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CHALLENGES IN THE IMPLEMENTATION OF FIELDWORK LEARNING IN THE GEOGRAPHY CURRICULUM IN INDONESIA

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Abstract: The objective of this study is to analyze the high school geography curriculum in Indonesia and suggest ways in which fieldwork geography learning can be implemented. To gather data, mixed methods were employed, including analyzing curriculum documents, the results of national exams, and surveys of geography teachers. The study was conducted with 26 geography teachers from South Kalimantan Province in Indonesia. The findings demonstrate that while the geography curriculum in Indonesia allows for fieldwork, not all teachers have the opportunity to carry it out. Furthermore, poor results in national exams may be attributed, in part, to the lack of fieldwork learning on the lithosphere topics. Geography teachers can handle the challenges in carrying out fieldwork by doing more student-centered learning, by developing students' investigative abilities, such as inquiry-based learning or project-based learning. Teachers can overcome cost problems by choosing locations around the school, reducing transportation costs, and using mobile phone technology for data input.

Keywords: geography; curriculum; fieldwork; lithosphere; Indonesia

1. Introduction

One of the topics covered in the Indonesian National Geographic course is the analysis of lithospheric changes and their impact on residents (Kamil et al., 2020). Therefore, students need to be directly involved in learning in the field, such as visiting geosites with lithospheric processes. However, learning from actual experiences such as touching, observing, and feeling geosphere phenomena are more meaningful (Klasner et al., 1992). Munandar (2019) stated the challenges of fieldwork in geography learning in Indonesia, including: 1) lack of funds, 2) difficulty to choose the right location, and 3) difficulty to reach the location. The geography curriculum at high schools in Indonesia also minimally includes fieldwork

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learning activities compared to curricula at the same level in other Southeast Asian countries (Chuan & Poh, 2000). For the above reasons, Ridha and Kamil (2021) emphasize the need to change the geography curriculum in Indonesia.

Fieldwork in other countries faces different problems. Munday (2008) identified barriers faced by Australian teachers including difficulties in planning field trips, high costs, lack of transportation to field trip sites, and students' unfamiliarity with field trips. In the United States of America (USA), fieldwork limitations include inadequate teacher preparation, costs, and lack of curricular support (Bednarz, 1999). In addition, a survey by The Geographical Association of the United Kingdom (UK) found that geography teachers in the UK also have problems in implementing fieldwork, such as costs, lack of support from the school, and the ideal time to conduct fieldwork (Kitchen, 2020). Teachers in Singapore stated that the main limitation in carrying out fieldwork was preparing logistics (Chew, 2008).

Teachers contribute to the design of the curriculum, determine teaching methods, guide students, and conduct assessments (Domaćinović & Vuk, 2022). Designing fieldwork programs needs to be demonstrated by geography teachers (Seow et al., 2019). A geography teacher must be able to master geography material and plan, implement, and assess learning activities in fieldwork (Brooks, 2010). Academic identity and subject mastery are important factors to consider in conducting fieldwork learning (Seow et al., 2020). Improving geography pedagogy competency is essential for developing geography education, especially regarding fieldwork as "signature pedagogy" in geography education (Seow et al., 2019). Fieldwork is the main focus of the geography education research roadmap (Huynh et al., 2015). Munandar et al. (2020) stated that some geography teachers in Indonesia were not ready to do this learning technique. In addition, problems and opportunities in fieldwork have not been widely studied, especially in developing countries such as Indonesia. Therefore, this research aimed: 1) to determine the learning conditions of high school geography in South Kalimantan, Indonesia based on: curriculum, teacher profile, teaching methods, and geography national exam results related to the lithosphere topic, and 2) to explore the challenges found by teachers on lithosphere topic through fieldwork.

2. Methodology

This research was structured to answer two questions: 1) How does the Indonesian geography curriculum enable fieldwork learning? and 2) How do geography teachers face the challenges of learning geography on the dynamics of the lithosphere through fieldwork? The research design used a mixed method based on quantitative and qualitative research (Creswell & Creswell, 2017). The geography curriculum in Indonesia was qualitatively analyzed from curriculum documents issued by the Ministry of Education, Culture, Research, and Technology (MOEC). The National Examination data were obtained through an analysis of the geography national examination data (Education Assessment Center, 2020). A survey was conducted among geography teachers at senior high schools in South Kalimantan. Next, these teachers were asked a list of questions about their teaching methods so far.

In order to obtain as good a sample as possible with teachers, Cluster Random Sampling was performed. This sampling is a probability sampling method that divides a population into clusters, such as districts or schools, and then randomly selects some of these clusters as a sample. The research population is schools located in South Kalimantan Province

consisting of 13 regencies. Each regency is represented by two geography teachers who teach grade 10.

Qualitative data were obtained from the geography curriculum, fieldwork opportunities based on geography teacher experience, and the national exam results about lithosphere obtained from the Education Assessment Center (EAC) by the MOEC. The Indonesia National Assessment Data (INAD) published by the EAC (Aditomo et al., 2019) were used to analyze the relationship between geography achievement scores and variables that represent learning content that can be carried out in fieldwork. To answer the research questions, the focus was on the data from the 2019 INAD Geography assessment. The statistical analysis conducted by the EAC was based on the overall student sample and therefore supports generalization to the student population nationally. This method was used to analyze textual data for analysis syllabus using the content analysis method.

3. Results

3.1. Geography curriculum about lithosphere

Based on the Regulation of the Minister of Education and Culture Number 36 of 2018 About the Senior High School Curriculum, it was stated that the basic competencies of lithosphere topic are divided into four categories: spiritual attitudes, fundamental social competencies, basic knowledge competencies, and basic skills competencies (Peraturan Menteri Pendidikan dan Kebudayaan Indonesia Nomor 36 Tahun 2018 Tentang Kurikulum 2013 Sekolah Menengah Atas OEC, 2018a). Basic knowledge competence is coded 3.4, and skills competence is coded 4.4. Basic Competence 3.4 describes how the lithosphere dynamics affect the relationship between people and the environment. Basic competence 4.4 explains the relationship between people and the environment based on the lithosphere dynamics narratives, tables, charts, graphs, illustrative visuals, and idea maps (Peraturan Menteri Pendidikan dan Kebudayaan Indonesia Nomor 37 Tahun 2018 Tentang Kompetensi Inti dan Kompetensi Dasar Pelajaran Pada Kurikulum 2013 Pada Pendidikan Dasar dan Pendidikan Menengah, 2018b).

The topics studied on lithospheric dynamics include: 1) individual actions involving the use of rocks that form the lithosphere, 2) the impact of tectonic activity on human life, 3) the impact of volcanic activity on human life, 4) the impact of seismic activity on human life, 5) the impact of exogenous processes on human life, and 6) land formation and use (Peraturan Menteri Pendidikan dan Kebudayaan Indonesia Nomor 54 Tahun 2013 Tentang Standar Kompetensi Lulusan Pendidikan Dasar dan Menengah, 2013). Indonesia's geography curriculum covers both physical and human geography, highlighting its impact on daily life. The curriculum in Indonesia emphasizes the achievement of students' competencies in knowledge and skills (psychomotor) collectively (Agency for Research and Development, Ministry of Education and Culture, 2017). Knowledge aspects of lithosphere dynamics are intended to assist students in examining the relationship between humanity and the environment due to lithosphere changes. The geography curriculum in Indonesia, especially on lithosphere dynamics, opens up opportunities for geography teachers to do fieldwork.

3.2. The results of the national geography exam

Data from the EAC (2020) of the MOEC showed that the national exam results in geography are low in all tested topics including the low percentage of students correctly answering questions about the lithosphere. The results from the national exam are shown in the following Table 1.

Table 1. Student percentage of correct answers on six-indicator geography national exam

Number of questions	Indicator	Percentage of correct answers (%)	
		National (n = 219,705)	South Kalimantan (n = 3,604)
17	Determine plate movement to determine the Earth's surface structure in Indonesia	34.78	24.17
19	Identify the Earth's surface structure based on plate movement	63.18	74.97
20	Identify the benefits of volcanism	55.29	44.95
21	Determine the distribution area of tectonic earthquakes	41.87	59.05
28	Identify rock types	25.31	35.75
29	Determine the type of soil	50.59	41.98
	The average correct answer	45.17	46.81

Note. Data in the columns are calculated based on *Indonesia National Assessment Data (INAD)* by Education Assessment Center, 2020 (https://hasilun.pusmenjar.kemdikbud.go.id/#2019!sma!daya_serap!99&99&999!s&09&T&T&1&unbk!1!&). In the public domain.

Table 2. Participants' data and teaching methods

Geography teacher profile	Type	Respondent (N=26)
Gender	Female	18
	Male	8
Education level (degree)	Undergraduate degree	17
	Master degree	9
Study program	Geography Education	26
	Others	0
Teaching period	0–5 years	3
	6–10 years	5
	11–15 years	9
	16–20 years	6
	More than 20 years	3
Learning model used in teaching about the lithosphere	Problem-based learning	14
	Project-based learning	6
	Discovery learning	5
	Others	1

According to Table 1, the expected competencies were not achieved, as only 45.17% of students on average answered correctly. It indicated that the lithosphere dynamics are still difficult for students in Indonesia to understand. The national exam achievement on this topic in South Kalimantan is also low, with only 46.81% of students who answered correctly. However, this achievement is slightly higher than the national value achievement. Only one of the six indicators on the lithosphere topic examined in the national exam may be considered acceptable—the ones indicating the Earth's surface shape according to plate movement. However, some students are still not able to answer correctly. The students' weakest answers were when the

questions were related to describing rocks. Therefore, the results of learning about lithosphere dynamics in Indonesia can be considered to be ineffective.

3.3. Geography teacher and teaching methods

Table 2 shows that most of the geography teachers in South Kalimantan have an undergraduate degree in geography education, and some even have a master's degree in geography education. Meanwhile, the average career of a geography teacher was more than ten years.

The surveyed teachers stated that when teaching lithosphere they used teaching methods that were in accordance with those recommended by the education office. More than half of these teachers use problem-based learning in teaching lithosphere, while 23.0% of teachers chose to use the discovery learning model. On the other hand, 19.2% used discovery learning, and 3.8% used conventional learning through lectures.

A survey conducted on geography teachers in South Kalimantan (Table 3) showed that most teachers had never participated in fieldwork activities, either in school, during college, or in teaching practice. None of the geography teachers in South Kalimantan did fieldwork learning on lithosphere topics. In contrast, most of them believe that fieldwork can be performed at school.

The most basic obstacle based on Table 3 is a lack of pedagogical and professional competence of geography teachers in carrying out fieldwork. All the teachers from the sample have never taken any fieldwork learning-related lectures, seminars, or training during lectures at school. One of the teachers, who has only taught high school geography for five years, stated that she had never participated in fieldwork activities when she was in college. This results in teachers not knowing how to carry out fieldwork learning, and of course, they will have difficulty choosing fieldwork locations for their students.

Table 3. Teacher responses about fieldwork challenges

No.	Questions	Responses (N=26)
1.	Have you ever attended training or lectures by doing fieldwork activities?	
	a. Yes	11
	b. No	15
2.	Have you ever done fieldwork as a teacher?	
	a. Yes	0
	b. No	26
3.	Is it possible to do fieldwork learning?	
	a. Yes	15
	b. No	7
	c. Maybe	4
4.	What challenges do you face when doing fieldwork?	
	a. Difficult to get permission from the school principal	13
	b. Difficult to get permission from students' parents	19
	c. I have not mastered the topic while in the field	10
	d. I do not understand learning with fieldwork	8
	e. Difficult to find the right location/place to do fieldwork	13
	f. The school is located far from the lithosphere activity for fieldwork	3
	g. The cost of fieldwork activities is high	21

On the other hand, some geography teachers said that they had participated in fieldwork activities when they were students, but were not confident when carrying out fieldwork as teachers. It was surprising to hear that every instructor in our survey had never used fieldwork to support their teaching. This is a shame because fieldwork is a much better way to teach some aspects of geography. The majority of geography teachers said that although carrying out fieldwork can be done, there are several obstacles that prevent them from doing so, such as financial difficulties, difficulty in obtaining approval from the school principal and parents, limited experience in carrying out fieldwork, and difficulty choosing fieldwork locations.

One of the external resources that teachers need when conducting fieldwork is help from the school principal. From the survey that has been carried out, it can be seen that most of the teachers do not get permission from the school principal when carrying out fieldwork. Geography teachers in Indonesia often experience several obstacles from school principals in carrying out field assignments. The principal's biggest fear is that accident could happen to students during fieldwork. It is also difficult to obtain permission from parents to take their children to do fieldwork. Apart from that, there is a crucial problem, namely the costs incurred due to fieldwork activities outside school. Most geography teachers involved in the survey stated that cost was the biggest obstacle when planning fieldwork.

4. Discussion

The geography curriculum for senior high school in Indonesia is suitable for fieldwork. Six learning indicators about the lithosphere are tested in the national geography exam. Only two of the six indicators that can be done with fieldwork learning are identifying rocks and determining soil types. Taking rock samples in nature and describing them is the best way to study rocks, and that can only be done through fieldwork activities (Dorn et al., 2013; Frøyland et al., 2016). Field activities are crucial for students when studying soil types (Charzyński et al., 2022). Students can learn the two indicators above through geographical inquiry-based learning (Özüdoğru & Demiralp, 2021; Seow et al., 2020). Activities in inquiry learning carried out by students have been proven to improve students' skills in identifying rocks (Piper et al., 2024). Fieldwork with geographic inquiry activities can make learning about the lithosphere more interesting and meaningful for students. Inquiry-based learning is a philosophical approach to teaching that is driven by questions and involves active, student-centered learning. Fieldwork is a teaching technique that emphasizes the investigation process and the development of investigative competence (Esteves et al., 2013) and can be used to improve student analysis. Learning lithosphere dynamics aims to train students to ‘analyze’ the cognitive domain and ‘create’ a psychomotor domain based on Bloom's Taxonomy (Anderson & Krathwohl, 2001).

As a starting point for developing teachers' abilities in carrying out fieldwork learning, this can be done by conducting project-based learning. Project-based learning is perfect for teaching lithosphere because of two important components: 1) questions or problems that students are looking for to solve and 2) students’ hypotheses, experimental design, data collected and analyzed, as well as the results and conclusions they might convey to others. Products created in geography learning can be in the form of maps, charts, images, multimedia audio video, or writing related to lithospheric material. Project-based learning was chosen as a didactic approach, where fieldwork projects build on real-world acute

questions, students' interests and choices, and solutions are reached (García de la Vega, 2022). This is also supported by a study that states that relative freedom when in the field as a learning environment makes students more proactive and improves teacher-student relationships (Lai, 1999). Field learning is applicable to many topics within the study of the geosphere, especially for the lithosphere.

The most basic obstacle based on Table 3 is a lack of pedagogical and professional competence of geography teachers in carrying out fieldwork, followed by funding difficulties in conducting fieldwork. This issue also occurs in developed countries, such as the USA, the UK, Australia, and Singapore (Bednarz, 1999; Chew, 2008; Kitchen, 2020). Several things that can be done to reduce fieldwork learning costs are using local areas (Boyle et al., 2007), trying to save money, or even getting free transportation (Leydon & Turner, 2013), developing an outdoor classroom in the schoolyard (Waldron et al., 2016), and use technology to speed up the data collection process (Chang et al., 2012). If geography teachers can reduce or eliminate costs in carrying out fieldwork, we believe that school principals and parents will be more lenient in permitting students to take part in fieldwork activities.

5. Conclusion

The geography curriculum in Indonesia provides opportunities for geography teachers to conduct learning within a fieldwork framework. Fieldwork can be carried out on the sub-theme of the lithosphere topic, such as learning about rocks by identifying the types of rocks in a place. The topic of lithosphere on national exams performs poorly due to a mismatch between the subjects studied and teaching methods. The challenges in carrying out fieldwork are costs, school permission and parental permission, difficulty finding fieldwork locations, and teachers' lack of confidence in carrying out fieldwork. The real action that must be taken immediately by geography teachers is to plan inquiry learning or project-based learning on certain sub-themes on the topic of the lithosphere. Therefore, geography teachers need to improve their pedagogy skills to find the fieldwork location near the school. Close location will reduce the cost and the permission more easily from the school and parents.

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