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Research Article

Literature Study: Effectiveness of Using Interactive Media "Google Earth" in Social Studies Learning for Elementary School Students

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Abstract

This study aims to evaluate the effectiveness of using interactive media "Google Earth" in learning Social Studies in elementary schools. As a technology-based learning tool, Google Earth allows students to explore geographical representations of the world visually and interactively, thus enhancing their understanding of spatial and geographical concepts. The results show that the use of Google Earth can significantly increase student engagement, facilitate visual exploration and encourage discovery learning. In addition, it helps students connect theoretical concepts with real contexts through engaging visual simulations. This study recommends the integration of Google Earth into the social studies curriculum as an innovative learning medium. With proper management, Google Earth has the potential to support more interactive and meaningful learning for elementary school students. Further research is needed to explore its impact in a broader and more diverse context.

Keywords: Google Earth, Interactive Media, Social Studies Learning

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INTRODUCTION

The main goal of education in Indonesia is to create a young generation that is superior and able to compete in the era of globalization (Capecchi dkk., 2024; Liu dkk., 2024;

Osarenkhoe & Fjellström, 2024). This is realized through periodic curriculum improvements, with the most recent example being Curriculum 2013. This curriculum is the result of the evolution of the Competency-Based Curriculum (2004) and the Education Unit Level Curriculum (2006).

The development of information technology has changed various aspects of life, including the academic world, especially in learning which is now increasingly integrated with technology. With the increasing application of information technology in education, many learning materials have been generated and accessed by learners through various information technology platforms (Bankar dkk., 2024; Chiu, Rahimi, & Lee, 2025; Rooks dkk., 2024). This is different from traditional learning methods that rely on the role of the teacher as the main source of learning, while other sources are only a complement to learning activities.

In elementary schools, learning is still focused on mastering aspects of knowledge, while the effectiveness and efficiency of the learning process in the classroom is still low. Many students tend to be inactive in discussing subject matter and feel reluctant to participate in expressing opinions or responding to problems (Lobo-Quintero, Hernández-Leo, Taibi, Theophilou, & Sánchez-Reina, 2024; Mgoduka, Kaseeram, & Heeralal, 2024; Stirrat, Martin, Umair, & Waller, 2024). They are more inclined to sit, listen, and take notes on what is delivered by the teacher, rather than actively seeking their own information from other sources.

Education is a deliberate effort to improve the quality of human beings, taking them from ignorance to knowledge, from incomprehension to understanding, and so on (Fu, Guan, Wang, & Chen, 2025; Jing dkk., 2024; Saneinia dkk., 2024). The educational process is a complex procedure that goes hand in hand with human development. Through education, various aspects of life are developed through the process of learning and learning. To achieve the desired goals, the learning process must be adjusted and stabilized to be effective and optimal. The needs and demands of society towards education always change over time, according to their development and needs. In Indonesia, the importance of social studies in basic education cannot be denied as it is in line with the needs of a society that is progressing towards progress, justice and prosperity. These educational guidelines are in line with the vision of Indonesia as a united country and famous for its cooperation. Social studies learning methods in elementary schools are the first step in formal socialization, so social studies materials are very valuable for the development of elementary school students.

Social studies education in schools is an attempt to simplify the various disciplines of social science, psychology, philosophy, state ideology, and religion, which are structured and taught scientifically and psychologically for educational purposes. Social science includes all facts, events, concepts, and knowledge related to human activities in building themselves, society, nation, and environment, based on past experiences, present, and future projections. The improvement of social studies education not only aims to develop intellectual competence, but also social skills needed by students (Dunn dkk., 2024; Tobias, Kittur, Al Momin, Rouf, & Sadri, 2024; Vermeer & van den Heijkant, 2024). The ability to find, select, use, and utilize information to strengthen themselves, as well as skills in working with diverse groups, are very important aspects for students who will become active citizens in the global era. Social studies education at the primary school level uses an integrated approach.

To achieve social studies learning objectives with conflicting characteristics, a very important key factor is the use of learning media, which allows students to develop and improve various aspects of their competence (Johnson, Turnbull, Reisslein, & Moustafa, 2024; Santoso dkk., 2024; Verbytska, 2024). Learning media is a tool that can reduce the tradition of learning that only relies on oral and written methods. There are various types of learning media that can be used by teachers to deliver learning materials, including visual, audio, and audiovisual media. The use of these various media can increase students' motivation to learn. When learning media is tailored to students' needs and abilities, the learning process becomes more interesting and students are more active in participating in learning. Although there are

many learning media options, it is important to consider students' needs and characteristics when choosing the right learning media (Mashuri, n.d.).

Media utilization by teachers is one of the important strategies in learning. Learning media is not only an additional tool during the learning process, but also an essential part that helps teachers motivate students and create an active, creative, effective, and fun learning environment (Gunesch, 2024; Mayrita, Sahfitri, Aprilia, Abdillah, & Saputra, 2024; Timmi, Laaouina, Jeghal, El Garouani, & Yahyaouy, 2024). Learning media has four virtues, namely facilitating student understanding, increasing learning motivation, reducing boredom in the delivery of material, and providing direct experience to students from the learning process (Karo-karo & Rohani, 2018).

One of the online media listed is utilizing Google Earth media. Google earth is a medium to show the globe with a 3D structure. The relationship in the utilization of google earth media with student learning activeness in order to attract student interest and be active in participating in ongoing learning activities. And this google earth media besides being able to be used with a laptop can be through a cellphone.

According to Yeyep and Yousman (2010:3), Google Earth is an interactive mapping application developed by Google. This application displays global maps, topography, and satellite photos that include various elements such as roads, buildings, and other geographic locations. With Google Earth, users can plan trips, search for tourist attractions, airports, restaurants, hotels, hospitals, schools, and others (Prasetya dkk., 2024; Serdechnaya, Serdechnyy, Andriyanov, & Korchagin, 2024; Yulianti, 2024). The app also provides latitude and longitude coordinates. Google Earth displays low-resolution satellite photos of features such as mountains, seas, and forests, as well as high-resolution satellite photos that show details such as roads, buildings, and offices. Some areas even come with 3D building models.

The results of learning using google earth media on student activeness, can inspire students to be more active and improve learning outcomes in learning. utilization of the internet as a thematic learning resource can create students to learn independently. Students can access online, so that it is easily welcomed and remembered by students and students are more active in carrying out the online learning process (NKS Nurdin 2020: 13-25). Based on this, researchers understand learning outcomes based on student activeness can utilize visual media, one of which is through google earth media. And this google earth media besides being able to utilize with a laptop can be through a cellphone

RESEARCH METHOD

This research uses Descriptive Qualitative research methods and uses literature study data collection techniques. According to (Kaziev, Kazieva, Kaziev, & Lovpache, 2025; Sapu, Aphathanakorn, & Thienmongkol, 2024; Seetha, Chouhan, Pilli, & Raychoudhury, 2024) Descriptive qualitative research is research that aims to describe and explain a phenomenon in depth by examining relevant literature, emphasizing the nature, characteristics, quality, and interrelationships between actions. Then according to (Nazir, 2018) Literature study or literature review is an activity of reviewing and examining various research results that have been carried out previously or related literature. This research only obtains data from literature without going through empirical research. This research is obtained from books, journals, scientific articles and theses that are previous and relevant to the topic of this research. Data analysis in this study used the Miles and Huberman data analysis model. According to, the Miles and Huberman model of data analysis is a popular and easy-to-use way of analyzing. This model emphasizes three core things, namely: Data reduction, Data presentation, Conclusion drawing/verification (Haramba, Millanzi, & Seif, 2024; Santos, Ortiz, Fronda, Galano, & Savellano, 2024; Zhao, Wang, Liu, Li, & Wang, 2024). Data acquisition in this

study was taken from books, journals, theses, and scientific articles that were appropriate and relevant to this study, then the data taken was studied in depth and then described descriptively.

RESULTS AND DISCUSSION

Effectiveness of Using Interactive Media "Google Earth" in Social Studies Learning for Elementary School Students. The use of media in social studies learning in elementary schools using interactive media Google Earth, there must be effectiveness that occurs in the teaching and learning process, according to (Aulia & Oktaviani, 2024; Lin, Yuan, Chen, & Abiri, 2024; Sarangi dkk., 2025) there are 4 indicators of the effectiveness of student learning as follows:

Table 1 Indicators Effectiveness Study Student

Indicator	Description
Student Activities in Participating in Learning	Interactions between students in the classroom have an impact on changes in their behavior, attitudes, academic achievements and skills as a result of interactions with teachers. This can be observed through the attention given to students.
Teacher's ability to manage learning	Teacher skills in implementing various learning activities to achieve set learning objectives.
Student Response	Students' positive responses to learning can be assessed through the results of their response surveys, which can help in responding to questions about the learning materials that will be used.
Mastery learning	Learning outcomes that have achieved established individual standards.
Indicator	Description
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Indicator	Description
Student Activities in Participating in Learning	Interactions between students in the classroom have an impact on changes in their behavior, attitudes, academic achievements and skills as a result of interactions with teachers. This can be observed through the attention given to students.

This analysis is applied to determine the effectiveness of the use of Google Earth learning media in learning social studies in elementary schools. Referring to the results of the analysis of the research conducted by (Chen, 2025; “Erratum Regarding Missing Declaration of Competing Interest Statements in Previously Published Articles (International Journal of Child-

Computer Interaction (2017) 12 (8–15), (S2212868917300399), (10.1016/j.Ijcci.2017.02.001)),” 2024; Yuen & Leslie, 2024). this research was conducted in the fifth grade of SDN Cibiru 06 and SDN Cibiru 09, Cileunyi District. They were selected as the research population and divided into experimental and control groups. Classes VA and VB were identified as experimental and control groups based on the school's consideration. The research instruments applied in this study were a pre-test and a post-test containing six essay questions that measured students' understanding of the material on natural appearances. The data obtained in this study were taken from the test results of students' understanding of the material of natural appearances in the control class and also the experimental class obtained from the results of the pretest and posttest assessment tests. The results of the research on students' understanding of the natural appearance of the control and experimental classes on the pretest are shown in the following table:

Table 2. Pretest Scores for Experimental Class and Descriptive Statistics Control Class

	N	Min	Max	Mean	Standard. Deviation	Variant
Experimental Class Pretest	20	41.67	75.00	58.3355	10.55880	111.48
Control Class Pretest	20	33.33	62.50	49.5825	8.64526	74,741
	N	**Min**	**Max**	**Mean**	**Standard. Deviation**	**Variant**

Based on the results of the pretest in the experimental class and the following results were obtained. 20 students participated in pre-test activities in the experimental class and pre-test in the control class. the lowest score obtained by experimental class students was 41.67, while the lowest score obtained by the class students was 33.33, the highest score obtained. The average score of students in the experimental class was 75.00, and the highest score of students in the control class was 62.50. The average results of the pre-test activities showed that students in the control class had lower scores than students in the experimental class. A total of 11 students scored above average. 9 students scored below average.

The results of the post-test scores in the experimental and control classes can be seen in the table below.

Table 3. Posttest scores for experimental class and control class. Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Experimental Class Posttest	20	70.83	100.00	86.0420	8.14152	66,284
Control Class Posttest	20	58.33	79.17	65.6240	6.74355	45,476
	N	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**	**Variance**

Based on the results in Table 3, 20 people participated in the post-test activities in the experimental and control classes. The lowest score of students in the experimental class was 70.83, while the control class was 58.33. Students in the experimental class got the highest

score of 100.00, while the class obtained a score of 79.17. The average score on the post-test of the control class was lower than that of the experimental class. In total, 12 students in the control class had scores above the average, while 8 students had scores below the average.

Based on the results of posttest analysis, experimental class students showed an increase in understanding of natural appearance material with a mean posttest score of 78.3355, while control class students had a mean posttest score of 64.5825 (Damayanti, Derinalp, Asyifa, & Suryatama, 2024; "Erratum Regarding Missing Declaration of Competing Interest Statements in Previously Published Articles (International Journal of Child-Computer Interaction (2019) 21 (89–103), (S2212868918300552), (10.1016/j.Ijcci.2019.06.001))," 2024; Yang, Basile, & Zhao, 2024). This shows an increase in understanding that affects students who apply digital map learning media (Google Earth).

Research conducted by (Utami, Dewi, & Erdiana, 2021) was conducted at SD Negeri Kramat Jegu 1 for grade V students in the 2020/2021 academic year. In the study population, there were 52 students from classes V-A and V-B of SDN Kramat Jegu 1 in that school year. However, the researcher only selected half of the students, namely 10 students from the control class (V-A) and 10 students from the experimental class (V-B). The purpose of this study was to assess the effect of Google Earth media on the level of learning engagement of grade V students through a 10-question Pretest and Posttest as well as through observation (Gharib, Bindoff, Peterson, & Salahudeen, 2024; Li, Wu, & Chen, 2024; Monib, Qazi, & Mahmud, 2024). The analysis showed that the average pretest score of the experimental class before using Google Earth media was 61.50. However, the average pretest score of the control class before the treatment was not described in the referenced source. After treatment, the average posttest score in the experimental class with the utilization of Google Earth media increased to 90.50, while in the control class, the average posttest score before treatment remained at 61.50.

Observation of student involvement in the learning process using Google Earth media on theme 2 subtheme 2 in lesson 4 about humans and the environment. The observation was carried out only in the experimental class. And the results of observations of student activeness in learning can be obtained with the following results.

Table 4 Results of Student Activity Data Analysis

No	Student Scores	P (%)	Information
1	42	80.77	Good
2	40	76.92	Good
3	36	69.23	Enough
4	41	78.85	Good
5	44	84.62	Good
6	37	71.15	Enough
7	41	78.85	Good
8	39	75.00	Good
9	40	76.92	Good
10	49	94.23	Very good

Total Score	409	**Total Score**
Average	40.9	Average
Percentage	78	Percentage
Criteria	Good	Criteria

The results of student activeness data in the experimental class obtained a total score of 409 with a percentage of 78.65% classified as good criteria (Greviana dkk., 2024; McInnis, Pindus, Kareem, Gamboa, & Nebeker, 2024; Sánchez-Gálvez, Álvarez-González, Molina-Iturbide, & Albores-Velasco, 2024). This is because after giving digital media google earth to fifth grade students. Meanwhile, the response results were only given to experimental class students, because the use of google earth media on activeness was only given to the experimental class with the results obtained a total score of 171 with a percentage of 95% results classified as very good criteria.

In other research conducted by (Clark dkk., 2024; Fajt, 2024; Hsia, 2024) This study consisted of 40 students from class IV-B for the control class and 39 students from class IV-C for the experimental class, so that a total of 79 students participated in the research experiment. This research was conducted using experimental method with Posttest-only Control Group Design. Class IV-B served as the control class, while class IV-C as the experimental class. Students of the experimental class learned with Google Earth media, while the control class learned with conventional media. The effect of using Google earth media on experimental meals is hypothesized as follows:

1. H0: There is no effect of learning media on student learning outcomes.
   H1: There is an effect of learning media on student learning outcomes.
2. H0: There is no effect of student activeness on student learning outcomes.
   H1: There is an effect of student activeness on student learning outcomes
3. H0: There is no effect of the interaction between student activeness and learning media on student learning outcomes.
4. H1: There is an effect of the interaction between student activeness and learning media on student learning outcomes.

The hypothesis can be accepted when the significance value of the statistical test results is less than the predetermined significance level, usually 0.05 (Déchène, Lesperance, Ziernwald, & Holzberger, 2024; Mudlapur & Kumar, 2024; Regalado, Santos, & Veloso, 2024). Thus, if the significance value is 0.05, the null hypothesis (H0) is retained. This study utilized an experimental method with a Posttest Only Control Group design to assess the impact of the media on learning outcomes. Information regarding the normality of student learning outcome test data can be found in the following table.

Table 5. Normality Test of Student Learning Results for Google Earth and Conventional Media

No.		Kolmogorov-Smimov	Shapiro-Wilk		Kolmogorov-Smimov	Shapiro-Wilk
Shiva Learning Results	Media	Statistics	df	Media	Statistics	df
	Google Earth	.132	39	Google Earth	.132	39
	Conventional	,149	40	Conventional	,149	40

The results of the normality test showed that the student learning achievement data in the experimental group using Google Earth and the control group applying the conventional approach were fairly distributed. The significance evaluation of the Shapiro-Wilk test showed a value above 0.05 for both groups. Thus, it can be concluded that the research data fulfill the assumption of normality and are ready for further statistical analysis.

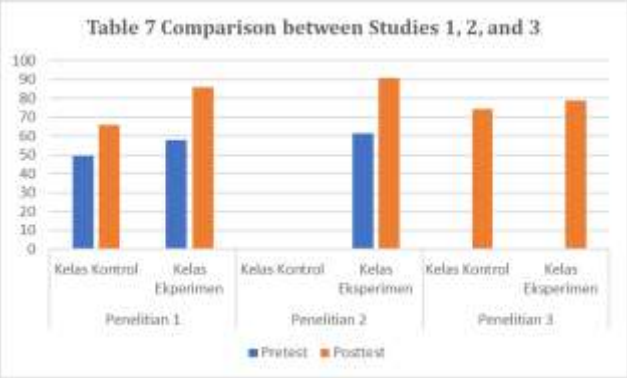
Furthermore, researchers tested the normality of student learning outcomes on low and high activeness can be seen in the following table

Table 6. Normality Test for Low and High Active Student Learning Results

		Kolmogorov-Smimov	Shapiro-Wilk		Kolmogorov-Smimov	Shapiro-Wilk
Shiva Learning Results	Media	Statistics	df	Media	Statistics	df
	Low	,110	57	Low	,110	57
	Tall	.123	22	Tall	.123	22

The normality test shows that the data on learning achievement of less active students has a normal distribution, with a significance of 0.441 (> 0.05). Similar results were also seen in the active students' learning achievement data, which showed a normal distribution with a significance of 0.088 (> 0.05). Thus, both groups of students can be concluded to have normally distributed data.

The study results show that learning media plays an important role in improving student learning achievement, with a significance level of less than 0.05. In addition, the level of student participation also has a significant influence on student learning outcomes, with a similar level of significance (Abdullah, Azid, & Desita Ria Yusian, 2024; Erden, Aydın Kahraman, & Çiftçi, 2024; Ratmaningsih dkk., 2024). However, there was no significant evidence of interaction between student participation and learning media on student learning outcomes, with a significance level above 0.05. Data on student learning outcomes from low and high participation groups showed a normal distribution pattern, with a significance level above 0.05. The data homogeneity test showed that the variation of the data from the four different groups was evenly distributed, with a significance level above 0.05. Thus, it can be concluded that the utilization of learning media, the level of student participation, and the interaction between them have a significant impact on student learning outcomes in primary schools. This research contributes significantly to the development of more interactive and effective learning methods at the primary education level.



Based on the data presented, the comparison between pretest and posttest scores between the control class that did not receive treatment and the experimental class before and after the application of Google Earth media as a tool in the learning process shows an increase in student learning achievement from before to after the exam, as well as differences in student learning achievement between the control class and the experimental class in both exams.

Effectiveness of Using Interactive Media "Google Earth" in Social Studies Learning for Elementary School Students.

Analysis of the results of the three studies highlighted differences in student engagement scores and learning outcomes between the pretest and posttest in the control class as well as the experimental class in the context of social studies learning (Haliti-Sylaj & Sadiku, 2024; Imron, Marzuqi, & Pradana, 2024; Sadri, Sadri, Al Momin, Kittur, & Rouf, 2024). The results of this study indicate that the effectiveness of learning media at the pretest stage shows a minimal level of activeness, as revealed in previous research.

During the pretest, the control and experimental classes did not receive any treatment using Google Earth media or conventional media. Then the control class carried out conventional learning, which is learning characterized by experiences connected to concepts, homework, lectures and questions and answers. While the experimental class received learning by using Google Earth media presented in the form of direct experience of seeing an attractive and interactive three-dimensional visual map of the world.

After the action was given to both control and experimental classes using conventional media and Google Earth in social studies learning, the studies conducted posttests to see differences in student learning outcomes. The posttest results showed that the effective increase in students' social studies learning outcomes was driven by the use of interesting and interactive media. The use of Google Earth media as learning media encourages a significant increase in student learning hail.

CONCLUSION

The results of learning using google earth media on student activeness, can inspire students to be more active and improve learning outcomes in learning. utilization of the internet as a thematic learning resource can create students to learn independently. Students can access online, so that it is easily welcomed and remembered by students and students are more active in carrying out the online learning process (NKS Nurdin 2020: 13-25). Based on this, researchers understand learning outcomes based on student activeness can utilize visual media, one of which is through google earth media. And this google earth media besides being able to utilize with a laptop can be through a cellphone. Researchers who plan to explore the impact of Google Earth media with the same variables are advised to take into account variations in the selection of materials. This approach will facilitate the evaluation of learning outcomes by considering the diverse sources that can influence them.

AUTHOR CONTRIBUTIONS

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.
Author 2: Conceptualization; Data curation; In-vestigation.

CONFLICTS OF INTEREST

The author(s) declare no conflict of interest

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