

Instructional Model of Group Investigation by Using Facebook in Improving Student's Reasoning on Geography Subject

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Abstract-*The causes factor that influence students problems are learning resources and instructional model applied have not provided opportunities for students to construct their knowledge. Based on these conditions, the Facebook-assisted group investigation model was developed to improve students' geographic reasoning abilities. It was supported with teacher book and student book. The purpose of this study was to obtain a valid, practical and effective Facebook-assisted investigative learning model. The research was a Research and Development (R & D). It applied Plomp's model (2013) which consisted of preliminary research, the product design, the product evaluation or evaluation. To investigate the validity and practicality at the product design phase, it would use formative evaluations that include self evaluation and one-to-one evaluation. In the assessment phase, summative evaluations are conducted which aim to determine the effectiveness of the product. The research data was collected through discussion, observation, interviews, questionnaires, and test. The collected data was analyzed using descriptive and inferential statistics. The results showed that the model book, teacher book and student book were valid. The value was > 3.20 with the *icc* the model book was 0.887, the *icc* student book, 0.969 and the *icc* teacher book 0.958. It means that the model and support system were feasible. Then, the practicality are useable, which is easy to use, helpful for the learning process, adequate timing and pleasant. Then, the instructional model also obtained, the students' geographic reasoning abilities can increase. It can be concluded that instructional model of group investigation by using Facebook in improving students' geographic reasoning ability was valid, practical and effective.*

Keywords:, Learning Model, E-Learning, Investigation Group, Facebook, Reasoning

I. INTRODUCTION

Geography Learning is not just memorizing the names of mountain towns, lakes, straits, and ethnic groups without having abilities to understand and explain relationships functional, interrelations, interactions, and inter-dependencies on the earth (space, area, region) with human beings. But, Geography is an analytic understanding (Enok, 2015). It relates to the 21st century/digital age education framework that the students are required to think critically. They are be able to give reason, describe problems and find solutions and be able to work together and to communicate with everyone. Therefore, teaching geography must use appropriate instructional models that arouse mindset and insight of students. The teacher is as manager who manage the class.

In digital era, the technologies develop rapidly and the expansion of the internet touch all society. There are many innovative instructional models that facilitate teachers in learning processes, it called E-Learning. E-Learning is a way of teaching and learning services or assistance with electronic devices, especially computer devices and uses the internet as an intermediary in the teaching and learning process. In this study, e-learning as additional class. The student may download learning material. It is no substitute conventional class. The students who take part in e-learning will get information early and knowledge (Siahaan, 2003). The application of E-Learning can be applied by using Facebook. Facebook is a pay-free social network commonly used by all groups and used in learning (Ratneswary, 2013) Facebook has features and menus that can be used for learning such as giving comments on the status of video links or images uploaded or by using inbox. Learning E-Learning by using Facebook has been carried out many studies such as Zigler (2007). He argued that Facebook social networking sites have the ability to change students from passive to be active students. Then, facebook also as a tool that can improve learning experiences (Piriyasilpa, 2010). It also revealed students learning climate in the classroom became more alive with learning using social networks (Mazer, Murpy and Simonds, 2007) . Learning by using Facebook with the investigation method makes students work hardly to find and solve problems. In this way, students are able to give reason for each problem. Reasoning is also a thought process carried out by drawing conclusions that produce a number of descriptions of information, concepts before they are communicated.

II. LITERATURE REVIEW

To create communicative and active atmosphere in teaching learning, the teacher must use instructional model which actively involves students (Eggen, P, Don Kauchak (2012). The model is designed to help students to develop the ability to think and gain an understanding of specific material. The instructional model is description of a learning environment and the results of the teacher's design as solutions, new innovations to gain knowledge in achieving goals. The investigative group learning models are able to create students do in collaborative and communicative. Investigation is a process and an activity, describing a problem is investigation solving problem as a process (Joseph B & Ban Har, 2012). This model can improve student learning achievement (Candra, 2015). By implementing investigation group, the students can increase reasoning ability. It covered how they find way as solution, how they correlate with others and also how the get ideas in overcoming the problems in school environment or outside(Candra, 2015)

Facebook advantages in learning process have been proven by some expert . Some of them discover that social networking has the ability to convert students from being passive students to be active students (Ziegler, 2007). Then, the use of social software in higher education provides collaborative space for learning and teaching that enables increased peer interaction and interaction between educators and students (Cress and Kimmerle, 2008); (Collins and Halverson , 2010); (Wodzicki, Schwammlein and Moskaliuk, 2012). The other study found that facebook is one of the best ways to improve communication and instill positive learning attitudes, motivate students to learn and encourage them to do assignments. They can build social relationships through virtual interactions (Ellison, Steinfield and Lampe ,2007); (Kabilan, Ahmad and Abidin, 2010); (wong, 2013).

III. METHODOLOGY

This research is Research and Development (R&D). The product in this study is an investigation group instructional model by using Facebook. Teacher books and student books would use in application of this model. It has purpose to improve geographic reasoning ability of high school students. The development design used is the design of Plomp (2013) which consists of several stages; Preliminary research, Prototype Phase Assessment stage. Data was analyzed in descriptive qualitative and quantitative. To test the validity of the model, the researcher used the experts judgment. It involved construct validity and content validity. The practical test of the model is determined by the results of evaluations by practitioners and observers. Analysis of the effectiveness of the group learning model assisted investigation was obtained from students 'Geographic reasoning abilities through learning outcomes tests. Students' geographic reasoning ability was seen from 2 aspects namely; 1) Knowing and describing a problem, 2) Finding a solution to problem solving. The question is tested in the form of an essay. Analysis for the effectiveness of the product used t-test. The trial subjects of this study were tenth grade students of State Senior High School (SMA) No. 9. Padang. The experiment group was taken randomly from all research subjects or the study population. The population of this study was class X students consisting of 9 classes. Techniques for collecting data by observing, interviewing and conducting Focus Group Discussion (FGD).

IV. DISCUSSION

The result of study showed about the students problem in learning geography and what the need to improve their reasoning ability.

- 1) Preliminary studies
 - a) problem analysis.

Relating to geography learning process in the classroom, it found that the students activity tend to memorize the material. Analyzing activity as a target of the curriculum 13 do not run well. The effect of it was students' reasoning on geography could not developed. It was supported by teacher argument. The teacher could not applied other method that raised students reasoning. For them, by applying method that involving student to discuss, it would take long time. The teacher was anxious if the learning target is not achieved..
 - b) product analysis.

Product analysis is done by analyzing the models applied in learning. The model analyzed is the model applied in learning such as learning with the approach of contextual teaching learning - group learning or cooperative learning, active learning. The results of the analysis obtained that the teacher needs to do innovation in the learning model. The innovation is to develop an investigative group learning model to facilitate student activity and develop students' geographic reasoning abilities.

- c) material analysis
Based on the teacher interview, it was obtained that too much learning material for class X for example, Litosfire has many material, but the meeting for this material only five. It was difficult to teacher to choose appropriate strategy in teaching.
 - d) Analysis of student characteristics.
The results of analyzing student characteristics provide an overview of product design and the scope of content on the product support system, especially in student books. Thus, the model and the books are developed based on students characteristics. It means the product can facilitate students to understand language, use of letters, materials, questions and test practice questions and also to raise their curiosity and increase students' geographic knowledge.
 - e) product analysis.
This is to analyze the suitability of the product.
- 2) Development Phase
- At this stage is to design/develop the initial product. It is a instructional model of investigation group by using Facebook to improve the geographic reasoning ability of high school students. first design of the online group investigation contains an introduction to models, rational models. Rational models as a basic to develop online Group learning models. This section also discusses theories supporting in development of online investigative Group learning models. The theories are constructivist learning,, model theory and model components. The material discussed in the teacher's book are: Litosfire dynamics and its impact on human life for six meetings. The material includes the meaning of litosfire, minerals, tectonism, volcanism, all kinds of exogenous power process and erosion. The student books contain instructions, learning objectives and indicators of achievement competency.
- The development of the investigation group instructional model follows the elements set by Joice & Weil (2011)
- a) syntax
The syntax of the model is designed to involve students directly and be as part of the learning process. As expected in the education curriculum, the learning process has to balance both academic aspects and character of students, in order goals of national education can be achieved. The learning process must be interactive, inspirational, fun, and not do in a one-way pattern that is centered on the teacher or students only. That is, to learn is needed is how to form their students understanding. it emphasis on the process and the teacher functions as a facilitator, motivator and director of activities.
 - b) Social system
In social system applied, the teacher acts as a facilitator, initiator and mediator who regulates the learning process sand accompanies students in discussing. This social system can be seen on Facebook through the comment at status and students inbox. In facebook, students actively discuss with group members in online.
 - c) Principle of Reaction
The principle of reaction in this learning model is to explain how a teacher respects, places, and responds to what has been done by students both online through Facebook and in class.
 - d) Support system
The types of systems supporting the Facebook-assisted investigation group learning model include: model manuals book, teacher books, student books and teaching materials in the form of power points and videos uploaded on Facebook.
 - e) Instructional impacts
It is for developing students' reasoning abilities on Geography subjects, increasing activities, building interest and arousing curiosity. Then, additional impact is the development of students' geographic reasoning abilities, cooperative ability and communicative ability.
 - f) Product validation
Based on the results of the validation conducted by five experts/validators (3 material experts, 1 linguist expert and 1 technology expert) shows that,
 - g) Model Book
The book model was stated to be very valid with an average value of 4.28 and for the ICC value obtained was very high = 0.887. The analysis of the average agreement between rater, while for one rater the consistency was 0.375. It indicates score from validators have a few correlation in determining validity. It means all score are valid.

- h) **Model Book**
The model book was stated to be very valid with an average value of 4.28 and for the ICC value obtained was very high = 0.887 of the analysis of the average agreement between rater and for one rater the consistency was 0.375. This indicates that between validators there is a small correlation in determining validity, it means Valid values have been given by each validators and get small correlation among validators in determining the validity of the model.
- i) **Student book**
Based on the assessment of experts, student book has an average ranging from 4,113- 4,6 toward organization, format, and material aspect . The results was categorized as valid. The aspect of the language showed that the students can understand easily with result 4.3, very high ICC 0.969 and 0.410 of a rater the consistency.It involved sentences, language and images in the student book.
- j) **Teacher's Book**
The results of the organization, format, material aspects of the book are an average ranged from 4.00 to 4.5. This results indicates that aspects of the teacher's book are categorized as very valid. The aspect of language are average ranging from 4.23 to 4.50. It can be concluded that the sentences and illustrations in the teacher's book give a message that easily understood by the teacher. Based on the analysis of the assessment given by the validator, all aspects of the teacher's book can be stated that very valid
- k) **Practicality Test**
(a) **Practicality of Investigation Group Instructional Model assisted by Facebook**
Based on the implementation Investigation Group Instructional Model assisted by Facebook, it found that the average score of all aspects in the X class of Padang 9 Senior High School was 4.33 It was interpreted that the implementation of the instructional model categorizes very good. It also was proven by intraclass test correlation on the results of the implementation of the model with a value of 0.181. There was small correlations between the assessors in determining the model's accuracy. Based on the observations, it was obtained information that the application of the instructional model of the Instructional Model assisted by Facebook was useful.
- l) **Focused group discussion (FGD).**
There were several suggestions and inputs from the FGD participants. They are; use appropriate diction in scientific writing, the design of the book cover is needed to be improved, use the appropriate based on description. As a whole, the results of FGD agreed that model were good and feasible to use. The revision of the product, namely prototype 4. After passed the evaluation steps, the product would revise and became final product
- m) **Effectiveness Test**
To investigate effectiveness of model, the researcher did observation by using observation sheet and did the test to know students reason ability. Based on t-tes, it was gotten that a significance level of 0.01

Table 1. Students' Reason Ability Score

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Result	Equal variances assumed	1.375	.264	4.399	12	.001	26.28571	5.9750	13.2673	39.304
	Equal variances not assumed			4.399	10.050	.001	26.28571	5.9750	12.9814	39.589

Based on the table 1, it can be obtained a significant score of $0.00 < 0.05$, H_0 is rejected. It means there are differences in the development of students' abilities in the experimental class and control class.

Conclusion

The findings have proven that instructional model of investigation group assisted facebook is able to improve student reason ability and learning outcomes. This model is better than conventional model. The students are enthusiasm in learning geography. This model gives opportunities to students to discuss with their friends in online. The also can work in team and share the idea or concept of learning by facebook. They feel free to write their idea and answer the question.

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