Effectiveness of Implementing Glideapps-Based E-Modules On The Learning Outcomes

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ARTICLE INFORMATION

ABSTRACT

Adjustment of learning media in schools with developments over time and technology is something necessity . Limited variety of learning media in schools potential lower effectiveness of the learning process , so that influence results Study participant education . Research based on problems learning less conventional effective because teachers tend to only utilise book print as a learning medium in the classroom . Research objectives that is know results Study geography between classes that implement e-Module based *GlideApps* and the classes that use it module conventional , as well as For know effectiveness use of e-Modules based on *GlideApps* on learning geography Class XI. Research location is at State Senior High School 1 Pringsewu . Study use type known experiments as *Quasi-Experimental Design* with design experiment in the form of *Nonequivalent Control Group Design* shaped *Pretest-Posttest Control Group Design* . Selection sample use purposive sampling technique with results class XI F8 as class control and class XI F1 as class experiments . Data analysis techniques for test hypothesis study using the *Mann-Whitney* test and the *Wilcoxon's V test* .Research result obtained that (1) there is difference results Study geography between classes that implement e-Modules based on *GlideApps* with an average value of 78.44 and the class that uses module conventional with an average value of 58.00, with difference mark second class of 20.44 and (2) e-Modules based on *GlideApps* stated effective to results Study geography in class XI SMAN 1 Pringsewu .

INTRODUCTION

National education in Indonesia aims For increase the sense of nationalism with hope participant students in Indonesia are able to For compete Good in a way national and international through effort focus participant educate to development attitudes , character , and values philosophical system in Indonesia (Sujana, 2019). Functions and objectives from education poured out in Constitution National Education System Number 20 of 2003 Chapter I Article 3 which states education as effort help participant educate in develop spiritual power , increase intelligence , improve ability control self , strengthening morals noble , and useful skills for self themselves , society , nation and state. However , there are various problem in education in Indonesia . Therefore

That required various effort For overcome existing problems . Frequent problems faced by the world of education moment This is weak learning process . One of the weak learning processes is caused by Because limitations of learning media used in class .

Teacher in enrich outlook student can use various types of learning media available as source learning (Nurrita , 2018). Formal educational institutions require management tool help interesting and interactive learning . Education World moment This demand adjustment progress technology in the digital era towards facilities and infrastructure supporting the learning process . Progress technology create many variations in learning media in the world of education moment this . Use technology in the world of education through utilization Android or *smartphone* that has almost owned by all participant educate as a learning medium participant educate later . According to Sari et al ., (2020) said that results Study participant education is greatly influenced by the use of *smartphone* in learning . However , in reality participant educate often feel saturated and bored moment follow classroom learning because the teacher only use book print as teaching materials and learning media . Phenomenon this also happens in the learning process geography at SMA Negeri 1 Pringsewu .

The results obtained through observation introduction at SMA Negeri 1 Pringsewu to geography teachers and participants educate class XI regarding problem in learning geography namely there is a number of problem in learning geography at SMA Negeri 1 Pringsewu including learning media geography that is not varied and methods monotonous learning . Learning media used by eye teachers lesson geography class XI at SMA Negeri 1 Pringsewu that is in the form of book print and *PowerPoint* (PPT) only in the form of sentence without existence other varied images . Learning media conventional or in the form of book print is the main media used by teachers for explain material and provide task to participant educate . Meanwhile For *PowerPoint* (PPT) becomes media variations in learning . Inadequate use of learning media varies the make participant educate feel not enough interested and inclined No notice explanation material delivered by the teacher in class . Attention participant educate to material influence results Study .

Issues that have an impact to results Study participant educate the must immediately resolved moment this . In reality, the learning media used still own lack so that need he did development of learning media is one of them using e-Modules. There are many *software* that can used For create and implement *e* -Module, one of them is *GlideApps* software . Based on background back above can known that problems that occur in learning geography class XI of SMA Negeri 1 Pringsewu that is Not yet its implementation *e* -Module based *GlideApps* on the eyes lesson Geography class XI by subject teacher lesson geography so that need effectiveness test was conducted related implementation *e* - The module is implemented in class XI of SMA Negeri 1 Pringsewu use *e* - Module based *GlideApps* and modules conventional .

Based on background behind above , there is formulation the problem you want answered , namely whether there is difference results Study between classes that implement e-Modules based on *GlideApps* and classes that don't implemented e-Module based *GlideApps* in class XI Geography SMAN 1 Pringsewu and how effectiveness implementation of e-Modules based on *GlideApps* to results Study participant educate Class XI Geography SMAN 1 Pringsewu . Research This own objective or answer from formulation problem , namely know whether there is difference results Study participant educate between classes that implement e-Modules based on *GlideApps* and classes that don't implemented e-Module based *GlideApps* in class XI Geography of SMAN 1 Pringsewu and its effectiveness implementation of e-Modules based on *GlideApps* to participants educate Class XI Geography SMAN 1 Pringsewu . With Thus , researchers do research entitled , " Effectiveness Implementation *E* - Module based *GlideApps* towards Learning Outcomes Class XI Students of SMA Negeri 1 Pringsewu " .

METHOD

Study This use approach quantitative with method experiment . As for the design experiments used that is *quasi-experimental design* with *non-equivalent control group design* shaped *pretest-posttest control group design* . Study done with test before and after implementation *e* -Module based *GlideApps* . Function from *pretest* and *posttest* is test effectiveness of learning media *e* -Module based *GlideApps* to results Study geography Class XI. Implementation time study that is July 22 - August 22, 2024. Research period referring to the calendar academic and material taught entering the odd semester of 2024/2025 with location research at SMAN 1 Pringsewu . Selection location study refers to the learning media applied , the quality of teachers and students , and means supporting infrastructure .

Population study This is all over participant educate class XI SMAN 1 Pringsewu who chose eye lesson geography . The research sample used as many as 72 students were divided to in class experiments and classes control . Class experiment amount to 36 students and class control totaling 36 students . The teacher who teaches geography in both class sample is the same teacher . Class control and class experiment will given different treatment related to the learning media used . Class experiment using learning media *website e -Module* based *GlideApps* , whereas class control using learning media conventional which has implemented previously .

Study This use a number of technique data collection . First , using a test instrument that is divided into become *pretest* and *posttest* , as well as questionnaire For results Study affective and psychomotor . Instruments test used For know scores obtained students , so that can measured effectiveness of learning media to results Study students . Second , using documentation For observation . Documentation study become complement in collecting data in research this . Before the test instrument used in research , then tests were carried out : validity , reliability , level difficulty , and power different , while the questionnaire instrument only Validity and reliability tests were carried out . The data analysis technique used analysis descriptive : normality test and homogeneity test as prerequisite research ; *Mann-Whitney U* test and Wilcoxon's V test as hypothesis tests study .
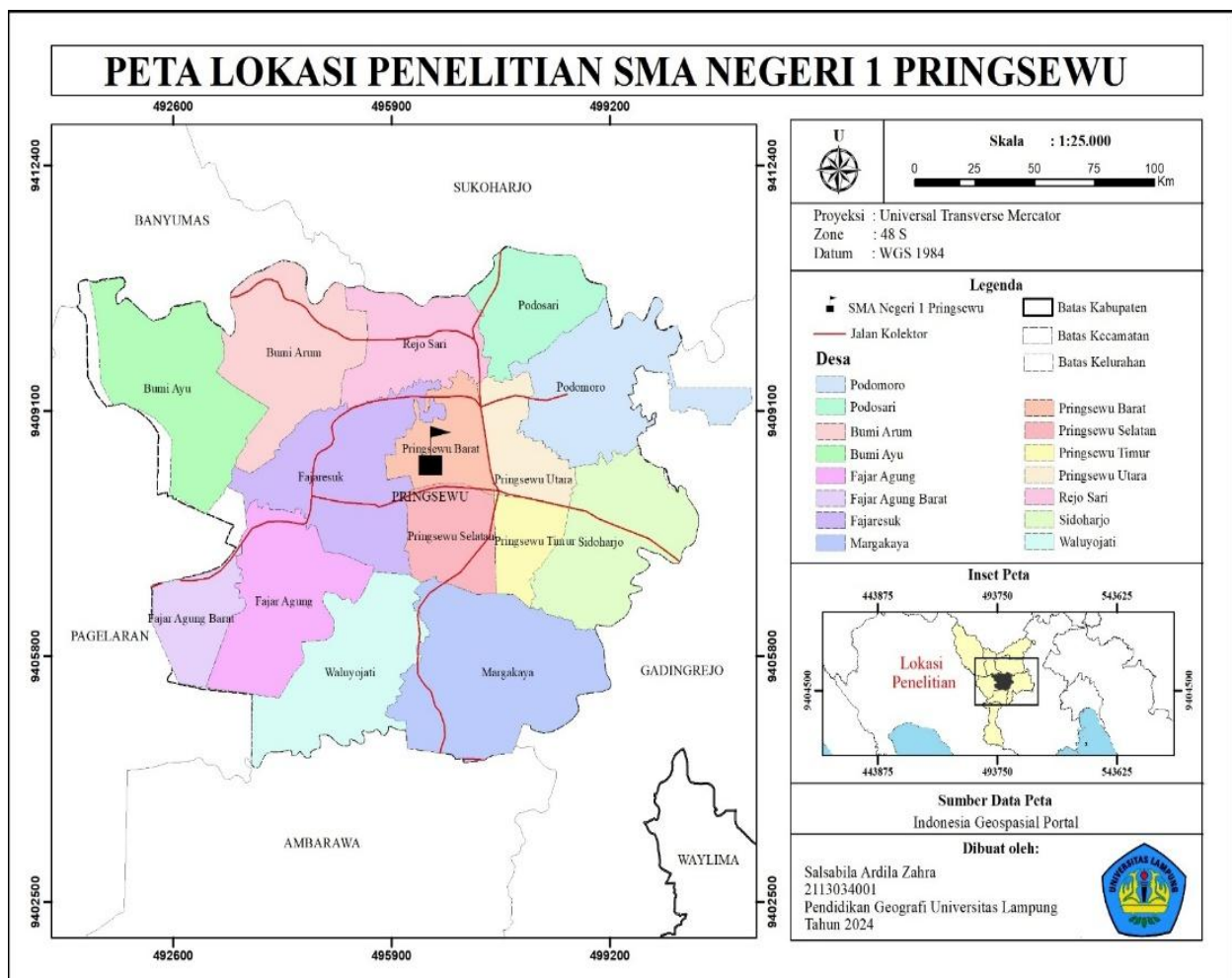
RESULTS AND DISCUSSION

RESULT

Figure 1. Research Location Map of SMA Negeri 1 Pringsewu 2024
Source : ArcGIS Mapping Results , 2024

State Senior High School 1 Pringsewu become location research used by researchers For test effectiveness *e* -Module based *GlideApps* to results Study geography students . Based on the Basic Education Data of the Ministry of Primary and Secondary Education showing SMAN 1 Pringsewu has NPSN 10805055. Data or results from study This in the form of mark *pretest* and *posttest* , as well as questionnaire results Study affective and psychomotor in class experiments and classes analyzed controls in a way descriptive For know values : maximum , minimum, average, and standard deviation . The data analyzed in a way descriptive use IBM SPSS 26 *for Windows* application so that obtained results data table Study cognitive , affective , and psychomotor in class control and class experiment as following :

Table 1Learning Outcomes Completion Classroom Pretest Cognitive Control and Class Experiment

No	Class	Mark	
		≥76 (Complete) Control	≤76 (Incomplete)
1	Control	0	36
2	Experiment	0	36
	Amount	0	72

Source : Results of Data Processing Using SPSS Application , 2024

Based on table 1 above , can explained Analysis of *pretest* and *posttest* data results Study cognitive obtained average value *pretest* participant educate second class different samples . Next based on value data *pretest* in table 24 data values *pretest* class control and class experiment , can interpreted in intervals using formula struges . Researchers count length of interval with use formula Struges (Sugiyono , 2017), as following:

Range Class　　　　　　= Maximum Value - Minimum Value
Amount Class　　　　　　= 1 + 3.3 Log n
Class Interval Length　　　= Length of Class Interval / Number Class

Based on formula the obtained results following :

Table 2Distribution Frequency of Class Pretest Score Data Control & Class Experiment

No	Interval Class	Frequency (f)	
		Control	Experiment
1	16 – 24	9	3
2	25 – 33	10	4
3	34 – 42	6	8
4	43 – 51	1	8
5	52 – 60	5	8
6	61 – 69	4	4
7	70 - 78	1	1
8	>79	0	0
	Amount	36	36
	Mean	37.33	45.56
	Median	32	44
	Mode	28	44

Source : Recapitulation of Class Pretest Results Control and Experimental Class , 2024

Based on table 2, distribution frequency of data values *pretest* class control and class experiment with mark lowest namely 16 and the value highest namely 72. The dominant value interval in the class control that is value 25–33, while the dominant value interval in the class experiment are in 3 intervals, namely 34–42, 43–51, and 52–60. After done *pretest* at the beginning learning , ended with giving *posttest* at the end learning . The following is value data *posttest* class control and class experiment .

Table 3 Class Posttest Value Data Control & Class Experiment (Completed & Incomplete)

No	Class	Mark	
		≥76 (Completed)	≤76 (Incomplete)
1	Control	11	25
2	Experiment	26	10
	Amount	37	35

Source : Recapitulation of Test Results Class Control and Experimental Class , 2024

Final data analysis *posttest* results Study participant teach in each class show existence significant difference . There is difference amount participant students who achieve Criteria Achievement of Learning Objectives (KKTP) (complete) in both the class listed in table 3 data values *posttest* class control and class experiments (Complete & Incomplete). The following is value interval table *posttest* second class .

Table 4 Distribution Frequency of Class Posttest Score Data Control & Class Experiment

No	Interval Class	Frequency (f)	
		Control	Experiment
1	16 – 28	7	2
2	29 – 41	2	1
3	42 – 54	5	0
4	55 – 67	10	6
5	68 – 80	2	2
6	80 – 93	3	12
7	>93	7	13
	Amount	36	36
	Mean	58.00	78.44
	Median	56	88
	Mode	96	88

Source : Recapitulation of Test Results Class Control and Experimental Class , 2024

Based on table 4, distribution frequency of data values *posttest* class control and class experiment with mark lowest namely 16 and the value highest namely 96. The dominant value interval in the class control that is score 55–67 with 10 participants students , while the dominant value interval in the class experiment namely >93 with 13 participants educate . After done *pretest* at the beginning learning , ended with giving *posttest* at the end learning . The following is chart comparison results Study class experiments and classes control with strengthened results calculation *N-Gain* .

There is difference average *pretest* and *posttest* scores in the class experiments and classes control . Results of the *N-Gain* test show that class experiment is at in category medium and class control is at in category low . Comparison results disclose difference score results Study between participant students who are taught with *e* -Module based *GlideApps* and learning using it book catak . Visible that average score (*mean*) in class experiments that apply *e* -Module based *GlideApps* own mark *pretest* and *posttest* were 45.56 and 78.44 respectively . Meanwhile, in class control that uses book print , average score (*mean*) *pretest* and *posttest* are 37.33 and 58.00. After obtained results about results Study cognitive , following is data analysis on results Study affective and psychomotor in class control and class experiment .
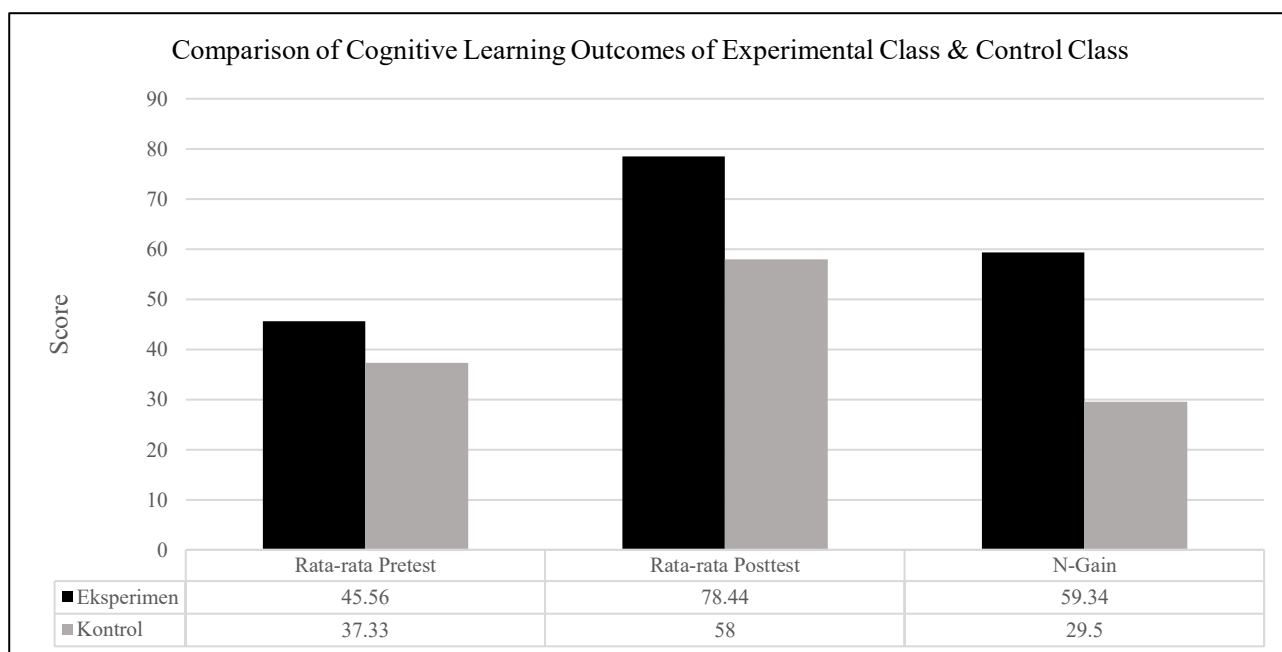
Figure 2 Graph Comparison of Learning Outcomes Cognitive Experimental Class & Class Control
Source : Recapitulation of Test Results Class Control and Experimental Class , 2024

Table 5 Descriptive Learning Outcome Statistics Affective Class Control

Descriptive Statistics											
	N	Minimum	Maximum	Mean	Standard Deviation		N	Minimum	Maximum	Mean	Standard Deviation
K1	36	1	5	3.75	1,025	K15	36	1	5	3.56	.809
K2	36	1	5	3.61	.934	K16	36	1	5	3.33	.894
K3	36	1	5	3.67	.926	K17	36	1	5	3.36	1,046
K4	36	1	5	3.58	.874	K18	36	1	5	3.75	.906
K5	36	1	5	3.92	.937	K19	36	1	5	3.50	.910
K6	36	1	5	3.53	1,000	K20	36	1	5	3.67	.862
K7	36	1	5	3.86	.867	K21	36	1	5	3.33	.926
K8	36	1	5	3.28	.974	K22	36	1	5	3.25	.874
K9	36	2	5	3.61	.838	K23	36	1	5	3.47	.971
K10	36	2	5	3.72	.849	K24	36	1	5	3.69	.920
K11	36	2	5	3.53	.774	K25	36	1	5	3.67	.926
K12	36	2	5	3.67	.862	K26	36	1	5	3.75	.874
K13	36	2	5	3.72	.815	K27	36	1	5	3.69	.856
K14	36	1	5	3.33	.862	K28	36	1	5	3.53	.845

Source : Results of the Control Class Affective Questionnaire , 2024

Based on the results data questionnaire affective class control in table 5, the average value statement the highest answer given by the participant educate is statement number 5, namely " I get knowledge new after accept material learning from the teacher using book print " with an average value of 3.92, while statement most answered negative by participants educate is statement number 22, namely "I can understand in detail location something phenomenon through map use book print " with an average score of 3.25.

Table 6 Descriptive Learning Outcome Statistics Affective Class Experiment

Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation		N	Minimum	Maximum	Mean	Standard Deviation
K1	36	1	5	3.83	1,082	K15	36	2	5	3.50	.971
K2	36	1	5	4.06	.893	K16	36	1	5	3.75	1,025
K3	36	1	5	3.94	1,040	K17	36	2	5	4.19	.856
K4	36	1	5	3.81	1,037	K18	36	1	5	3.72	1,003
K5	36	1	5	4.08	.996	K19	36	1	3	2.17	.811
K6	36	1	5	4.00	1,014	K20	36	1	5	3.72	1,031
K7	36	2	5	3.81	.920	K21	36	1	5	3.50	1,159
K8	36	2	5	3.75	.874	K22	36	2	5	3.94	.924
K9	36	1	5	3.83	1,000	K23	36	2	5	3.97	.810
K10	36	2	5	3.94	.924	K24	36	1	5	3.72	1,085
K11	36	2	5	4.03	.810	K25	36	1	5	3.25	1,204
K12	36	1	5	3.83	1,134	K26	36	1	5	3.64	1,018
K13	36	2	5	3.64	1,018	K27	36	2	5	3.83	.878
K14	36	2	5	3.72	.849	Valid N (listwise)	36				

Source : Experimental Class Affective Questionnaire Results , 2024

Furthermore , based on the results data questionnaire affective class experiment in table 6, the average value statement the highest answer given by the participant educate is statement number 17, namely "I can understand in detail location something phenomenon through map use *e* -Module based *GlideApps* " with an average rating of 4.19, while statement most answered negative by participants educate is statement number 19, namely " I feel fed up with approach learning use *e* -Module based *GlideApps* " with an average rating of 2.15.

Table 7 Descriptive Learning Outcome Statistics Psychomotor Class Control

Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation		N	Minimum	Maximum	Mean	Standard Deviation
K1	36	1	5	3.53	.941	K15	36	1	5	3.64	.961
K2	36	1	5	3.97	1,028	K16	36	1	5	3.44	.877
K3	36	1	5	3.17	1.108	K17	36	1	5	3.28	1,137
K4	36	1	5	3.19	.920	K18	36	1	5	3.56	1,107
K5	36	1	5	3.50	1,028	K19	36	1	5	3.31	1,117
K6	36	1	5	3.28	.914	K20	36	2	5	3.61	.903
K7	36	1	5	3.58	1,131	K21	36	2	5	3.39	.871
K8	36	1	5	3.44	1,107	K22	36	1	5	3.44	1,081
K9	36	1	5	3.86	1,150	K23	36	1	5	3.67	.986
K10	36	1	5	3.50	.910	K24	36	2	5	3.36	.762
K11	36	1	5	3.61	.964	K25	36	2	5	3.58	.906
K12	36	1	5	3.64	1,046	K26	36	1	5	3.17	1.108
K13	36	1	5	3.56	1,027	K27	36	1	5	3.67	.926
K14	36	1	5	3.75	.937	Valid N (listwise)	36				

Source : Psychomotor Questionnaire Results Class Experiment , 2024

Based on the results data questionnaire psychomotor class control in table 7, the most statements answered positive by participants educate is statement number 2, namely "I am able do repeat instructions from the relevant teacher use book print " with an average value of 3.97, while statement most answered negative by participants educate is statement number 3, namely " I am able access videos on books print " with an average score of 3.17.

Table 8Descriptive Learning Outcome Statistics Psychomotor Class Control

Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard Deviation		N	Minimum	Maximum	Mean	Standard Deviation
K1	36	1	5	3.75	1,025	K16	36	1	5	3.33	.894
K2	36	1	5	3.61	.934	K17	36	1	5	3.36	1,046
K3	36	1	5	3.67	.926	K18	36	1	5	3.75	.906
K4	36	1	5	3.58	.874	K19	36	1	5	3.50	.910
K5	36	1	5	3.92	.937	K20	36	1	5	3.67	.862
K6	36	1	5	3.53	1,000	K21	36	1	5	3.33	.926
K7	36	1	5	3.86	.867	K22	36	1	5	3.47	.971
K8	36	1	5	3.28	.974	K23	36	1	5	3.25	.874
K9	36	2	5	3.61	.838	K24	36	1	5	3.69	.920
K10	36	2	5	3.72	.849	K25	36	1	5	3.67	.926
K11	36	2	5	3.53	.774	K26	36	1	5	3.75	.874
K12	36	2	5	3.67	.862	K27	36	1	5	3.69	.856
K13	36	2	5	3.72	.815	K28	36	1	5	3.53	.845
K14	36	1	5	3.33	.862	K29	36	1	5	3.53	.845
K15	36	1	5	3.69	1,167	K30	36	1	5	3.78	.959

Source : Psychomotor Questionnaire Results Experimental Class , 2024

Based on the results data questionnaire psychomotor class experiment in table 8, the most statements answered positive by participants educate is statement number 5, namely "I am able using video on *e* - based modules *GlideApps* ." with an average rating of 3.92 , whereas statement most answered negative by participants educate is statement number 23, namely "I use *e* -Module based *GlideApps* moment do homework " with an average score of 3.25 .

Then , a prerequisite test is carried out research . Before test hypothesis research , then tested prerequisite study moreover first , namely the normality test and the homogeneity test. Prerequisite test study This using *pretest* and *posttest* data class experiments and classes control . First , the data tested normality For know is the research data normally distributed or no . Normality test use help IBM SPSS 26 *for Windows* application Where the result , as following :

Table 9**.** Results of the Normality Test of the Second Pretest and Posttest Data Class

Tests of Normality

	Class	Kolmogorov-Smirnov [a]			Shapiro-Wilk		
		Statistics	*df*	*Sig.*	*Statistics*	*df*	*Sig.*
PD Learning Outcomes	Experiment Pretest	.130	36	.129	.972	36	.489
	Posttest Experiment	.102	36	.000 [*]	.955	36	.000
	Pretest Control	.103	36	.000 [*]	.958	36	.008
	Posttest Control	.094	36	.200 [*]	.944	36	.052

Source: Results of Data Processing Using SPSS Application , 2024

Based on table 9, can explained that mark significance in the Kolmogorov-Smirnova column shows that values significance stated in the normality test the more big from 0.05 on the class pretest class experiments and posttests control , however not on the class posttest class experiments and pretests control . Normality test next , namely listed in the Shapiro-Wilk column shows that values significance stated in the normality test the more big from 0.05 on the class pretest class experiments and posttests control , however not on the class posttest class experiments and pretests control . With thus based on normality test show that the pretest and posttest data for the class experiments and classes control No distributed normally .

Next , for prove validity from the abnormal data prerequisite tests were carried out second , namely the homogeneity test . Prerequisite test study This using *pretest* and *posttest* data class experiments and classes nature the same (homogeneous) or No the same (homogeneous). Homogeneous data can used For test hypothesis study this . Homogeneity test use help IBM SPSS 26 *for Windows* application Where the result , as following :

Table 10. Results of the Second Pretest and Posttest Data Homogeneity Test Class

Test of Homogeneity of Variance				
	Levene Statistics	df1	df2	Sig.
Results *Based on Mean*	5,510	3	140	.001

Source: Results of Data Processing Using SPSS Application , 2024

Based on table 10 above , it is stated mark significance in the column *Based on Mean on* calculation data mark homogeneity is <0.05 which means the data is not homogeneous . Based on the homogeneity test show that the value data *pretest* and *posttest* class experiments and classes control No nature homogeneous . So , the hypothesis test using non- parametric tests .

Then , a hypothesis test was carried out study using non- parametric tests , because the data results research findings abnormal and not homogeneous . Quantitative data used For test hypothesis study this , namely the class pretest and posttest experiments and classes control .

Hypothesis first submitted in study this , namely " There is difference results Study between classes that implement e-Module based *GlideApps* and classes that don't implemented *e* -Module based *GlideApps* in class XI of SMAN 1 Pringsewu ". Hypothesis testing This used For know whether there is difference results Study geography between participant educate class control and class experiments seen from value data *posttest* . Hypothesis This will tested use formula *Mann-Whitney U* , with results calculation If mark its significance more small than α (0.05), then hypothesis accepted , whereas If mark its significance more big than α (0.05), then hypothesis rejected . The following table hypothesis test results First .

Table 11 Hypothesis Test Results First

Test Statistics [a]	
	Results
Mann-Whitney University	365,000
Wilcoxon W	1031,000
Z	-3,200
Asymp . Sig. (2-tailed)	.001

Source : Results of Data Processing Using SPSS Application , 2024

Based on table 11, value significance (*2-tailed*) in the table of 0.001, meaning mark significance the more small from α (0.05). With Thus , the hypothesis The first one says " There is difference results Study between applied classes *e* -Module based *GlideApps* and classes that don't implemented *e* -Module based *GlideApps* in class XI SMAN 1 Pringsewu " was accepted .

Hypothesis the second one proposed in study this , namely " Implementation *e* -Module based *GlideApps* effective to results studying in class XI of SMAN 1 Pringsewu ". Hypothesis This tested based on mark *pretest* and *posttest* class experiments used as sample research the hypothesis . This tested use formula *Wilcoxon's V* with provision that is , if mark its significance more small from α (0.05), then hypothesis accepted , whereas If mark its significance more big from α (0.05), then the proposed hypothesis rejected . The following is table hypothesis test results second .

Table 12 Hypothesis Test Results Second

Test Statistics [a]	
	PostTestEks - PreTestEks
Z	-4.922 [b]
Asymp . Sig. (2-tailed)	.000

Source : Results of Data Processing Using SPSS Application , 2024

Based on table 12, then researchers referring to data acquisition in the value row significance . The significance value in table 35 is 0,000 , It means mark significance the more small from α (0.05) . With Thus , the hypothesis the second which reads " Implementation *e* -Module based *GlideApps* effective to results studying in class XI SMAN 1 Pringsewu " accepted .

DISCUSSION

Study This conducted at Pringsewu 1 State Senior High School in the year academic year 2024/2025. Before start research , researcher conduct prerequisite tests instrument study in the form of question tests and questionnaires in classes XI F.2 and XI F.10. After That researchers do series study with start experiment For know difference results Study geography between classes that implement e-Modules based on *GlideApps* and implemented classes module learning conventional , as well as know effectiveness implementation of e-Modules based on *GlideApps* to results Study geography participant educate class XI at SMA Negeri 1 Pringsewu . Research This use design Pretest-Posttest Control Group Design research . Research design This share sample into two classes , namely class XI F.8 as class control and XI F.1 as class experiment . On learning this is what acts as a teacher is researchers Alone .

learning process in class by researchers using the same learning model only there is differences in the learning media used . The learning model used namely Problem Based Learning in 8 meetings . Problem Based Learning (PBL) was chosen as a learning model in the classroom control and class experiment due to objective learning that will be achieved own correlation with stages learning in the Problem Based Learning model. The Problem Based Learning (PBL) learning model has 5 syntaxes as proposed by Trianto (2011), including : (1) orientation participant educate on problems ; (2) organize participant educate For learning ; (3) guiding individual and group investigations group ; (4) develop and present results ; (5) analyze and evaluate the problem-solving process problem .

Based on results research in table 11, it was found mark significance by 0.001 more small of α (0.05). So , there is difference results Study between class experiments and classes control based on mark significance obtained . The difference in the average value *posttest* second class namely 20.44. This result is also in line with with study Saputro , et al (2021), who stated calculation study Saputro , et al (2021) can explained with Sig. value (2-tailed) is 0.011, so $p < 0.05$ then hypothesis Ha can accepted with results testing the prove that there is difference results study in class experiments that apply learning geography through integration *Whatsapp Group* and *Gnomio* with class controls that apply learning geography through integration *Whatsapp Group* and *Google Classroom* for students class XI at SMA Negeri 8 Surakarta.

Improvement results Study cognitive from *pretest* to *posttest* can seen from average value difference *pretest* and *posttest* in class experiments and classes control . Improvement mark *pretest* and *posttest* in class experiment of 32.88, while average value difference *pretest* and *posttest* in class control of 20.67. This is show that improvement results Study cognitive from *pretest* and *posttest* in class experiments and classes control can it is said Far different or significant with grades in class experiment more superior . In addition , the factors the presence of difference results Study between class experiments and classes control , namely seen through the learning process carried out in both class the as two- factor support previously . Implementation *e* -Module based *GlideApps* is very in accordance applied to the material position strategic and potential natural resources in Indonesia, because *e* -Module based *GlideApps* containing analysis spatial with show position Indonesia's strategic and distribution source Power nature contained in map inside *e* -Module based *GlideApps* which can be explored independently by participants learn anywhere and anytime . This is in line with study Rizaldy , et al . (2022), class experiment using learning media *Geoeduvid Website* so that student pushed For absorb knowledge conveyed by the teacher. Students become more motivated For exploring information on the internet that has been available on *the website* so that can increase knowledge spatial Geography students . Statement the supported by research by Auliya & Safitri (2024), digital learning media provides visual and interactive representation from phenomenon geographical , making concepts abstract more real and easy accessible to students . For example , a map interactive and virtual tours allow student exploring feature geographical and regional with the way that is not can imitated by books text traditional . Different with class control that uses module conventional in the form of book print that is rigid and limited .

Supporting factors next thing that influences results Study class experiments and classes control , namely use *e* -Module based *GlideApps* which is flexible compared to with book print . This is in line with study Murtado , et al (2023), one of the superiority The main digital learning media are its flexibility , which allows student access materials and sources education When only and from any location . The website learning media has excess like student can access without limited time and place , the website provides various source learn , and according with demands curriculum that uses technology (*Salam, 2015*). In addition , e - modules based on *GlideApps* also includes YouTube videos that have been stated as material supporters material learning . This result is also

in line with research by Utami et al ., (2021), where participant educate more like If in the learning process using video, because with using participant videos educate become more interested For learn the material to be given .

Other supporting factors for see increase and decrease results Study geography seen from distance the house that was taken participant educate going to to school . Furthermore , if seen based on range place stay participant educate and connect with results Study participant students who have not yet reach KKM, still there is a number of participant students who are included in case said . In class experiment there are 10 participants students who have not yet complete in learning , 2 participants educate be within reach distance more from 5000m, 6 participants educate is at a distance of 5000m, and 2 participants educate is at a distance of 500m. This is in line with study *Lisnawaty* & Zaifullah (2022), distance place stay participant educate influential to his activity follow eye Social Studies lessons in grade VII of SMP Negeri 1 Kasimbar Kasimbar District Parigi Mautong Regency . Statement the supported by research *Bangun* et al. (2024) , long distance between home and school can cause fatigue physical and mental for students , so that they become not enough focus and not enthusiastic in Study .

Furthermore For see effectiveness e- module implementation Wilcoxon's V test was used . Based on results research in table 12, it was found mark significance of 0.000 < 0.05. This means that the e-Module is based on *GlideApps* effective For implemented as a learning medium geography class XI. However , still there is participant students who do not achieve the KKTP determined by the teacher as stated explained in the analysis results learning contained in the hypothesis First research . Therefore that , hypothesis second in research can it is said effective However No significant . Effective However No significant that is No means variable X is really No influential against Y, will but its influence No means Because such small the effect (Akbar et al . , 2023). Learning applied in groups sample class experiment is learning using e-Modules based on *GlideApps* done with 8 meetings . Research experiment done for 4 weeks in succession , with specification time , namely One Sunday there is 5 hours of divided lessons into two meetings in One week , meeting First done for 3 hours of learning and meetings second implemented for 2 hours of learning , so the total is deep One Sunday there were two meetings with allocation 5 hours of learning time . Learning modules used in class experiment is an e-Module based on *GlideApps* with learning model *Problem Based* Learning (PBL) is said effective as a learning medium .

E-Module based *GlideApps* it is said effective , because the e-Module is based on *GlideApps* integrating audio visuals equipped with explanation material , so that participant educate capable understand material position strategic and potential resource nature in Indonesia with fast . Statement This supported by Primananda & Hamid (2021) who said that use of audio visual media in learning geography considered impact directly by the teacher, because considered very effective . This is also supported by Sahrina et al ., (2023), with results study that there is supporting activities like existence images / illustrations , infographics , learning videos so that student interested For using e-Modules based on Heyzine flipbook. A learning medium in the form of e-Modules is considered effective If capable give impact positive on improvement competence participant educate . Effectiveness implementation of e-Modules based on *GlideApps* proven with results answer participant educate after given treatment occurrence change positive compared to before given treatment . Not only that , there are 3 realms learning achieved in use of e-Modules based on *GlideApps* that is results learning in the realm cognitive , affective , and psychomotor .

Furthermore , based on results learning using e- modules participant educate capable Study individually with active without help maximum from educator so that participant can Study independent . This is in line with results study Praise and Worship et al ., (2022) that e-Modules have advantages , where use module can help student Study in a way independent with without or with teacher assistance . In addition , with using e-Modules, participants can Study in accordance with level his abilities and after lessons in class finished participant educate can know level success achieved . After given treatment learning with using e-Modules based on *GlideApps* , students feel Study geography more easy , because the e-Module is based *GlideApps* serve material past easy example understood .

Position material strategic and potential resource nature in Indonesia has Lots terms and concepts that require visualization for understanding participant educate can increased . So from it is e-Module based *GlideApps* No only provide material However collaborate between materials and images , maps distribution resource nature , also video links or articles that can support depiction participant educate to the material being taught . This is Because moment learn material using e-Modules based on *GlideApps* , the material presented Lots describe associated concepts with life everyday , such as analyze position strategic an area. In addition , e-

Modules are based on *GlideApps* can made into as one of the teaching materials because there is Lots information , description images , and the text in it . This in accordance in Yaumi (2018) that good teaching materials that is there is instruction learning , multimedia, to useful online information .

E- module based *GlideApps* own interactive activities . Statement the supported by Nurhasanah & Darmansyah (2024) who said that module electronic more interactive compared to module print and enable use images , animations , videos, audio and films, as well as test or quiz formative . Application designed education For facilitate activity Study teaching , e-learning platforms, applications interactive , and multimedia content provides possibility for teachers to create environment dynamic and diverse learning (Wahyuni & Haryanti , 2024) . With thus , so that the results Study participant educate can increased , utilization teaching materials that are interactive like e-Modules should be used in learning to be able to increase attention , power pull as well as performance Study participant educate . This is in line with study Murniati (2022) who said learning use teaching materials in the form of e-modules using easy language understood and synchronized with Power think students . In addition , e-Modules are based on *GlideApps* own advantages that can be read When only and where just as well as can save money because No must buy book .

apart from aspect cognitive aspects affective also influences effectiveness results Study participant learn . Learning outcomes affective can seen in participants educate in behavior his behavior , but can also be measured through questionnaire with scale Likert . Ability affective relate close with interests and attitudes that can shaped not quite enough responsibility , cooperation , discipline , commitment , trust self , honest , respect other people's opinions , and abilities control self (Saftari & Fajriah , 2019). Based on observation to behavior characterful participant educate show positive results . In class experiments using e-Modules based on *GlideApps* , participant educate capable responsible For finish task or problems given by the teacher through Work The same in group with truly using e-Modules based on *GlideApps* . Participants educate Study through cooperation with each other help fellow member group . Statement the supported by Tasya & Abadi (2019) that learning realm affective designed For own response and stimulus to can reach more action Good .

Participant educate in class experiment own high enthusiasm moment using e-Modules based on *GlideApps* as teaching materials in learning and getting experience learn something new as a sense of trust self will get many information new . This is in accordance as stated by Anggara (2024) that learning media interactive can make student more active and involved in the learning process . This is can develop attitudes and knowledge participant educate in accordance with each person's abilities , so that give more learning meaningful and enjoyable for participant educate .

Participant educate committed For support activity Study with using e-Modules based on *GlideApps* and open e-Modules based *GlideApps* For learn anywhere . This is in accordance as stated by Lastri (2023), e-Modules can help student For Study in a way independent and able measure level his understanding own opinion the reinforced by Sholeh et al ., (2023) that the interactive e-Module become innovation in learning and its use by students can done at home or in class , so that Study student become more flexible .

Apart from the aspect affective in which influence level effectiveness , there is results Study psychomotor as balancer results Study affective and cognitive . Based on observation direct and assessment results Study participant educate known that participant educate capable show position Indonesia's strategic position on the map contained in the e-Module based on *GlideApps* , participant educate capable identify distribution resource nature in Indonesia through e-Modules based on *GlideApps* , participant educate capable show distribution material mine through e-Modules based on *GlideApps* , participant educate capable watch videos with method Click on the video gallery in the module electronics and understanding every explanation , discussion with friends when experience difficulty , able look for other references when module Not yet give information learning that can be help in activity study and assignments , able to show steps method access and explore e-Modules based on *GlideApps* For learn material , looking for explanation on the internet when find a difficult word understood , can inspect Alone results activity learn and read , understand module This in a way sequentially every part . Through map that has been provided on the e-Module, participants educate can with clear and detailed see distribution material existing mines in Indonesia. Use map is tool think the simplest spatial that can be convey various type information (Logan, 2012). Students become more active and enthusiastic in follow the learning process with using map media on *GlideApps* .

CONCLUSION

Based on formulation problems , results and discussions that have been explained previously about effectiveness implementation *e* -Module based *GlideApps* to results Study participant educate class XI SMAN 1 Pringsewu , research This has two conclusions , namely there is significant difference between results Study participant educate in class experiments that implement e-Modules based on *GlideApps* and classes control that uses learning conventional on the material position strategic and potential resource nature in Indonesia in class XI SMAN 1 Pringsewu 2024/2025 with an average value of class experiment 78.44 and class average value class control 58.00, with difference mark second class of 20.44., as well as E-Modules based on *GlideApps* effective to results Study Geography in class XI of SMAN 1 Pringsewu . E-Module based on *GlideApps* give positive influence in learning geography ..

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