product design realization activities. In the design stage, a conceptual framework for implementing new learning models/methods has been prepared. In this development stage, materials were collected, developed or produced, tested and distributed, developed product evaluation instruments, through expert evaluation of content, media and instructional design, product improvement based on opinions and suggestions from experts. After going through this stage, small group trials can be carried out.
***Implementation* Stage** ; the implementation stage is carried out after completing the revision of the experts and includes extensive trials for large groups.
***Evaluation* Stage** ; It is carried out in two forms, namely formative and summative evaluation. *Formative evaluation* is carried out at the end of each face-to-face meeting, while *summative evaluation* is carried out after the activity ends as a whole.

The research was conducted using a questionnaire. The questionnaire is used to assess the validity and practicality of the digital teaching materials that have been developed. Expert validators consist of subject content experts , learning model design experts and content/ learning media experts who are IKIP lecturers Siliwangi London . Small group trials were conducted by 5 (five) randomly selected students , namely students who had high, medium and low abilities, while large group trials were conducted by 1 (one) class of 20 (twenty) students VIII MTS Ibn Solih Evening, Bandung.

A data analysis for validity and practicality of each described in Table 1 , sources modified from (Akbar, 2013) and Table 2 , sources modified from (in Riduwan, 2005) .

Table 1. Criteria for validity

No	Validity Criteria	Validity Level
1	$80\% < P \leq 100\ \%$	Very Valid (can be used)
2	$60\% < P \leq 80\ \%$	Valid (may be used without revision)
3	$40\% < P \leq 60\ \%$	Valid enough (can be used but needs revision)
4	$20\% < P \leq 40\ \%$	Invalid (recommended not to use)
5	$0\% < P \leq 20\%$	Invalid (should not be used)

Table 2. Practicality criteria

No	Practical Criteria	Practical Level
1	$80\% < P \leq 100\ \%$	Very Practical
2	$60\% < P \leq 80\ \%$	Practical
3	$40\% < P \leq 60\ \%$	Pretty Practical
4	$20\% < P \leq 40\ \%$	Less Practical
5	$P \leq 20\%$	Impractical

RESULTS AND DISCUSSION

Results

***Analysis* Phase** ; This stage includes student character analysis, needs analysis , teacher competency analysis and student instructional analysis. The results of the needs analysis conducted on June 22 - 27 uni 20 23, s students are not used to working on problem solving questions so it is difficult to understand the information on the questions. Students need to be trained to work on questions that require higher order thinking so that students' mathematical problem solving abilities can develop properly (Dwi Putra, Fathia Thahiram, Ganiati & Nuryana , 2018) . Other conditions indicate that teachers still experience difficulties in the learning process which facilitates students' critical thinking skills in mathematics , learning methods still use lecture techniques (conventional), less interactive. Teachers have not been able to develop various teaching materials for the learning process, also some teachers have not been proficient in using technology in the development of information and communication. This has an impact on the quality of learning obtained by students. Based on the results of observations, it is known that the use of teaching materials in the process of learning mathematics greatly influences student academic achievement. The demands of the independent learning curriculum is to develop the potential of students and improve the quality of education, and in order to create these goals. So we need a teaching material with a learning model that can help the learning process, presents problems that must be solved together so that learning activities are created that can improve critical thinking in mathematics .

***Design* Stage** ; the results of the analysis phase serve as the basis for designing interactive digital teaching materials . As for what must be done in the design stage, namely the drafting of digital teaching materials assisted by *Google sites* and create research instruments.

The following is *a prototype* that the author has designed for the initial display / front screen display (*Home* or Veranda) to make it easier to use.

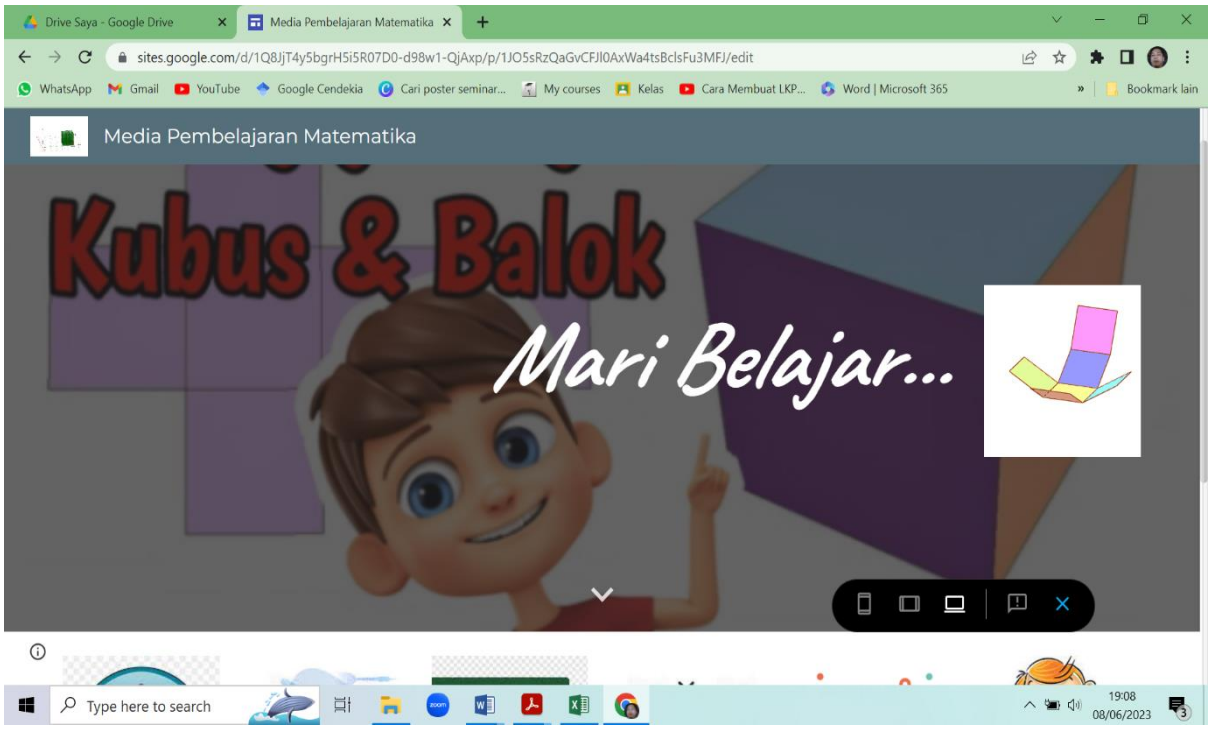

Figure 3. Front screen display of teaching materials assisted by *Google sites*

As for the screen display, several menus are inserted, including: Objectives, Material, Video, Simulation, and Evaluation, as shown below :

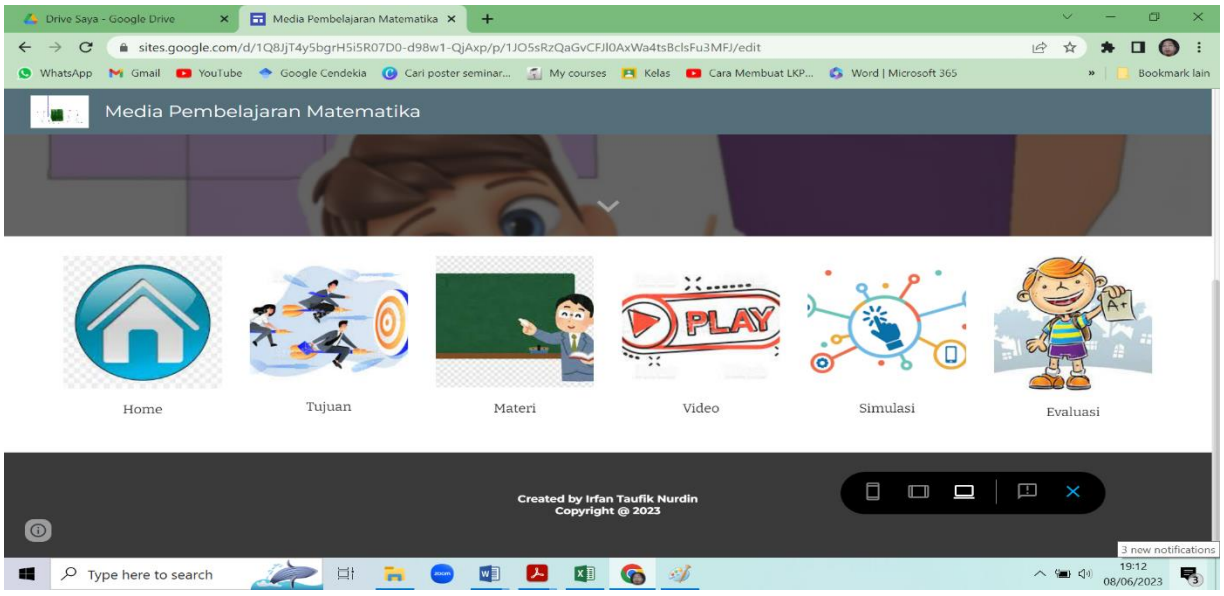

Figure 4. Display of the homepage (menu) of teaching materials assisted by *Google Sites*

***Development* Stage** ; after the designer produces an initial design of digital teaching materials assisted by *Google sites* The next validation is carried out by validators (subject content experts , learning model design experts and content/ learning media experts), namely the assessment of each aspect asked on the assessment sheet , seen from the components of content feasibility , presentation feasibility, aspects of *Problem Based Learning assessment* , language /readability feasibility , and content feasibility . In addition, in this validation the validator provides comments and suggestions for improvement (revision), which are presented in Table 3.

Table 3. Comment and suggestions from validator

Validators	Comments and Suggestions
Subject Content Expert	1. Adjust the material to the learning objectives 2. Presentation of questions according to real life (depth of matter)
Learning Model Design Expert	1. Correct the questions presented (must be appropriate with learning model indicators)
Learning Media Content Expert	1. Add user manual. 2. Create sub-media that involves interaction teachers and students (such as quizzes and simulations) 3. Adjust the LKPD *Liveworksheet* accordingly indicator of *Problem Based Learning* 4. Absence form and assessment that can be directly accessed by students (one time process)

Overall it is good, the results of the assessment and suggestions are used for the revision of this development research . In general, the assessment of the design of digital teaching materials assisted by *Google sites* from experts is "can be used with revisions according to suggestions" and the average value of validity from all experts, the average *Vah is 60% and is declared "quite* valid ".

The implementation of the small group trials consisted of 5 (five) students who were taken randomly, who had low, medium and high ability levels. Prior to being given the student practicality questionnaire, 5 (five) students were asked to use teaching materials assisted by *Google sites* first independently within 45 minutes. After that each student was given a practicality questionnaire which aims to find out the practicality level of response.

Based on the results of the practicality questionnaire calculations for small group trials, 5 (five) students obtained a positive response to the teaching materials assisted by *Google sites.* by obtaining an average *P of* 66.15% . The results of the practicality questionnaire assessment of the small group trial were categorized as **practical** and showed that there was no need for revision of *the google sites*- assisted teaching materials developed. Furthermore, it can be used in the large group trial stage.

Implementation **Stage** ; The large group trial was conducted with students of class VIII MTS Ibn Solih Soreang , numbering 2 0 (twenty) students. In this trial, the researcher acted as a facilitator. During the process learning, researchers guide students, provide instructions and directions on teaching materials interactive digital that has been prepared and used . Learning tools in the form of digital teaching materials assisted by *Google sites* with models *Problem Based Learning* . The trial implementation time was carried out during one meeting to see student responses . After students have finished participating in the learning process, students are asked to fill out a student practicality questionnaire consisting of 13 indicators conformity statements . A student practicality questionnaire was given to find out students' practical responses to the digital teaching materials being developed. Based on the results of the calculation of the large group trial questionnaire, an average score of 69.23% was obtained .

Thus the results of students' practicality questionnaire calculations on the LKS developed in the **Practical category** are presented in Table 4 .

Table 4. The results of the analysis of students' practicality level

No	Aspect	Indicator	Score
1	Appearance	a. The attractiveness of the media display of digital teaching materials	5
		b. Ease of use of media	3
		c. Clarity of instructions for using the media	1
2	Text	a. Text readability	4
		b. Use of typeface	5
		c. Use of font size	5
3	Material	a. Clarity of presentation of the material	2
		b. The material is easy to understand	3
		c. The material presented is interesting	4
4	Images & Videos	a. The use of images in accordance with the material	3
		b. The use of video in accordance with the material	4
5	Evaluation	a. The suitability of the questions with the material	3
		b. Clarity of work instructions	3

***Evaluation* Stage ;** In addition to testing the level of validity and practicality of the teaching materials developed, the researchers at this evaluation stage processed the data obtained in the form of *pretest* and *posttest values* that had been presented in the form of formative and summative questions and then analyzed and then processed using SPSS to see the potential level (contribution , effective, efficient), meaningfulness (benefit), and correlation (influence) of this study namely "development of digital teaching materials assisted by *Google sites with problem based learning* models to improve critical thinking skills of SMP/MTS students".

Data processing is presented as follows:

1. The effectiveness of the PBL learning method on student learning .

To see the effectiveness of the learning method, data analysis was carried out using inferential statistics with paired sample t-test (2 *sample dependent*), *paired sample t-test* .

Table 5. *Pretest* and *posttest results*

Student Code	*Pretest*	*Posttest*	Student Code	*Pretest*	*Posttest*
S-1	70	77	S-11	66	83
S-2	70	80	S-12	66	73
S-3	71	80	S-13	67	72
S-4	60	80	S-14	67	84
S-5	63	80	S-15	67	89
S-6	65	73	S-16	68	85
S-7	66	71	S-17	67	70
S-8	81	72	S-18	67	74
S-9	74	84	S-19	77	87

S-10	74	78	S-20	77	84

Tests of Normality

	Kolmogorov-Smirnov [a]			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
PRETEST	,211	20	,020	,931	20	,160
POSTEST	,146	20	,200 *	,939	20	,231

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on *the output table* in the shapiro-wilk section for a *pretest value of* 0.160 and *a posttest* of 0.231. The value of both is greater than 0.05, it can be concluded that the two values are normally distributed, thus the requirements for the *paired t-test* fulfilled , then the *paired t-test was carried out* .

Paired Samples Statistics

		Means	N	std. Deviation	std. Error Means
Pair 1	PRETEST	69,15	20	5,174	1.157
	POSTEST	78,80	20	5,800	1,297

The *output* shows that *the pretest average* is 69.15 and *the posttest average* is 78.80. Because the *posttest value* > *pretest* value , it can be interpreted that descriptively there is a difference in the mean learning outcomes between *the pretest and posttest* results . Furthermore, to prove whether the difference is *significant* or not, it is necessary to interpret the results of *the paired sample t test* contained in *the output table of paired samples correlations* .

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	PRETESTS & POSTESTS	20	,152	,523

Based on *the output* above, it is known that the value of the correlation coefficient is 0.152 with a sig value of 0.523. Because the Sig value > 0.05, it can be said that there is no relationship between *the pretest variables* and *the posttest variables* .

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	PRETEST - POSTEST	-9,650	7,162	1,601	-13,002	-6,298	-6,026	19	,000

Based on *the output table* , it is known that the Sig (2-Tailed) value is 0.000. Due to the one-party hypothesis, the sig/2 value is 0.000/2 = 0.000. Then H_0 is rejected and H_α is accepted, so it can be concluded that student learning outcomes after getting the PBL learning method are better than before getting the PBL learning method.

2. The effectiveness of new teaching materials assisted by *Google Sites* .

To see the effectiveness of the product, data analysis was carried out using inferential statistics with an unpaired t test (2 *independent samples*).

Table 6. BRSD material student scores

Mark	*Google Sides* BA class	Mark	Ordinary BA class
55	1	70	2
75	1	75	2
60	1	80	2
80	1	75	2
95	1	55	2
80	1	45	2
80	1	65	2
85	1	60	2
95	1	70	2
90	1	75	2
70	1	80	2
65	1	75	2
50	1	55	2
75	1	45	2
80	1	65	2
65	1	60	2
75	1	70	2
80	1	75	2
95	1	80	2
80	1	65	2

Tests of Normality

		Kolmogorov-Smirnov [a]			Shapiro-Wilk		
	Class	Statistics	df	Sig.	Statistics	df	Sig.
Mark	BA Google Sites	.158	20	.200 *	.943	20	.273
	BA Ordinary	.170	20	.130	.906	20	055

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on *the output from shapiro-wilk, the Google Sites* BA class Sig value was 0.273 and the BA Ordinary class Sig value was 0.055. Because the Sig value of both classes is greater than 0.05, it can be concluded that both data are normally distributed, so that the fourth condition for the *independent t- test* has been fulfilled. Then the steps for the *independent t- test are carried out* .

Hypothesis testing

$H_0 : \mu_1 = \mu_2$
There is no difference in the average student scores between classes using teaching materials assisted by *Google sites* and classes using ordinary teaching materials.

$H_\alpha : \mu_1 \neq \mu_2$
There is a difference in the average student scores between classes using teaching materials assisted by *Google sites* and classes using ordinary teaching materials.

Group Statistics

	Class	N	Means	std. Deviation	std. Error Means
Mark	BA Google Sites	20	76.50	12,784	2,859
	BA Ordinary	20	67.00	10,809	2,417

the Google Sites BA class average was 76.50 and the BA Ordinary class average was 67.00. Descriptively, it can be concluded that there is a difference in the average student scores between classes using teaching materials assisted by *Google sites* and classes using ordinary teaching materials.

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Nilai	Equal variances assumed	.228	.636	2.538	38	.015	9.500	3.743	1.922	17.078
	Equal variances not assumed			2.538	36.979	.016	9.500	3.743	1.915	17.085

output results , *Sig Levene's test for equality of variances* is 0.636 > 0.05. That is, the variance between the *Google Sites BA class* and the Ordinary BA class is HOMOGEN, so that the interpretation of *the independent sample test output table* is guided by *the equal variances assumed* for the Sig (2-tailed) value, which is 0.015 <0.05. Based on this, it can be concluded that $\boldsymbol{H_0}$ is rejected and $\boldsymbol{H_\alpha}$ is accepted, meaning that there is a significant difference in the mean scores of students between classes using teaching materials assisted by *Google sites* and classes using ordinary teaching materials .

Discussions

The PBL learning method aims to assist students in developing thinking skills, solving problems, learning to act as adults by involving them in real experiences, becoming autonomous and independent learners. Problem-based learning (*Problem Based Learning*) is a learning approach that presents contextual problems so that it stimulates students to learn. Problem-based learning is applied to be able to stimulate high-level thinking in problem-oriented situations, so that it can arouse students' interest, real and in accordance with their intellectual development.

The findings (Putra, Putri, Lathifah & Mustika, 2018) that self-developed teaching materials for student learning can improve their mathematical abilities at moderate criteria. The development in this study is digital teaching materials assisted by Google sites that are interesting and interactive, supported also by the selection of *problem based learning model learning techniques* to improve students' critical thinking in mathematics. Media _ communication between Teacher And participant educate can be bridged by deep digital teaching materials process learning online nor learning offline. Material teach digital or often called *e-books* is A book Which displayed in form electronic Which Can accessed through *smartphones* And computer or laptop (Asrial, Syahrial, Maison, Kurniawan & Piyana , 2020) (Nisa, Ismet & Andriani, 2020) (Sitorus, 2019) .

Based on data analysis, it was found that student learning outcomes after getting the PBL learning method were better than before getting the PBL learning method , this can be seen in the pretest *average* output *of* 69.15 and the *posttest average* of 78.80 . In other conditions, a significant difference can be seen from the average student score between classes using teaching materials assisted by *Google sites* , which is 76.50, with the average grade for students using ordinary teaching materials, which is only 67.00.

CONCLUSION

The purpose of this research namely the development of interesting and interactive *google sites*-assisted digital teaching materials is also supported by the selection of *problem based learning model learning techniques* .

This research provides implications that can provide a mathematics learning environment which is usually fixed in the classroom becomes learning that is not limited by space and time, presented in an open, effective and efficient manner, as well as the practicality of teaching materials/learning media that are easily accessible, so as to facilitate students to be able to understand mathematical concepts with the prior knowledge they already have. know because they build their own student environment. Provision of a learning environment that interactive and interesting can create good and fun student learning motivation and eliminate the notion that mathematics is difficult.

From the research results , the prototype is in the form of assisted digital teaching materials These *google sites* , apart from being declared effective, efficient, quite valid and having a practical level of use with the "Practical" criteria, also have a potential effect on improving students' critical thinking skills in mathematics.

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