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Implementing Google Earth to Enhance Student's Engagement and Learning Outcome in Geography Learning

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Abstract

This study aims to examine the effects of Google Earth on students' engagement in learning and their learning outcome. This study employed pre-experimental design with the One-Shot Case Study design. From the exploration directed crosswise over various areas of evaluation of 12 students in the school, it is demonstrated that dynamic learning of students in was high since it was above 75% and learning outcomes reached an average of 80. This is good considering that the passing grades set in the school was 70. The application of experiential learning methods can produce satisfactory output when viewed from student participation. By looking at the characteristics of schools where students number was less than 20, the teacher is required to develop innovative learning methods. If implemented, this may yield in the improving circumstance of the currently marginalised Geography.

Keywords: Google Earth; Student`s activities; Geography learning.

1. Introduction

The absence of time is a significant hindrance to actualising GIS in educational programs due to the requirement for instructors to gain proficiency with the product and to comprehend the hidden information. Additionally, teachers need to prepare materials for students' exercises, so as to allow more time for the students to become familiar with the product and fuse the device in the learning experience. Teachers' emphasis on GIS instruments has often been challenging because of the measure of time required to learn and apply the devices. The time related to learning GIS applications has been an extensive factor in GIS and related advances having just restricted execution in classrooms.

Fullan & Langworthy (2014) state the content review changed the focus of the class to one of deep learning. One of the solution to solve this problem is the use the simple artificial intelligence that may facilitate interactions between teachers and students. Google Earth is

very good to introduce the “real world” to students because it can bring students to the reality of earth surface. Google composes the stage which enable the instructor ‘to bring a universe of data alive’ for students’. Other study mentions that Google Earth is anything but difficult to utilise and shows, in a visual geospatial setting, a lot of data that applies to points that are tended to in geoscience courses and numerous other instructive settings. Hong (2018) investigates approaches to upgrade basic citizenship through the instruction and learning of topography. Aydin (2010) composes that Geography instruction should occur in the dynamic investment of students during the time spent all encompassing and significant connections, while preparing subjects and multi-dimensional reasoning aptitudes.

Thankachan & Franklin (2013) propose that the utilisation of Google Earth in the classrooms builds the consideration of the students, especially among the rudimentary students. During the investigation, through the homeroom perception, the scientists saw more consideration being paid to the exercise among primary school students than the secondary school students when Google Earth was being utilised. Phadke (2010) argues that there are important risks and costs involved in investing in the use of Google Earth imagery for rhetorical communication.

Cuviello (2010) proposes that Google Earth has a spot in the classrooms, conveying a class solely with Google Earth is compelling at displaying the material covering the goals of the class. There is nothing to state that a blend of various strategies during one talk period is not appropriate. Students need to learn. A portion of the strategies educators use in class will work for certain students and not with others. In the event that educators center around the significant foci and integrate techniques to show those things, a greater number of the students will be provided with the opportunities to learn. This strategy makes students to be actively engaged in the classroom and to actively participate in discussions. Ademe (2010) proposes that dynamic learning techniques are procedures which make students dynamic members during the educating learning process. Accordingly. Drake (2012) states that dynamic learning offers some desire for expanding theoretical comprehension, its absence of suitable center leaves it experiencing blended discoveries.

Johnson *et al*. (2011) states that Google Earth can possibly bring the best of instructive innovation into instructors' study halls. It enables students to go past basic maps and worksheets to give them a special, intuitive, and connecting with taking a gander at our planet. Given its assortment of additional items and layers, it is equipped for being utilised in a wide assortment of substance territories. Far and away superior, Google Earth is an instrument that can move students over the whole globe like a flash, allowing them a chance

to explore regions of our planet that they will in all probability never travel to. Its usability, free cost, and versatility make Google Earth an unquestionable requirement for any educator's homeroom. Conceivably, no other subject can benefit more from utilising Google Earth than that of geoscience training. Instead of different maps or charts of land information, it is presently consolidated into a virtual, intelligent, three-dimensional model. Luckily, geoscience instructors at all levels comprehend that potential and have steadily attempted to put Google Earth into their homerooms.

Patterson (2007) argues that Google Earth engages students by giving them the way to finish complex undertakings and by giving them significant scope in the plan of ventures. Students are encouraged to mindful of spatial patterns and suggestions while not unequivocally realising they are learning geography, this can be both a potential quality and shortcoming. Despite the fact that Google Earth does not have a huge number of apparatuses and abilities as does a genuine GIS, it empowers students to find out about spatial examples and think spatially. It likewise makes way for students to participate in GIS as they pose progressively mind-boggling and definite inquiries after they arrive at the utmost of Google Earth's utility.

Innovation has incessantly become part of our education: from kindergartens to graduate schools, new learning devices are progressively utilised either for in-class exercises or for learning appraisal (Cauley *et al*., 2009). So as to plan students for the Science, Technology, Engineering, and Mathematics (STEM) fields, educators in their comparing instructive controls have become pioneers in embracing instructional advancements and empowering scientific thoughts (Marshall, 2009). Students’ achievements on each indicator is measured as lessons on the topic of remote sensing and GIS take place. Students will independently operate the Google earth software and interpret land appearances on the surface of the earth, then students also do labeling and temporally analyse the changes in land that occur based on aerial photographs on Google Earth. Although it is not as complex as GIS software, it is expected that this simple software can represent the existence of remote sensing technology and GIS because so far the difficulty in teaching this topic is the small number of teachers using technology to aid their teaching.

Gökçea (2015) states that the impact of various strategies and methods over students’ aptitudes ought to be resolved. Schools' framework ought to be refreshed and redesigned, and separate examinations researching the impact of schools' foundation over students’ abilities ought to be structured. In-administration preparing projects ought to be led so as to assist

educators with finishing their insufficiencies in planning and utilising maps, for example, GIS, Google Map, and Google Earth.

Previous studies do not measure in depth the activities of students in the class relating to their interactions with teachers and peers to overcome the problem of learning geography by using google earth. This research not only examines in theory but also the application of Google Earth software in increasing student activity, focus of research is to observe the correlation between use of Google Earth and Student's activities. This study measures the indicators of Student's activities, such as (1) participation in carrying out their learning tasks; (2) involvment in problem solving; (3) questions for other students or teachers if they do not understand the problems they face; (4) involvement in group discussions according to the teacher's instructions;(5) assessment of his ability and results - the results obtained;(6) training in solving problems;(7) ability to complete tasks. This study aims to examine the effects of Google Earth on students' engagement in learning and their learning outcome.

2. Methods

This study employed pre-experimental design with the One-Shot Case Study design. Data were collected by using observation sheets. Analysts at that point gauge data from a writing survey in light of their own worries and circumstance. Field observations were used to measure students activity during interpreting images with criteria as follows: (1) participating in carrying out their learning tasks; (2) involving in problem solving; (3) Asking other students or teachers if they cannot solve aproblem ; (4) Trying to find various information needed for problem solving; (5) Carrying out group discussions in accordance with the teacher's instructions; (6) Assessing his abilities and the results obtained; (7) Training themselves in solving problems or similar problems; (8) using or applying what is obtained in completing the task or problem it faces. There were external variables that influenced the shape of the dependent variable. Therefore, the experimental result which was the dependent variable was not solely affected by the independent variable. This was because there was no control variable and the sample was not randomly selected.

Table 1. Treatment Schemes in the experimental and observation classes

	Group	Dependent Variable	Observation
(R)	Experiment	X	O

X = Treatment using Google Earth

O = Observation during the activity

The researcher wanted to find out the effects of the treatment given to students in the form of aerial photo interpretation activities from Google Earth and temporally analyze their chosen location. This study used the following scheme: (A) Participating in carrying out their learning tasks, (B) Involving in problem solving, (C) Asking other students or teachers if they do not understand the problems they face, (D) Trying to find various information needed for problem solving, (E) Carrying out group discussions according to the teacher's instructions, (F) Assessing his ability and results - the results obtained, (G) Training in solving problems; (H) Completing tasks.

Table 2. Description of each aspect

Scoring	Remark
1	Need improvement
2	Fair
3	Good
4	Very Good

Calculation of the average percentage of indicators of student participation above are as follows:

$$I\,KS = \frac{\sum s}{F} \times 100\% \qquad (1)$$

I KS : Student Activity Index

$\sum s$: The total number of students average score

F : Frequency of students

3. Results and Discussion

The assessment of the activities of students in the interpretation of aerial photographs were based on the accuracy of the object recognition made by students, because this is the most vital part in image interpretation. Aerial photography as the oldest image in remote sensing has the most complete element of interpretation compared to the interpretation of other images. The aerial photo in question is an aerial photo from Google Earth. Google Earth is an interactive mapping application released by Google. Google Earth displays a map of the globe, topography, terrain that can be overlaid by road, location building or other geographic information. After going through instrument validation, the following are the results obtained in this study.

Table 3. Results of Observation of Student Activity

Student's Name	Aspect of Activities Observed (Scores)								Total	%	Mean
	A	B	C	D	E	F	G	H			
Student A	4	3	3	4	3	2	2	3	24	67	
Student B	4	4	4	4	4	4	3	3	30	83	
Student C	3	4	3	4	4	3	3	3	27	75	
Student D	3	3	3	4	4	4	4	3	28	78	77
Student E	3	4	4	4	4	3	3	3	28	78	
Student F	4	4	3	3	3	4	3	4	28	78	
Student G	3	4	4	3	3	3	4	4	28	78	

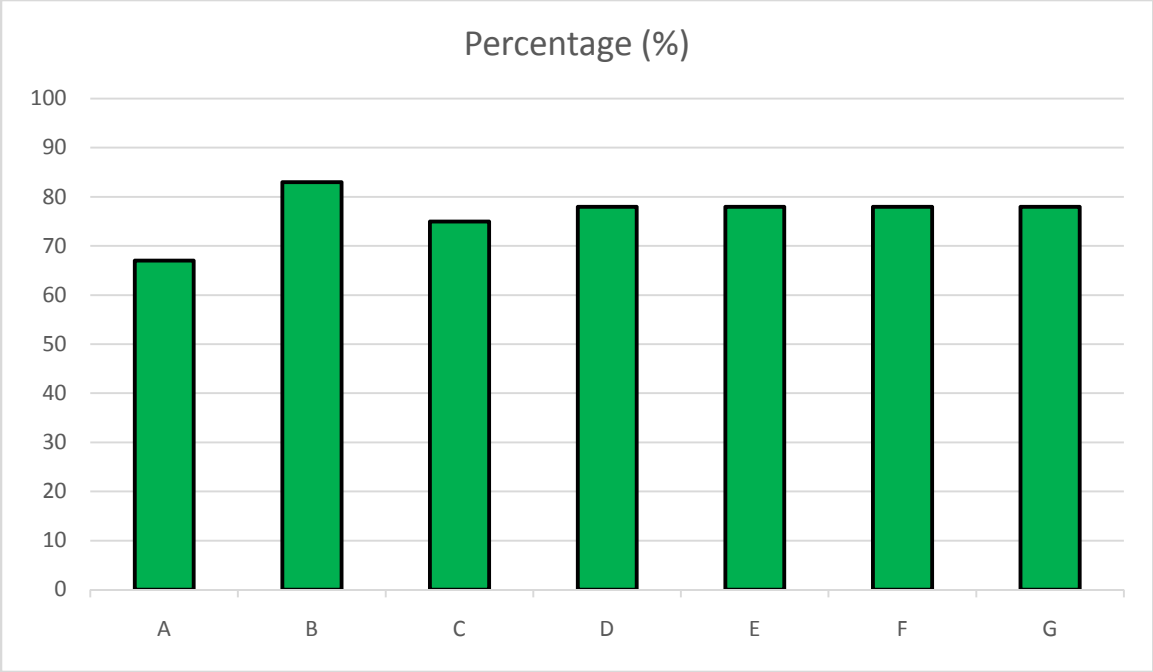

Figure 1. Aspect of activities observed

The present investigation was intended to comprehend the effect on students' learning in a social examinations study hall with Google Earth intervened guidance. Google Earth enables students to finish complex assignments by providing them the and extensive scope in the structure of ventures. Students were made mindful of spatial patterns and suggestions while not expressly realizing they were learning topography, this can be both a potential quality and shortcoming. Students freely worked on the Google earth programming and

translated land appearances on the outside of the earth, at that point students likewise did marking and transiently dissect the adjustments in a land that happen dependent on airborne photos on Google Earth. In spite of the fact that Google Earth does not have a huge number of devices and capacities as does a genuine GIS, it empowers students to find out about spatial examples and think spatially. The utilization of Google Earth in the study hall will build consideration of the students.

Table 4. Student's Scores (learning Outcome)

Students	Scores	Mean
Student A	75	
Student B	90	
Student C	80	
Student D	80	80
Student E	85	
Student F	80	
Student G	70	

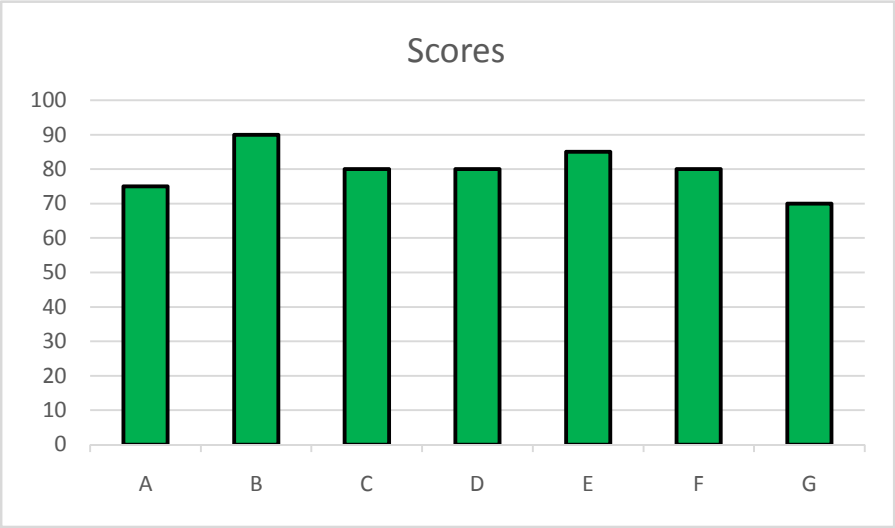

Figure 2. Student's learning outcome

Based on Table 3 above, it can be seen that the learning outcomes of students reached an average of 80. This was very good considering the passing grades in the school was below it, namely 70. Based on the results of the aboveit is known that the application of experiential learning methods can produce satisfactory output when viewed from student participation. The results of this study are reinforced by Prawindia (2016) proposition that based on the results of observation and identification of geographic teaching materials used by students, there are still some shortcomings. Analysis of geographic content includes the use of geographic concepts and formal geographic objects in the form of linkages of objects in terms of spatial, territorial, and environmental aspects. With expanding student support, different elements are relied upon to increment in particular self-efficacy. Self efficacy is an individual's beliefin their capacity to prevail with regard to accomplishing objectives. Palmer (2013) states that students reacted decidedly to learning landforms and their related developmental procedures utilizing Google Earth and advantageous representations.

The results of this study are reinforced by Collins (2018) compared customary paper maps and computerized maps to decide if various media significantly effective to improve students' mindfulness and specific sorts of spatial reasoning aptitudes. In light of the examination of inside and out meetings with center school students and educators in the wake of executing a progression of geospatial learning exercises, the creators reason that expanded introduction to maps and spatial reasoning exercises can improve students' spatial reasoning abilities paying little mind to media.

Yuda (2011) states that spatial learning has a different way of testing students' spatial thinking skills, namely by means of games, such as puzzles, video games, and maps. This was done because his research involved elementary education studentsas respondents, so that such tests were considered to be more familiar and not to change the situation. The results of the study for three meetings showed an increase in the activity of teachers and students at each meeting with an average of 92.15%, categorized as very good. Experience-based learning is useful because the application of Experiential Learning learning models with correct steps is proven to increase the value of the process and student learning outcomes. Furthermore, the researchers also provide advice to schools to complement learning media that support the learning process so that learning can take place actively, innovatively, creatively and pleasantly. Jo & Hong (2018) investigate that urge proceeded with look into endeavors to amass information about educational program, guidance, and evaluation, just as

instructors' expert advancement that can assist students with turning out to be 21st century residents furnished with geospatial proficiency.

Fieldwork also needs to be developed in experiential learning, because field practice is very good for stimulating students' brains to be able to remember the activities and knowledge carried out. Components in product development need to be considered, because they are tailored to the learning needs of students. A more specific explanation for each indicator is as follows:

Table 4 shows that of all of 7 students showed very good participation in carrying out their learning tasks. 3 students showed very good indicators in the contribution of completing their assignments. While the other 4 students were known to get a score of 3 which was a good indicator. Abdullah *et al*. (2012) argue that the students concurred on the significance of friends in the learning procedure. Notwithstanding, students like to be in a gathering like them in terms of decisiveness in the study hall. In general, the two gatherings of inactive and dynamic students recognized the significance of students to shout out in the class.

From table 4 it is known that from a total of 7 students, 5 students got very good indicators and only 2 students got good indicators. This shows that students are able to contribute to problem solving in class discussions. Samson’s (2015) techniques that draw in and persuade students advances further learning and encourages the improvement of powerful critical thinking and basic reasoning aptitudes.

From table 4 it is known that from a total of 7 students, 3 students got very good indicators and 4 students got good indicators. This shows that students were able to develop the skill to ask questions during the discussion process. From table 4 it is known that from a total of 7 students, 5 students got very good indicators and only 2 students got good indicators. this shows that students are able to solve the problems contained in the discussion theme.

From table 4 it is known that from a total of 7 students, 4 students got very good indicators and 3 students got good indicators. This shows that students are able to carry out group discussions according to the teacher's instructions. Instructors need to discover approaches to fuse dynamic procedures such that sparkles intrigue and enthusiasm for students. Consolidating a constructivist structure that supports such a methodology might be an answer, alongside the preliminary work in preparing students to take part in such an educational move, as in certain orders this training strategy might be considered outside of the standard of what is normal for certain students in the classrooms setting.

From table 4 it is known that from a total of 7 students, 3 students got very good indicators, 3 students got good indicators and 1 student got fair indicator. This shows that students are able to assesstheir ability and their learning result. Explicit criteria to elevate quality criticism should be grown with the goal that coordinated effort can be increasingly effective and advantageous to every student and accordingly elevate students' chances to assume liability for their learning (Ndoye, 2017). Oral and moment input should be underscored and advanced dependent on the consequences of this examination. Advantages from self and friend appraisal can be expanded additionally if exercises are planned in a manner that enables students to apply their evaluative aptitudes. These evaluative abilities will assist students with surveying their work and that of others regarding expected execution criteria so as to become dynamic students and better arranged to take part in deep rooted learning. While this examination shows the advantages of companion and self-appraisal, apparently not all students saw their interconnection and how they should expand on one another. Earlier research (Reinholz, 2016) has demonstrated the need not exclusively to build up the connection among friends and self-appraisal, however, to make evident and clarify the systems through which this linkage occurs.

From table 4 it is known that from a total of 7 students, 2 students got very good indicators, 4 students got good indicators and 1 student got fair indicator. This shows that students are able to train in solving problems or similar problems. Learning the pace of self-guideline in students with preparing in critical thinking abilities is altogether more than students without these training (Ahghar, 2012).

From table 4 it is known that from a total of 7 students, 2 students got very good indicators and 2 students got good indicator. This shows that students were able to be trained in solving problems or similar problem. Students' view of authority and execution objectives demonstrated various examples of connection with learning techniques, the inclination for testing assignments, the frame of mind toward the class, and convictions about the reasons for progress and disappointment.

Marra *et al.* (2015) explore that students praise the exploration of their fieldwork area using Google Earth and QGIS, and both the students that did and did not use GIS during the fieldwork indicate the preparatory GIS-assignment as the most valuable for their fieldwork. This is certainly very good if it is correlated with the situation of marginalized Geography (Yunus, 2010). With the increasing activity of students, it is expected that this can eliminate the impression that Geography is a science that is not too favored by students. In spite of the fact that Google Earth enables students to investigate the Earth in increasingly unique and

intuitive manners, there are a few constraints in instructive settings, for example, high data transfer capacity request, and requirement for preparing to comprehend the Google Earth interface.

4. Conclusion

. The application of learning methods which utilsied Google Earth technology has proven to have an impact on increasing student activity. Therefore, students were able to develop their hard and soft skills. This can be good if applied in all schools. Because Geography subject of the Remote Sensing and GIS chapter can be less effective if conducted by the lecturing method. The teacher must be able to understand the characteristics of students and the characteristics of the chapter to be taught because each chapter in Geography is unique. When students are engaged in the learning, they will enjoy to study Geography, so that this can eliminate the impression that Geography is a difficult lesson which involes a lot of memorizing activities. It is expected that if more schools implement this method, tgeography marginalization will fade away and will eventually disappear. This is our shared responsibility as stakeholders and actors in the field of Geography.

Conflict of Interest

The authors declare that there is no conflict of interest with any financial, personal, or other relationships with other people or organizations related to the material discussed in the article.

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