

# An Analysis of the Implementation of Multiliteracy Learning in Third-Grade Elementary School Classes Using Google Maps to Teach Materials on the Surrounding Environment

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## Abstract

The digital and spatial literacy skills of elementary school students still require improvement, as Social Studies instruction often fails to make full use of digital media to help students understand their surrounding environment in a contextual way. Consequently, students find it difficult to identify the locations of specific regions, grasp spatial relationships, and relate the concepts they learn to the real-world conditions around them. This study aims to examine the implementation, use, and student responses toward multiliteracy learning assisted by Google Maps on material related to the surrounding environment in third-grade elementary school classrooms. This qualitative research applied a case study approach at SDN Kaliasin VII/286 in Surabaya, involving 24 third-grade students from Class 3B as participants. Data were gathered through observation, interviews, and documentation, then analyzed using the Miles and Huberman model, consisting of data reduction, data presentation, and conclusion drawing. The findings show that all four stages of multiliteracies learning, namely location-based practice, open-ended instruction, critical framing, and transformative practice, were successfully carried out. Students showed enthusiasm and were able to operate Google Maps, trace routes, and understand the functions of regional administrative structures through critical reasoning. Nevertheless, during the transformative practice stage, 12 students still had difficulty transferring their spatial understanding from digital maps to hand-drawn maps. In conclusion, Google Maps substantially supports and facilitates students' digital and spatial literacy in recognizing their local surroundings. Teachers are advised to provide focused guidance when training students to draw maps by hand in order to address obstacles in their spatial understanding.

**Keywords:** Multiliteracies Education, Google Maps, Spatial Literacy, Elementary School

## Abstrak

Keterampilan literasi digital dan spasial siswa sekolah dasar masih perlu ditingkatkan, karena pembelajaran IPS seringkali belum memanfaatkan media digital secara optimal untuk membantu siswa memahami lingkungan sekitarnya secara kontekstual. Akibatnya, siswa mengalami kesulitan dalam mengidentifikasi lokasi suatu wilayah, memahami hubungan spasial, serta mengaitkan konsep yang dipelajari dengan kondisi nyata di lingkungan sekitar mereka. Penelitian ini bertujuan untuk mengkaji penerapan, pemanfaatan, dan respons siswa terhadap pembelajaran multiliterasi berbantuan Google Maps pada materi lingkungan sekitar di kelas III sekolah dasar.

Penelitian kualitatif ini menerapkan pendekatan studi kasus di SDN Kaliasin VII/286 Surabaya, dengan melibatkan 24 siswa kelas III B sebagai partisipan. Data dikumpulkan melalui observasi, wawancara, dan dokumentasi, kemudian dianalisis menggunakan model Miles dan Huberman, yang terdiri atas reduksi data, penyajian data, dan penarikan kesimpulan. Temuan penelitian menunjukkan bahwa keempat tahap pembelajaran multiliterasi, yaitu praktik berbasis lokasi, pembelajaran terbuka, penguatan kritis, dan praktik transformatif, berhasil dilaksanakan. Siswa menunjukkan antusiasme dan mampu mengoperasikan Google Maps, melacak rute, serta memahami fungsi struktur administrasi wilayah melalui penalaran kritis. Meskipun demikian, pada tahap praktik transformatif, sebanyak 12 siswa masih mengalami kesulitan mentransfer pemahaman spasial mereka dari peta digital ke peta gambar tangan. Dapat disimpulkan bahwa Google Maps secara signifikan mendukung dan memfasilitasi literasi digital dan spasial siswa dalam mengenali lingkungan sekitarnya. Guru disarankan memberikan bimbingan yang terfokus saat melatih siswa menggambar peta secara manual guna mengatasi kendala dalam pemahaman spasial mereka.

**Kata Kunci:** Pendidikan Multiliterasi, Google Maps, Literasi Spasial, Sekolah Dasar

## Introduction

Elementary education is one of the tools that can be used to develop students' character and social competencies. To foster individuals who care about their surroundings, students can learn through the social studies curriculum ([Rezania & Afandi, 2020](#)). Through this subject, students are expected to become familiar with their surroundings. Students are expected to be able to identify what is present in their daily environment and interact within it ([Susanti & Endayani, 2018](#)). In the new Social Studies curriculum for elementary education, which is taught in third grade, the learning outcome is to identify the location of the regency/city and province where they live using conventional or digital maps ([BSKAP, 2025](#)). Mastering this competency requires an approach that goes beyond a purely textual focus ([Fadillah et al., 2023](#)). This approach must also incorporate various modes of representation so that students can truly understand the space and locations around them.

To develop students' ability to understand their surrounding environment, one strategy teachers can employ is implementing multiliteracies-based learning ([Mahendra et al., 2026](#)). Multiliteracies-based learning addresses the demands of the 21st century. Literacy is one of the fundamental skills students must possess. ([Mahdianto, 2025](#)) explains that literacy is the foundation for lifelong learning. [Asari et al. \(2023\)](#) explain that literacy is the ability to explain and understand information in detail when reading and writing. In the context of multiliteracies, this ability is expanded to include spatial, visual, and technological literacies ([Fudhaily, 2023](#)).

Learning objectives are more easily achieved with the aid of instructional media. Instructional media can help students understand the material more clearly ([Gunawan & Ritonga, 2019](#)). Students are able to see, hear, and engage in various enjoyable and meaningful activities through the instructional media presented in the classroom ([Cahyadi, 2021](#)). The use of instructional media can help students understand the material clearly and increase their engagement in the learning process. Instructional media can make the learning process more effective and meaningful for students ([Aryadillah & Fitriansyah, 2017](#)). This aligns with [Daryanes et al. \(2023\)](#) who explain that instructional media is an important part of meaningful learning. Instructional media can also encourage students to develop 21st-century skills. In today's digital age, accelerating the development of literacy and technology through the digitization of learning is key to creating interactive and

contextual learning experiences (Hendratno et al., 2025). Teachers' innovation in creating meaningful learning is also heavily dependent on their ability to integrate digital technology (Rochaendi et al., 2024).

To teach students about their surrounding environment, one tool that can be used is Google Maps. Google Maps is a digital mapping application developed by Google that can clearly show the location of a place. This application not only displays standard road maps but also satellite imagery from above, topographic features, and street-level photos that can be rotated 360 degrees in real time. Research shows that the use of Google Maps in social studies instruction significantly improves students' learning outcomes and spatial understanding (Dewi et al., 2024). This is because Google Maps presents visualizations of real-world environments that are familiar to students' daily lives (Lalotra et al., 2025). An analysis of the implementation of multiliteracies education in elementary schools indicates that this approach is effective in enhancing students' critical thinking skills, digital literacy, and creativity (Winangsih et al., 2025). Through Google Maps, students can easily read maps (spatial literacy), interpret spatial images (visual literacy), and view real-world environments directly on their screens. The integration of digital maps into elementary school instruction is also supported as an effective approach for developing geographic and regional thinking skills from an early age (Maulaya et al., 2025).

The concept of multiliteracies emerged in response to the demands of the 21st century, which require literacy skills that extend beyond simply reading and writing printed text. Asari et al. (2019) explain that digital literacy is a crucial skill that teachers and students must possess in the millennial era, where the use of digital media is increasingly widespread and both students and teachers are active users. As it has evolved, literacy is no longer limited to printed text but encompasses various forms of visual, digital, and multimodal texts. Multiliteracies education emphasizes students' ability to understand messages conveyed through images, videos, and symbols, thereby enriching their critical thinking skills (Dafit, 2017). This approach prepares students to become adaptive and critical learners in navigating the flow of digital information. Mahdianto (2025) asserts that literacy is the foundation for lifelong learning. In practice, multiliteracies education in elementary school can be implemented through the use of various media, such as visual and audiovisual texts in Indonesian language instruction, as well as simple infographics in science and social studies lessons (Yuliati et al., 2021). Theoretically, multiliteracy is rooted in the view that meaning is constructed through various symbols and modes of communication, so that children learn to understand the world through text, images, sound, and digital media (Sari & Abidin, 2025).

### ***Spatial Literacy and Cognitive Development in Elementary School-Aged Children***

Spatial literacy is one of the 21st-century skills that is important to develop from an early age. Spatial literacy is defined as the ability to understand spatial concepts, apply reasoning processes using appropriate tools to determine spatial relationships between people, places, or objects, and visualize and communicate these spatial relationships in various contexts (National Research Council, 2006). There are three main domains in spatial literacy: visualization, reasoning, and communication. Research indicates that elementary school students' spatial literacy remains relatively low because social studies instruction has not yet provided optimal learning experiences through active student engagement, the use of spatial media, and appropriate instructional strategies. Strengthening spatial literacy in elementary school social studies instruction can be effectively achieved through the use

of spatial media such as maps, globes, and atlases, supported by teacher competence and appropriate instructional strategies. From a cognitive development perspective, elementary school-aged children (7–11 years old) are in the concrete operational stage according to Piaget's theory. At this stage, children have a clear understanding of distance and spatial relationships but still require concrete experiences to grasp abstract concepts, including spatial concepts.

### ***Google Maps as a Learning Tool to Enhance Spatial and Digital Literacy***

Google Maps is a digital mapping application that can clearly show the location of a place through street maps, satellite images, and 360-degree Street View features. Research indicates that the use of Google Maps is effective in improving the spatial literacy of elementary school students ([Fadillah et al., 2023](#)). In an experimental study involving fourth-grade elementary school students, the average posttest score for spatial literacy in the experimental class using Google Maps reached 73.06, while the control class scored only 60.56. The use of digital map media in learning allows students to actively seek out and practice concepts rather than passively receiving information from the teacher, making the learning process easier to understand and more engaging ([Muhammad, 2017](#)). Other studies have also shown that the implementation of digital map-based learning media (Google Earth) has a significant positive effect on conceptual understanding in social studies, with the experimental class's average posttest score (86.04) outperforming that of the control class (65.62) ([Dewi et al., 2024](#)). Furthermore, Google Maps and digital mapping technologies have been shown to significantly enhance student motivation, spatial literacy, and conceptual understanding ([Novayanti et al., 2026](#)). Google Earth and interactive digital maps have emerged as the most effective tools because they combine interactive visualization with contextual learning experiences.

### **Research Method**

This study employed a qualitative approach with a case study design. Regarding qualitative research, [Creswell \(2014\)](#) states that this approach is a process of scientific inquiry that begins with philosophical assumptions and interpretive frameworks to understand the meaning individuals or groups ascribe to a social or human problem. Meanwhile, the selection of the case study method was based on the argument by ([Sugiyono, 2023](#)) who states that a case study is conducted by exploring in detail and depth a program, process, event, or activity involving one or more individuals.

This research was conducted at SDN Kaliasin VII/286 Surabaya. The subjects in this study were 24 students of class 3B. Data in this study were collected through three complementary techniques: observation, interviews, and documentation. Each data collection technique was specifically implemented as follows. First, the observation technique was conducted to directly observe the learning process utilizing Google Maps media in grade 3. Second, the interview technique was conducted with the grade 3 students of SDN Kaliasin VII/286 Surabaya to discover in more detail their use of and responses to the Google Maps media. Third, the documentation technique was conducted to obtain various important records that are relevant and directly related to the research focus.

To support the data collection, the instruments used in this study consisted of an observation sheet regarding the use of Google Maps media, as well as interview guidelines directed at the grade 3 students and teacher regarding the use of and responses to the said media. The data collected from the analysis of Google Maps usage were entirely qualitative.

Furthermore, the data were analyzed using qualitative data analysis techniques. Referring to the framework by Miles and Huberman in [Sugiyono \(2023\)](#), the data analysis activities in this study consisted of three interconnected core components, namely data reduction, data display, and conclusion drawing. After proceeding through these analytical stages, a final conclusion was formulated based on the predetermined research objectives.

## Results

This study applied multiliteracies learning through the “City Space Detective” role-playing approach, which consists of four stages: situated practice, overt instruction, critical framing, and transformed practice. The research subjects were third-grade students at SDN Kaliasin VII/286 in Surabaya.

### *Situated Practice*

In the initial stage of learning, known as situated practice, the teacher began the lesson by asking students to recall their daily route from home to school and the buildings they encountered along the way. Students then engaged in a simulated aerial exploration using Google Maps on individual computers, starting from a view of outer space and gradually zooming in until the location of SDN Kaliasin VII/286 in Surabaya appeared on their screens. Every student in the class, accounting for one hundred percent of participants, completed this stage successfully by operating the Google Maps application independently, identifying the boundaries of the Embong Kaliasin neighborhood, and locating the school on their own devices without assistance. This outcome indicates that third-grade elementary students already possess sufficient basic digital literacy to operate digital mapping technology.

### *Overt Instruction*

At this stage, the teacher provided explicit explanations of two main concepts. First, the Physical Territorial Structure on the map, which includes three basic elements: points (buildings), lines (roads), and areas (parks). Second, the Administrative Structure, namely the division of the territory into RTs, RWs, subdistricts, and kelurahan, along with their functions in facilitating management and services for residents. The teacher also invites students to stand up and point to the cardinal directions (north, south, east, west) inside the classroom to reinforce their spatial understanding.

This overt instruction represents a key component of multiliteracies pedagogy as formulated ([Cope & Kalantzis, 2015](#)), in which teachers provide explicit instruction on relevant knowledge systems and metalanguage. The activity of pointing out the cardinal directions inside the classroom is a form of multimodal reinforcement that involves body movement (gestural modality) to strengthen conceptual understanding, as found in research on multimodal practices in early elementary classrooms.

### *Critical Framing*

This stage tests students’ reasoning skills through two mission worksheets.

**Table 1** Result of Mission 1: Exploring the Bambu Runcing Monument

| Indicator                                                    | Students Who Can | Students Who Cannot |
|--------------------------------------------------------------|------------------|---------------------|
| List public places and buildings around the monument         | 17 students      | 7 students          |
| Describe the route from school to the Bambu Runcing Monument | 19 students      | 5 students          |

**Table 2** Result of Mission 2: My Surrounding Administrative Area

| Indicator                                                                 | Results                                                   |
|---------------------------------------------------------------------------|-----------------------------------------------------------|
| Identify the boundaries of the RW (neighborhood unit) using a digital map | 100% of students were able to do so                       |
| List buildings located within one RW of the school                        | 22 students were able to do so, 2 students did not answer |
| List the village head and activities at the village office                | 100% of students were able to                             |

The success of all students in understanding the functions of the kelurahan (administrative village) office, including processing ID cards (KTP), family cards (KK), and loss reports, indicates that the critical framing stage successfully guided students to understand that the division of administrative districts aims to facilitate services for residents. This reflects the essence of critical framing in multiliteracies pedagogy, which is to help students connect knowledge to a broader sociocultural context. As [Miles et al. \(2014\)](#) noted, teachers' application of critical framing has a significant impact on students' ability to access and interpret knowledge critically.

### ***Transformed Practice***

In the final stage, students were challenged to draw their own maps illustrating a simple, safe route from school to a designated safe location in the Embong Kaliasin neighborhood. The results revealed a significant gap in ability:

The difficulties experienced by these 12 students included: an unclear depiction of the destination, confusing route lines, maps drawn upside down, and street names not written clearly. Based on the interview results, students who struggled admitted that remembering the shape of the road from the computer screen and then transferring it to a blank piece of paper felt quite difficult.

These findings indicate that although students are able to operate digital maps and understand spatial information receptively, they face obstacles in transforming that understanding into independent graphic representations. In other words, there is a gap between receptive spatial literacy (the ability to read and understand maps) and productive spatial literacy (the ability to draw and create maps).

## **Discussion**

### ***The Success of Google Maps-Based Multiliteracies Learning***

This study demonstrates that the use of Google Maps in multiliteracies learning effectively helps third-grade elementary school students understand material on regional planning and their surrounding environment. All students were able to operate Google Maps and locate their school independently, demonstrating that digital media can accelerate students' spatial understanding. These findings are consistent with the results of a study by [Novayanti et al. \(2026\)](#), which stated that digital maps significantly improve student motivation, spatial literacy, and understanding, with learning outcomes increasing by 20–30%.

This learning activity simultaneously integrates two essential 21st-century skills: digital literacy and spatial literacy (spatial thinking). Spatial literacy is one of the pillars of geographic intelligence that must be developed from an early age. When students view the school grounds from a bird's-eye view, material that is usually perceived as abstract becomes concrete and tangible. Students can immediately recognize the buildings they pass

by every day and connect them to their lessons, creating a contextual and meaningful learning experience.

Interview results show that students are enthusiastic about learning using digital maps. They feel that tracing roads and buildings is like going on an adventure, rather than simply memorizing textbook content. The presence of realistic map images makes it easier for students to visualize what a sub-district or neighborhood boundary looks like. This aligns with findings that contextual multiliteracies learning, which incorporates various visual media, can enhance the quality of learning and prepare students to become adaptive and critical learners.

### ***Development of Reasoning Skills and Critical Thinking***

During Mission 1 and Mission 2, it was evident that students' reasoning skills and critical thinking developed very well. The ability of 19 students to trace routes, 17 students to locate buildings around a monument, and the success of all students in understanding the function of the sub-district office demonstrate that students grasp the purpose of urban structures and their administrative functions.

This success is closely tied to the instructional design that integrates critical framing as one of the pillars of multiliteracies pedagogy. Critical framing helps students not only learn facts but also understand why an area needs to be divided into RTs, RWs, subdistricts, and sub-districts. Students come to understand that the government divides areas into administrative units solely to facilitate services for its citizens. Through this understanding, students are encouraged to become more familiar with and appreciate the environment where they live, an important affective learning outcome at the elementary school level.

### ***Challenges in Transformation Practice: Gaps in Spatial Representation***

The most significant finding of this study was that 12 students (50%) had difficulty drawing maps by hand, even though they had completed the previous three stages. The observed difficulties, including maps drawn upside down, unclear routes, missing street names, and unclear destinations, indicate barriers in the students' spatial processing. The students were not yet able to transfer the visual information from digital maps into the simple maps they created themselves.

This phenomenon can be explained through theories of children's cognitive development. According to Piaget, children aged 7–11 are in the concrete operational stage, during which they begin to think logically about concrete objects but still struggle with abstract concepts and complex symbolic representations. The ability to draw maps involves higher-order cognitive processes, including: (1) recalling spatial information from a computer screen, (2) performing mental rotations and transformations of representations, and (3) producing graphical representations on a blank sheet of paper.

Research on the development of map-drawing skills in children shows that younger children can draw simple topological maps before transitioning to egocentric landmarks (Piaget & Inhelder, 1956). However, the transition from drawing based on direct experience to geometrically accurate mapping requires structured support. As revealed in research on spatial and map literacy in primary education, most children initially produce fragmented spatial representations before developing a coherent allocentric framework (Maharani & Maryani, 2015).

The difficulties experienced by students in this study may also be linked to previous findings indicating that children often struggle with spatial interpretation when using

traditional static maps in textbooks, primarily due to the high cognitive demand of translating abstract spatial representations and a lack of engaging visualizations. In this context, although digital platforms like Google Maps provide dynamic and engaging visualizations, the process of transferring spatial information from digital formats to manual, self-drawn representations remains a significant cognitive challenge for third-grade elementary school students..

### ***Pedagogical Implications***

The findings of this study have several important implications for geography education and spatial literacy in elementary school. First, digital map-based learning needs to be balanced with gradual map-drawing practice. Teachers can design transitional activities, for example, by providing basic maps that already include some elements (such as main roads or reference points) so that students only need to fill in the details, rather than drawing from scratch on a blank sheet of paper.

Second, the development of spatial literacy in elementary school requires an approach that takes into account children's cognitive developmental stages. Mapping activities can begin with simple tasks such as drawing a floor plan of the classroom or the schoolyard before moving on to mapping larger areas. As suggested in research on the development of spatial thinking, methods such as graphic modeling, interactive exercises, and problem-based learning can enhance students' cognitive engagement.

Third, teachers need to recognize that proficiency with digital technology does not automatically guarantee proficiency in manual spatial representation. These two skills, digital literacy and productive spatial literacy, need to be developed separately yet in an integrated manner. Ideal multiliteracies learning involves not only the consumption of digital information but also the production of representations by the students themselves.

### **Conclusion**

Based on the research findings and discussion presented, it can be concluded that the implementation of Google Maps-assisted multiliteracy learning on the topic of the local environment has proven effective in creating a meaningful and enjoyable learning experience for third-grade elementary school students. The use of this medium has clearly facilitated the integration of digital literacy and spatial literacy, allowing abstract concepts such as administrative divisions (RW and kelurahan) and spatial planning to be represented more concretely through digital map visualizations. Through structured learning stages, ranging from location-based activities to critical analysis, students demonstrated high enthusiasm and sharp critical thinking skills, evident in their ability to read maps, trace routes, and identify the functions of public facilities in their local environment. However, this study also highlights significant cognitive challenges during the transformation practice stage. A total of 12 students still struggled to transform the visual representation from digital maps into proportional and accurate hand-drawn maps. These findings indicate that the spatial transformation process among students in third-grade has not yet developed optimally and still requires more specific and targeted instructional interventions.

In response to these findings, there are several recommendations that stakeholders may consider. For classroom teachers, it is highly recommended to design more in-depth and step-by-step learning activities during the transformation practice phase. Before assigning students to draw maps directly on blank paper, teachers need to bridge students' spatial understanding through concrete transitional activities, such as using graph paper to

understand scale, practicing filling in missing routes on partial maps, or arranging mock building blocks on a base map to visualize layout. For educational institutions, the use of digital mapping technology in Social Studies (IPS) instruction should be consistently optimized as part of pedagogical innovation. This student-centered learning approach is highly recommended not only to enhance cognitive competencies but also to foster students' social awareness and concern for the sustainability and potential of their local environment. For future researchers, given students' limited capacity to manually process and interpret spatial information from applications such as Google Maps, there is a vast research opportunity to explore or design alternative interactive digital map media. Ideally, such media should be specifically developed with consideration for the cognitive characteristics and stages of cognitive development of students in third grade, thereby bridging the gap between technological abstraction and students' manual representation abilities.

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