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The efficacy of field study in augmenting proficiency in mapping and comprehending natural and cultural landscapes

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Abstract

Field study is a crucial learning tool in Geography as it provides numerous opportunities for learners to observe, listen, inquire, gather data, and explore phenomena more freely. This study evaluates the effectiveness of field studies in enhancing the ability to describe natural and cultural landscapes, as well as proficiency in reading maps. It used a quantitative descriptive method, while the data collection was performed using a questionnaire. Effectiveness analysis compares students' understanding of mapping materials, landscapes, and cultural landscapes before and after implementing field study activities. The research findings suggest that field study is highly effective in aiding learning, specifically in the skills related to mapping, as well as comprehending natural and cultural landscapes. This is evident from the significant improvement in students' understanding levels after implementing the field study. In mapping and understanding natural and cultural landscapes, there is a 40 percent increase in comprehension levels, progressing from a lower understanding level to moderate, reasonable, and excellent levels. The research results also indicate that field study activities fulfill the experiential learning cycle proposed in Kolb's Theory. Besides, field study provides meaningful experiences and enhances various skills of students, particularly in recognizing geospheric phenomena like natural and cultural landscapes using a spatial approach, in harmony with advancements in geographic information technology.

Keywords: landscapes; excursion learning; field studies

1. Introduction

Geography is a highly complex and expansive field of study (Aksa, Utaya, & Bachri, 2019) that examines the geosphere (Arinta, Utaya, & Astina, 2016; Muryani & Prihadi, 2023). In geography, places and their phenomena serve as the primary laboratory (Goss, Archer, & Dalton, 1968; Krakowka, 2012). Further, geography education aims to develop students' affective, cognitive, and psychomotor skills. It encompasses not only classroom learning but is also supported by field-based learning (Arinta et al., 2016; Muryani & Prihadi, 2023). Natural and cultural landscapes are components of the material objects in geography (Susilawati, 2015). The concept of natural landscapes has been a longstanding focus in geography (Ikhsan et al., 2018). As crucial elements in shaping the characteristics of a region, understanding natural and cultural landscapes is essential (Sejati, Ikhsan, & Sugiarto, 2023; Taylor & Lennon, 2011). Another competence a geographer should possess is mapping through understanding geographic information systems (Muryani & Prihadi, 2023). In light of the aforementioned characteristics of geography, it is imperative that field trip-based learning methods (excursion learning) be employed to facilitate an immersive understanding of the geographical study field (Munandar et al., 2019).

"Excursions" refers to a planned journey, adventure, or excursion involving visiting a particular place (Sari et al., 2017; Astalin & Chauhan, 2018). The excursion invites learners to see a specific place, creating an engaging, easy, and effective learning experience (Astalin & Chauhan, 2018; Latipah et al., 2019). The excursion is considered the most conducive learning method in various disciplines, including Geography, as it provides learners ample opportunities to observe, listen, inquire, collect data, and explore phenomena more freely (Astalin & Chauhan, 2018). Another advantage of learning through the excursion is its ability to reinforce concepts, promote integrated exploration, encourage more productive inquiry, boost students' learning motivation, and develop physical-social skills through meaningful learning experiences (Latipah et al., 2019). The excursion learning can be implemented using various strategies, including conducting field studies.

A field study is one of several learning strategies that can be employed alongside an indoor study (Esteves et al., 2019). John Dewey, a renowned educational theorist in the early 20th century, emphasized the importance of experience in constructing an individual's education (Reginio, 2011). Field study is considered highly valuable in education as it offers experiential learning outside the classroom. This is supported by Kolb's learning theory, which emphasizes the significance of field experiences and laboratories in the learning process (Reginio, 2011; Sejati et al., 2023; Stern & Powell, 2020). Field study can enhance interaction between educators and students, thereby creating new and meaningful learning experiences (Latipah et al., 2019; Saefudin, Permana, & Amprasto, 2021). Besides, it involves collecting and analyzing data related to phenomena in the field, thereby enhancing students' understanding of specific theories and promoting more effective learning (Munandar et al., 2019). The experiential learning cycle can enhance positive outcomes in educational and interpretative experiences. This is achieved through active participation, reflection on experiences, drawing insights and principles from the reflection, and applying that knowledge in new situations (Stern & Powell, 2020). Experiential learning can enhance students' interest, knowledge, curiosity, and motivation and foster positive attitudes toward the subject (Behrendt & Franklin, 2014; Silva, Silva, & Varejão, 2010).

Field study becomes a critical learning method in the field of geography (Esteves et al., 2019; Goss et al., 1968; Jonasson, 2011; Krakowka, 2012; Max, 2009; Munandar et al., 2019; Sahrina & Deffinika, 2021; Sejati et al., 2023). Field studies facilitate the internalization of relevant geographic theories and concepts (Goss et al., 1968). Field study represents a distinctive and crucial learning model in geography (Max, 2009). Geography without field study is like science without experiments (Bruinsma, 2024; Demirkaya & Atayeter, 2011; Munandar et al., 2019). Field study represents a well-consolidated learning model that can serve as a procedural teaching strategy in geography (de la Vega, 2022). It is of particular importance in the introduction of landforms in both physical and human geography (Sejati et al., 2023). Field studies in geography education are essential activities that encourage the development of geographical knowledge and skills that are not feasible to learn solely in the classroom (Esteves et al., 2019; Goss et al., 1968; Max, 2009). Field studies elucidate the intricacies of geographical phenomena, rendering them comprehensible to participants and providing a foundation for the study of geosciences and geography (Norsandi, 2018; Sejati et al., 2023). It also directs experiences to the actual field, where landscapes, locations, and people can be observed firsthand. Besides, field study allows students to apply the knowledge acquired in the classroom to a real-world environment (de la Vega, 2022; Esteves et al., 2019;

Munandar et al., 2019; Reginio, 2011). Therefore, field studies are necessary to introduce the actual conditions of the geographical study field (Munandar et al., 2019).

Geography education at the Faculty of Teacher Training and Education, Universitas Sebelas Maret, places a strong emphasis on field studies as the primary learning method. This is implemented through a three-stage field study course. The initial stage of the course is devoted to the introduction of landforms, cultural landscapes, and mapping. The second phase emphasizes surveying competence, data collection, and measurements. The third phase involves the practical implementation of research and colloquium. Further, field studies are also implemented in specific field practicals for certain courses. Field studies are crucial in enhancing the understanding of landforms and cultural landscapes among second-semester geography education students at the Faculty of Teacher Training and Education, Universitas Sebelas Maret. This is achieved by identifying each destination stop site's physical, social, economic, and cultural aspects using spatial, ecological, and regional complexity approaches. Several studies on the benefits of field studies have been conducted. These invlode those by Behrendt and Franklin (2014), de la Vega (2022), Jonasson (2011), Latipah et al. (2019), Max (2009), Nawi and Fauziana (2016), and Sejati et al. (2023). These studies investigate the advantages of field studies on learning interest, improvement of knowledge in pedagogical, affective, cognitive, and psychomotor aspects, and enhancing basic spatial skills and ecological intelligence for students.

This research evaluates the efficacy of field study in enhancing the competence of mapping and understanding natural and cultural landscapes among students of the Geography Education Program at the Faculty of Teacher Training and Education, Universitas Sebelas Maret. Field study activities allow students to apply the theories and concepts of geography learned in a real-world environment, thereby facilitating a deeper understanding of how geographical concepts function in real-world contexts. Consequently, a comprehensive investigation is essential to ascertain the effectiveness of field study activities. This research is novel in its attempt to elucidate the benefits and effectiveness of field study activities in enhancing students' understanding of geography topics, particularly in mapping skills and understanding natural and cultural landscapes. This aspect has yet to be expressly addressed in previous studies. Therefore, the research is expected to create meaningful learning that will contribute to increasing understanding of mapping, landscapes, and cultural landscapes through field study activities.

2. Method

This research was conducted with the population of geography education students from the Faculty of Teacher Training and Education at Universitas Sebelas Maret, batch 2022. The field study involved visits to various Southern and Northern Central Java regions, each with distinct characteristics of natural and cultural landscapes. During the journey, participants were provided with materials about natural and cultural landscapes, the use of maps, and the opportunity for students to explore various phenomena at each stop site on their own. The route of the field study activity is presented in Figure 1.

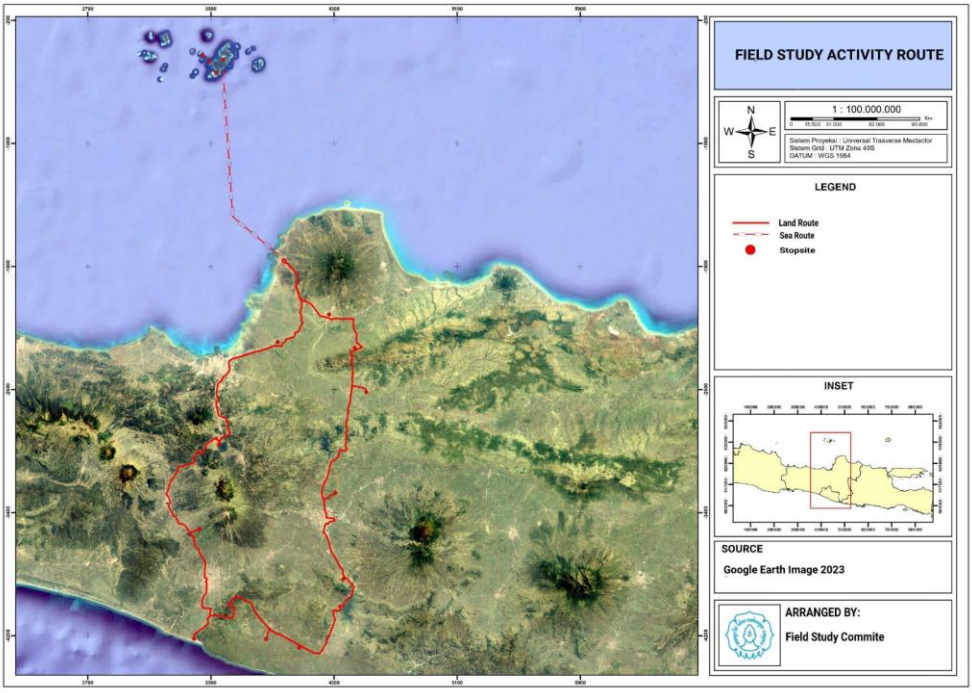

Figure 1. The Route of The Field Study Activity

The field study activity route was determined based on the distribution of landforms and cultural landscapes in the Central Java region. Based on the physiographic division of Java by Van Bemmelen, Central Java is situated in four geological conditions: Southern Mountain Arc, Kendeng Basin, Modern Arc, and Sunda Shelf (Smyth, Hall, & Nichols, 2008). All stop sites in the field study activity covered all the mentioned Geological zones, as presented in Figure 2.

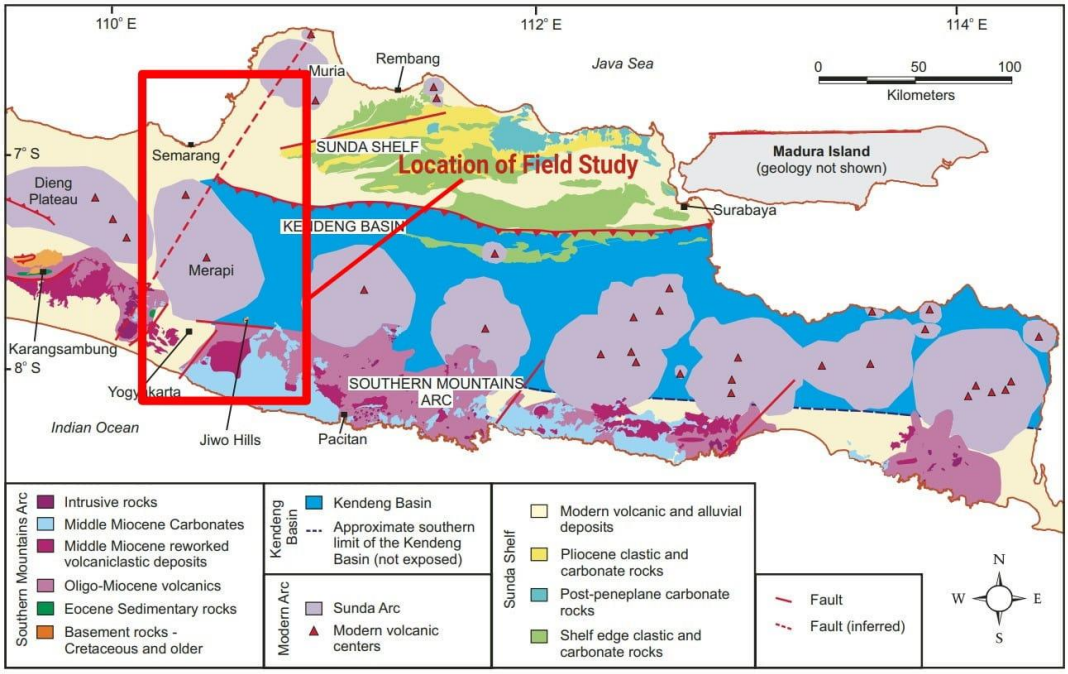

Figure 2. The Physiographic Zone of the Field Study Activity Locations
Source: Smyth et al. (2008)

From the landform perspective, the field study activity route visited various landforms, including Fluvial landforms, volcanic landforms, structural landforms, as well as denudational landforms, including plains, hills, and mountains, spanning from the northern to the southern part of Central Java, as illustrated in Figure 3.

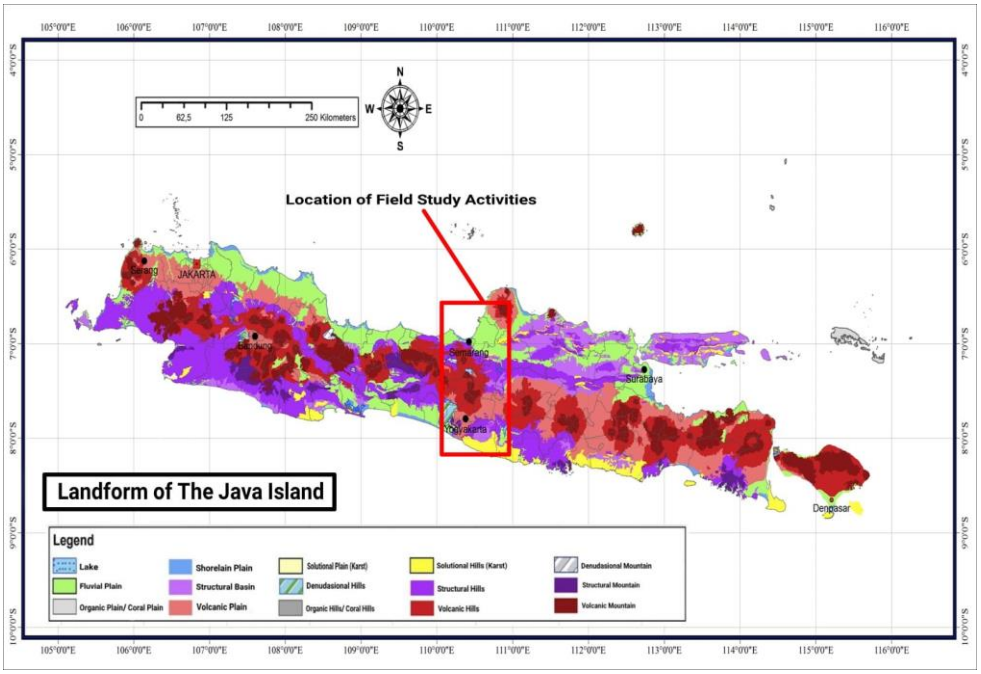

Figure 3. Landform Types at the Field Study Activity Locations
Source: Sugiyanto (2014)

The data collection was performed through a questionnaire. The questionnaire method is a data collection approach that involves questions for respondents to fill in or answer (Amirwati, 2022; Sugiarto, 2011). The data obtained from the questionnaire served as primary data (Sugiarto, 2011). In this study, the data obtained from the questionnaire consists of students' understanding of mapping and landforms before and after participating in the field study activity. The indicators measuring the effectiveness of field study on the understanding of mapping and natural and cultural landscapes are presented in Table 1.

Table 1. Indicator and Parameter of Field Study Effectiveness on Understanding of Mapping, Natural Landscapes, and Cultural Landscapes

No.	Indicators	Parameters
1.	Understanding of Mapping	Fundamental Mapping Concepts Field Orientation Map Interpretation Use of Mapping Tools Spatial Analysis
2.	Understanding of Natural Landscapes	Identification of Natural Landscapes Classification of Natural Landscapes Processes of Natural Landscape Formation Landscape Analysis
3.	Understanding of Cultural Landscapes	Identification of Cultural Conditions Identification of Cultural Structures Cultural Dynamics Spatial Cultural Analysis

Following the indicators presented in Table 1, the data were then compiled into a list of questions in the questionnaire associated with implementing the field study activity. This process revealed the effectiveness of the implementation of the field study activity in improving students' understanding of mapping, natural landscapes, and understanding related to cultural landscapes. The number of respondents in this study amounted to 83 people who were students of the class of 2022 who had carried out field study activities. The proportion of respondents in this study is presented in Table 2.

Table 2. The Percentage of Respondents' Gender in The Study

Gender	Number	Percentage (%)
Male	22	27
Female	66	73
Total	83	100

The data analysis was carried out using quantitative descriptive analysis correlated with the Experiential Learning Cycle. Quantitative descriptive analysis is a method of analysis that explains data by referring to statistical descriptions (Aziza et al., 2023). Effectiveness analysis compares students' understanding of mapping materials, landscapes, and cultural landscapes before and after implementing field study activities. This allows for the determination of the extent to which field studies enhance student competence. In more detail, the method of analysis is presented in Figure 4.

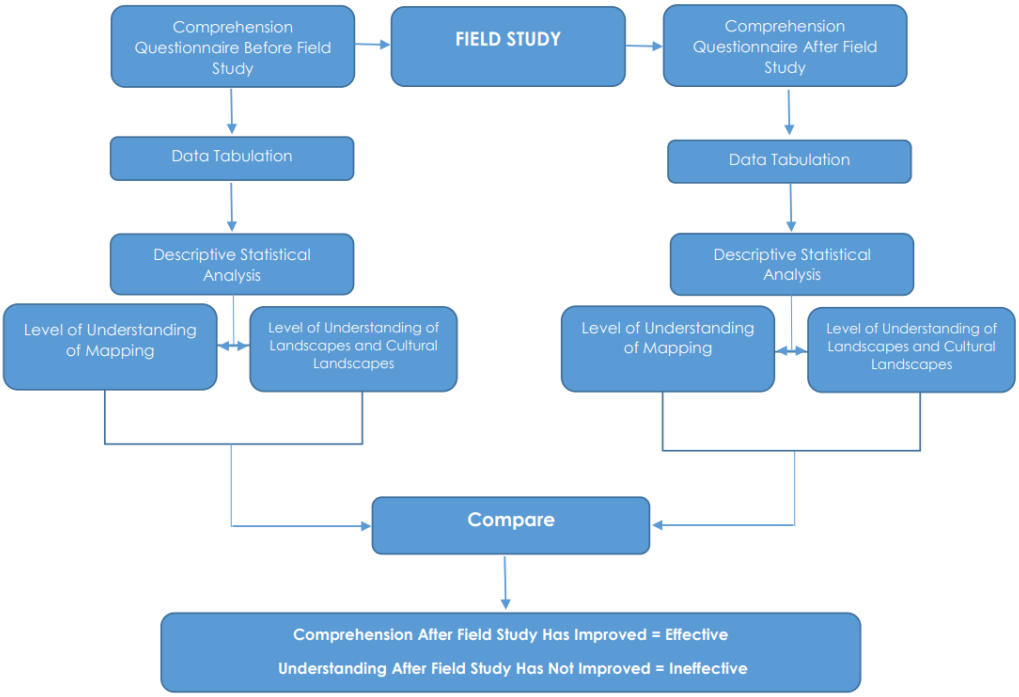

Figure 4. Stages of Data Analysis

3. Results and Discussion

Field study, as one of the excursion learning methods, is considered a highly conducive learning method in various disciplines, including Geography. It provides learners with ample

opportunities to observe, listen, inquire, collect data, and explore phenomena in a more free manner (Astalin & Chauhan, 2018). The field study method allows for the complex nature of geographical phenomena to be revealed, thereby facilitating their comprehension and providing a foundation for further geoscientific and geographical studies (Norsandi, 2018; Sejati et al., 2023).

3.1. The Effectiveness of Field Study in Enhancing Mapping Competence

In supporting the improvement of students' competence in mapping, field study teaches students various aspects related to mapping, including the basic concepts of mapping and the use of mapping tools. During the preparation phase, this is done by creating maps needed throughout the field study activities. Other activities included in the field study course are field orientation learning, map interpretation, and spatial analysis of the environment at each stop site during field study activities. The mapping material in field study activities is presented in Figure 5.

Figure 5. Practice in the Use of Mapping Tools and Map Utilization

The results of questionnaire data processing on the effectiveness of field study in improving mapping competence are presented in Figure 6.

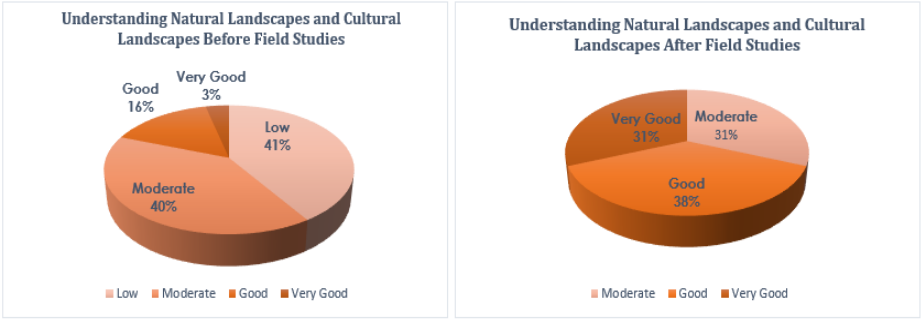

Figure 6. Comparison of Mapping Competence Levels Before and After Field Study

The results of the measurement presented in Figure 6 indicate that students' understanding levels in mapping competence are improved. Prior to the implementation of the field study activities, it was known that students' understanding of mapping competence ranged from inadequate to proficient, with the largest proportion of students falling into the inadequate category, at 40% of the total student population. In contrast, only 4% of students were in the proficient understanding category. Following the implementation of field study activities, students demonstrated improved understanding levels in mapping competence, with the majority of students falling into the moderate, reasonable, and excellent categories. A notable 40% of students demonstrated a good understanding, while the percentage of students with sound and excellent understanding levels increased significantly. These findings indicate that field study activities can effectively enhance students' understanding of mapping competence. The success of field study in improving understanding of mapping can also be observed from the absence of students with a less-than-good understanding of mapping material. Prior to the implementation of field study activities, a significant number of students required a more comprehensive understanding. According to the respondents' statements, the increase in students' understanding of mapping competence is attributed to the field study activities.

In addition, field study provides students with the opportunity to use mapping tools directly. Providing opportunities for students to use the game directly allows them to explore the functions. This approach is employed in the tool independently to provide a meaningful experience and to store it in their memory for a longer period of time. This aligns with the assertion put forth by Demirkaya and Atayeter (2011) that practical or experiential learning with instructor guidance provides more permanent knowledge than learning only presented in class. A significant number of students indicated that hands-on experiences with the tools facilitated their comprehension of the tools' methods, workings, and functions. The utilization of diverse maps also afforded students novel experiences pertaining to the analysis of various types of maps, the comprehension of map components (symbols), and the observation of the actual appearance of objects on the map in the field. Additionally, students acquired a range of skills during field study activities, including field orientation. This corroborates the assertion (Bruinsma, 2024) that direct experience helps students understand actual spatial analysis. Most students express that field orientation provides new experiences and knowledge, allowing them to locate themselves on the map based on the orientation activity.

Some of the students' responses to the question, "How can field studies improve your ability to understand mapping concepts, use mapping tools, and perform spatial analysis using maps?" include:

R1: During field studies, students can practice directly plotting and determining an object's location on the map and identifying symbols on the map with their original natural appearance.

R4: Field studies help understand maps because each stop site uses geological, landform, or terrain maps.

R42: By practicing mapping tools such as Kompas, GPS, and Abney levels directly in the field, students can easily remember the material.

R38: Field studies contribute to the comprehension of maps and mapping because maps are utilized at each stop site, and proficiency in their use, determination, and interpretation is a requirement. Consequently, our understanding of these concepts has been enhanced.

R74: Field study activities allow students to learn directly from experts in their fields, apply the knowledge they have learned, and gain firsthand experience on how to use maps and mapping.

R76: At each stop site, the use of geological maps or terrain maps allows us to ascertain our precise location with regard to the research area.

R53: My mapping understanding is noticeably improved, especially when using geological maps, where we can also observe the structure of geological formations at the bottom of other geological structures by looking at lines that run from one point to another. These lines represent the transverse appearance of the formations passed by these lines. By knowing the transverse formation vertically, students can learn the formation or age of formations that have been formed before so that the analysis of morphological aspects can be clearly described.

R64: By looking at the natural and realistic appearance of the map, formations, and positions matched from the map to the original, I came to understand maps and mapping more.

R38: At every stop site, the map must be opened. There, we did map orientation, map reading, and map analysis. These activities can increase understanding of maps and mapping.

R23: Utilizing a map, one can identify a specific location at each stop site by plotting the geographical coordinates or UTM coordinates using GPS and subsequently implementing them onto the map. Resection and intersection analysis can be performed to determine the distribution of rock formations in each area by examining geological maps.

The enhanced proficiency of students in the field of mapping indicates that field study presents a positive impact on enhancing students' Mapping competence, consistent with the research findings (Sejati et al., 2023), which suggests that field study can improve students' geographical literacy, geographical analysis skills, application of geographical knowledge, cartography skills, critical thinking, and scientific thinking. The research is also supported by the statement from Max (2009) that field study provides students with the opportunity to develop specific skills such as mapping, data collection and analysis, and interpersonal skills. The research results also align with Bahri's (2020) findings that field study significantly influences students' spatial thinking abilities. Another study conducted by Norsandi (2018) emphasized the benefits and importance of field learning. The study found that field studies significantly influence students' learning outcomes and achievements. Other studies conducted by Diharjo and Syamsunardi (2023), Latipah et al. (2019), Rochayati and Maetasari (2013) indicate that learning through field studies can enhance students' learning motivation, increase their activeness, and demonstrate differences where students show more enthusiasm in participating in the learning process. The effectiveness of learning through field study activities is also supported by Arinta et al. (2016), who reported that the learning interest of Geography Education students increases following the implementation of learning through field studies.

3.2. Effectiveness of Field Study in Improving Competence in Physical and Cultural Landscapes

Field study can foster conceptual reinforcement, integrated exploration, more productive inquiry, and physical-social skills development through meaningful learning (Latipah et al., 2019). Besides, it is crucial to introduce the characteristics of the land in physical and human geography (Sejati et al., 2023). The focus of learning during the field study activities for Geography Education students at the Faculty of Teacher Training and Education, Universitas Sebelas Maret, is natural and cultural landscapes. The material begins with an introduction to natural and cultural landscapes, the formation process, and an understanding of the various characteristics of each natural and cultural landscape. The material for introducing natural and cultural landscapes is presented in Figure 7.

Figure 7. The Introduction to Natural and Cultural Landscapes

The results of measuring the effectiveness of field study in the competence of landforms are presented in Figure 8.

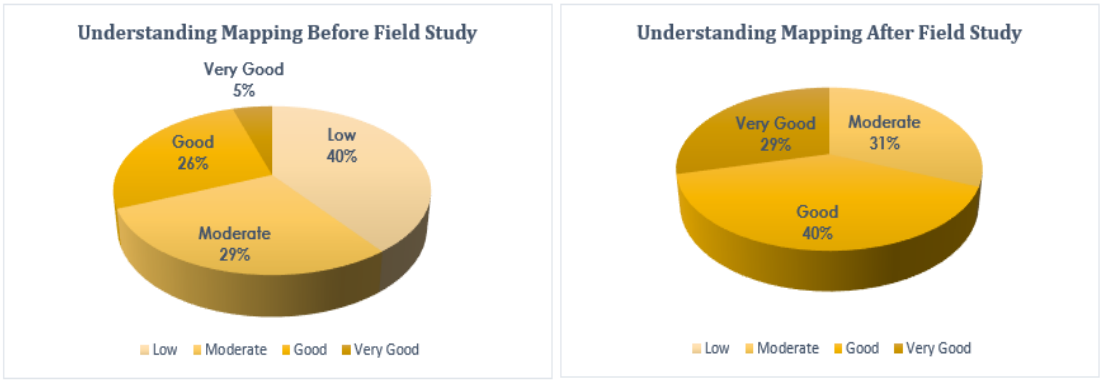

Figure 8. Comparison of the Level of Competence in Landforms and Cultural Landscapes Before and After Field Study

Figure 8 indicates that students in the Geography Education program who have participated in field study activities demonstrate enhanced comprehension of landforms and cultural landscapes. This improvement is evident in the moderate and low understanding levels, which, prior to the implementation of field study activities, exhibited a high percentage of 41% for moderate understanding and 40% for low understanding. Following the implementation of field study activities, the percentages decreased to 31% for the moderate level, and there were no more students with a low understanding of landforms and cultural landscapes. Students with a good level of understanding exhibited the highest percentage, at 38%. Additionally, there was an increase in excellent understanding, which previously stood at only 3%, rising to 31% after implementing the field study. The observed increase in the percentage of students demonstrating outstanding knowledge in the field of landscape and cultural areas provides evidence that the field learning approach, as exemplified by the Field Work Lectures, is highly effective in helping students gain a deeper understanding of the landscape and the cultural regions, particularly at each visited stop site.

Field learning provides students with a more profound comprehension of the landscape and cultural areas. By visiting and observing the natural landscapes and cultural environments in person, students learn about various types, characteristics, formation processes, and dynamics associated with each natural landscape and artistic setting. Krakowka (2012) posits that discussing cultural landscapes with learning will not yield the same benefits as experiencing the real world. The study's findings are based on the statement Bradwell and Stoker (2016) that learning in the field helps students understand various rocks and landscapes and trains physical abilities. Field studies also aid students in understanding how natural landscapes and cultural environments interact, relate, and mutually influence one another. The results of the study, as presented by de la Vega (2022), indicate that field studies assist students in understanding the interconnectedness between natural landscapes and cultural environments by identifying anthropogenic impacts on landscapes and the resulting imbalances. Besides, field study reinforces their understanding of the materials acquired during classroom learning. As a result, concepts and distinctions between natural landscapes and cultural environments, which were previously somewhat vague, become more apparent as they directly observe related objects in the field. The findings support the statement of Demirkaya and Atayeter (2011) that with field studies, verbal information can be supplemented with visual information obtained in the field, providing a more robust understanding in students. The findings are also consistent with the assertion from Heffernan et al. (2013) that learning in the field provides a direct and authentic experience and involves students in the learning process, which can have a significant impact because it helps students internalize their learning, which in turn makes it more accurate and allows for deeper contemplation to occur.

Some of the students' responses to the question, "How can field studies improve your understanding of the classifications, dynamics, and processes that occur in landscapes and cultural landscapes?" include:

R2: During field studies, visiting different places with different cultures related or unrelated to environmental factors. Understand the cultural differences in each stop site area and how the surrounding community utilizes the potential of their area, both natural resources and tourism.

R13: Field studies can alter the perspective of perceiving landforms on the Earth's surface in terms of geography (geology and geomorphology) and its relation to culture in these natural features.

R27: At each stop, an explanation of the landscape and cultural landscape in the area significantly enhanced my comprehension of the material obtained in class.

R55: Through field studies, students can observe each type of landform and the process of formation that is influenced by the surrounding environment. By obtaining explanations from lecturers and examining each landform directly, we can distinguish the form and the process that occurs. Similarly, the different cultural landscapes at each stop site are based on the characteristics of the landscape in the region.

R80: Field studies provided me with invaluable experience. Prior to engaging in field studies, I found it challenging to comprehend the concepts of landscape and cultural landscape as presented in the classroom. However, through hands-on activities, I was able to gain a deeper understanding of these concepts and retain the knowledge more effectively.

R61: Several sites examine the landscapes and cultural landscapes owned in each region so that they can know and compare landscapes and cultures between regions, especially in the South to North Java Island region.

R79: Yes, maybe there is less understanding of what was originally a mace of any desire, and so know what a landscape is, such as landforms, rocks, and human activities from one thing by looking at the landscape and how it relates to the cultural landscape in real terms on the ground.

This research is supported by Silva et al. (2010), which highlights that field studies are vibrant as they offer unlimited geographical possibilities since physical and human aspects become simultaneous objects of study. Introduction to landforms and cultural landscapes through fieldwork provides valuable pedagogical experiences to students, fostering various skills such as cartographic skills, spatial thinking, geographical literacy, the application of geographical knowledge, spatial analysis, and critical and scientific thinking skills (de la Vega, 2022; Ikhsan et al., 2018; Max, 2009; Bahri, 2020; Sejati et al., 2023). Students' enhanced understanding of the competence of natural landscapes and cultural environments following the implementation of field studies indicates that field studies have an impact on students' achievements and learning outcomes. This finding is consistent with Norsandi (2018), which states that there is a significant simultaneous influence between field studies and student performance. Through various experiences gained, field studies indirectly enhance students' interest, motivation, and enthusiasm to participate in learning activities (Arinta et al., 2016; de la Vega, 2022; Diharjo & Syamsunardi, 2023; Latipah et al., 2019; Rochayati & Maetasari, 2013).

3.3. Compatibility of Field Study Effectiveness with Kolb's Learning Theory

Field study activities generally fulfill the experiential learning cycle proposed in Kolb's Theory. Knowledge is created through the transformation of experience (Krakowka, 2012). Kolb's Experiential Learning Cycle is an approach that emphasizes the importance of direct experience and active application in effective learning. There are four stages in experiential learning. First, Active Experimentation (PLAN), where students actively investigate and test

their knowledge. Second, Concrete Experience (DO), where students actively engage in field activities. The fourth stage of reflective observation (OBSERVE) involves reflecting on the experiences gained to conclude. The final stage is Abstract Conceptualization (THINK), where students begin to formulate ideas based on their understanding before and after field activities, ultimately gaining comprehension of specific concepts and theories. Kolb's experiential learning cycle is presented in Figure 9.

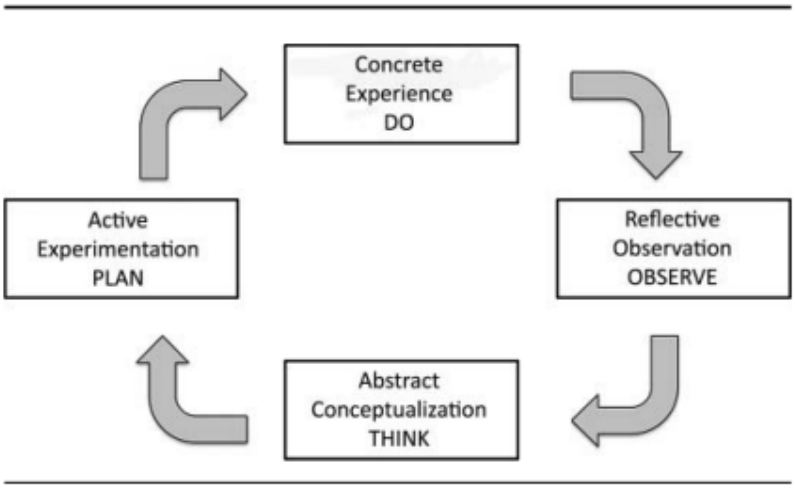

Figure 9. The Experiential Learning Cycle by Kolb

The stages of implementing field study activities in geography education indirectly manifest each stage in Kolb's learning model (Krakowka, 2012). The implementation of Kolb's learning model in field study activities is presented in Table 3.

Table 3. Implementation of Kolb's Learning Theory in Field Study

Stages of Kolb's Learning Model	Relevant Field Study Activities
Active Experimentation (PLAN)	Observing maps in the process of determining locations and planning field study routes.
Concrete Experience (DO)	Implementation activities of field study.
Reflective Observation (OBSERVE)	Reflection on findings during the field study activity
Abstract Conceptualization (THINK)	Applying experiences to the concepts and theories learned

One of the most effective methods in helping students understand is to bring students into the actual learning process, which can be achieved through learning in the field. This statement is consistent with the finding Krakowka (2012) that field visits are stereotyped as direct experiences and can provide tangible results based on their experiences in the field.

The analysis results indicate that field studies are highly effective in developing competence in mapping and understanding natural and cultural landscapes. This finding is consistent with findings from Astalin and Chauhan (2018), Max (2009), and Munandar et al. (2019), which assert that field-based learning manifests a more effective educational approach. Besides, the effectiveness of field-based learning aligns with Kolb's experiential learning theory, emphasizing the significance of field experiences and laboratories in the learning

process (Behrendt & Franklin, 2014; Holton, 2017; Krakowka, 2012; Moser & Moser, 2016; Sejati et al., 2023). The efficacy of field-based learning has been demonstrated to provide students with invaluable experiences and to enhance their pedagogical, affective, cognitive, and psychomotor abilities. It offers students the opportunity to observe, listen, inquire, analyze, and explore various phenomena in a more unrestricted manner (Arinta et al., 2016; Astalin & Chauhan, 2018; de la Vega, 2022; Muryani & Prihadi, 2023). Consequently, field studies have become indispensable and must be incorporated into the geography curriculum. This is because the earth, as an object of geography study, cannot be fully comprehended through solely classroom-based learning. This is also evident from the statement of Stoddart and Adams (2004), which emphasizes the importance of field studies for a geographer in physical and cultural geography, as observation of the earth represents a geographer's primary means of comprehending the functioning of the world.

4. Conclusion

One of the learning methods employed in the field studies is conducive to enhancing students' understanding of mapping competencies and natural and cultural landscapes. The effectiveness of field studies in improving Geography Education students' competencies at the Faculty of Teacher Training and Education, Universitas Sebelas Maret, has been demonstrated. This is evidenced by the students' increased level of understanding in mapping competencies, as well as natural and cultural landscapes. Prior to the implementation of field studies, the experience was predominantly at a lower level (40%). Nevertheless, following the implementation of field studies, the proportion of students demonstrating sound and excellent levels of understanding increased significantly. Consequently, field studies have proven to be an effective learning method within the Geography Education program at the Faculty of Teacher Training and Education, Universitas Sebelas Maret, particularly in enhancing competencies related to mapping and understanding natural and cultural landscapes. Field studies in geography education align with Kolb's experiential learning theory, emphasizing the importance of field experiences and laboratories in learning. Consequently, field studies must be incorporated into the geography learning curriculum for physical geography, human geography, and culture.

Author Contributions

All authors have accepted responsibility for the entire content of this manuscript and approved its submission.

Conflict of Interest

Authors state no conflict of interest.

Data Availability Statement

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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