Jurnal Multidisiplin Sahombu
Volume 4, Number 02, 2024, DOI 10.58471/jms.v4i02
ESSN 2809-8587 (Online)
https://ejournal.seaninstitute.or.id/index.php/JMS/index

Analysis Problems of Geography Teachers in Applying Learning Strategies to Sensing Material Far away at SMA N 7 Medan

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Article Info

Keywords:
Geography teachers,
teaching approaches,
remote monitoring,
technology for education,
barriers to learning,
alternatives for learning.

ABSTRACT

This study aims to analyze the problems faced by geography teachers when implementing learning strategies with remote sensing tools. The research method used is descriptive and qualitative with a case study approach in a number of high schools. Data were collected through interviews, observations, and document analysis. According to the study, the main obstacles for teachers are the lack of appropriate learning materials, the lack of personnel skilled in remote sensing technology, and low motivation to learn materials that are considered complex. Suggested solutions include developing technology-based teaching materials, regular teacher training, and using a contextual approach to improve student understanding. The results of the study showed several problems, including limited access to supporting technology tools such as computers and remote monitoring software, lack of training for teachers on the latest technology, and low student interest in this material. In addition, some teachers have difficulty connecting theoretical concepts with appropriate field practices. Another factor that also influences is the lack of support from schools in providing adequate facilities.

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INTRODUCTION

Geography education is eye lessons that play a role important in develop understanding student about natural universe and environment surrounding area. One of the Topic most important in geography is sensing far. Sensing Far give student outlook about use technology For observe and analyze phenomena on the surface earth. Sensing distance Far covers concepts like image satellite, spectrum electromagnetics, and computing spatial, and relevant with fields like spatial planning, prevention disasters, and management source Power nature. However, the application of learning on the material sensing Far often face various constraints, good from teacher, student, and means supporters. Main discussion sensing Far usually nature abstract and requires understanding in -depth technical. Therefore That appropriate learning strategies are needed so that students can understand and apply it with Good.

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From the corner teacher's point of view, this is one of the constraint the biggest limitations competence in use supporting tools and technologies learning sensing far away, like device GIS (Geographic Information System) software or application processing image satellite. Not all teachers have background behind training special in technology geospatial, so that impact on the effectiveness of the learning strategies applied. In addition, the limitations facilities at school, such as lack of computer, internet access, or device relevant software, to be other obstacles that hinder learning. Many schools, especially in rural areas isolated, still own minimal infrastructure for support learning based on technology. Another challenge for student is lack of motivation and skills base For understand draft technical like interpretation images and spatial data analysis. This is often exacerbated by the lack of approach learning that is of a nature situational, so that student consider material sensing Far No relevant with life they daily.

Therefore that, analyze limitations of teacher learning strategies on the material sensing Far become very important For identify existing obstacles and looking for solution strategic. Research This aiming For give a comprehensive overview about challenges faced by teachers in teach material this, and give recommendation For increase effectiveness learning geography in schools. With better understanding Good to obstacles This, it is hoped, will have a more effective learning strategy innovative and adaptive can developed, so that learning sensing Far No only increase understanding students, but also equip they with skills relevant practical with needs of the times.

Geography education plays a vital role in developing students' understanding of the world and the environment around them. One of the most important topics in geography is remote sensing, which provides students with insight into the use of technology to observe and analyze phenomena on the Earth's surface. This material covers concepts such as satellite imagery, the electromagnetic spectrum, and spatial computing that are relevant to a variety of fields, including spatial planning, natural resource management, and disaster prevention. However, teaching remote sensing often faces challenges, both from the perspective of teachers, students, and supporting facilities, given the technical and abstract nature of the material.

Geographic) software. Information System) and satellite imagery processing. Many teachers do not have specific training in geospatial technology, thus hampering the effectiveness of learning applied in the classroom. In addition, limited facilities in schools, such as lack of computers, internet access, or relevant software, are additional obstacles that hinder technology-based learning. Most schools, especially those in remote areas, still face major challenges in providing adequate infrastructure to support technology-based teaching and learning processes.

In addition, students often find it difficult to understand remote sensing material because of its abstract and technical nature. Many students are less motivated because they do not see a direct connection between remote sensing material and their daily lives. In addition, time constraints in the curriculum and obstacles in delivering complex material make teaching remote sensing more difficult. Therefore, this study aims to identify the obstacles faced by teachers in implementing remote sensing learning strategies and to

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examine the availability of learning resources that can support them in delivering this material more effectively.

RESEARCH METHODS

This research was conducted at SMA N 7 Medan, located at Jl. Timor No. 36, Gaharu, Medan Timur District, Medan City, North Sumatra. The location of this research was chosen because this school is a high school that requires geography learning using remote sensing materials. The research was conducted at 08:15 to 10:00 WIB, with the aim of exploring the challenges faced by teachers in teaching remote sensing materials in geography classes.

The data collection techniques used in this study involved interviews, field observations, and documentation studies. Interviews were conducted by talking directly with geography teachers at SMA N 7 Medan to explore the difficulties they faced in teaching remote sensing material. The questions asked were designed to flow naturally, but still focused on obtaining more in-depth information. In addition, field observations were conducted to directly observe the learning process in the classroom, how teachers use technology in teaching, and students' reactions to the material being taught.

Documentation study is also part of the data collection method, where documents such as lesson plans, syllabus, and student grade records are analyzed. This aims to determine the extent to which remote sensing materials are applied in the curriculum and learning plans at SMA N 7 Medan. After data from interviews, observations, and documents are collected, analysis is carried out by looking for patterns or problems that often arise, such as limitations in technology, equipment, and student motivation. The results of this analysis will be used to find more effective solutions in teaching remote sensing at the school.

RESULTS AND DISCUSSION

Results

Based on the results of an interview with Mrs. Ani Yulistya, a geography teacher at SMA Negeri 7 Medan, several obstacles in implementing remote sensing learning strategies were identified. Mrs. Ani, who has been teaching for 4 years, said that the biggest challenge in teaching remote sensing is the limited tools and resources. Remote sensing requires special software to process satellite imagery, but unfortunately, the school does not have such devices. In addition, many students do not have adequate personal devices to access the material at home, thus hampering the learning process outside of school hours.

In assessing students' ability to understand the basic concepts of remote sensing, Ms. Ani revealed that many students had difficulty understanding the material, such as how satellite imagery is made and used. Often students only memorize the theory without really understanding its application. To support the implementation of the learning strategies that have been prepared, Ms. Ani looks for additional sources, such as online videos or simulations from the internet, but is limited by internet access that is not always smooth at school. The books available at school also rarely provide examples of remote sensing applications that are relevant to the Indonesian context, making it difficult for students to

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relate them to real life.

Regarding facilities and infrastructure, Mrs. Ani revealed that the facilities at the school are still far from adequate. The school does not have a computer laboratory equipped with image processing software such as ArcGIS, so that teaching of the material is mostly done in theory. The projectors and computers available in the classroom often do not function properly, making teaching more dependent on the lecture method, even though remote sensing should be taught practically and applicatively.

To overcome these obstacles, Mrs. Ani has tried various strategies, such as using interactive learning videos from the internet and encouraging students to conduct group discussions and simple projects, such as making manual maps based on data they search for themselves. However, without adequate tools, the results obtained are not optimal. Mrs. Ani also holds additional consultation sessions outside of class hours to help students who are having difficulties, but this is still limited by the limited facilities available.

Discussion

The Nature of the Problem

Problematics, derived from the English term "problem", refers to "issues" or "questions". A problem can be interpreted as an obstacle or challenge that requires resolution. In other words, problems arise as a difference between the situation that occurs and the expectations that are to be achieved.

In the Great Dictionary of the Indonesian Language, the word "problem" is defined as something that continues to cause difficulties and cannot be resolved. Thus, problems are considered as obstacles that hinder efforts to achieve goals or optimize results. The term "problematic" comes from the word " problematic " in English, which refers to something that is problematic.

In KBBI, "problem" is defined as things that have not been solved and have the potential to cause difficulties. Meanwhile, " problematic " functions as an adjective that describes a problem. The term "problem" itself can be used in various contexts, indicating the meaning of "issue" or "question". According to KBBI, a problem is further defined as "something that has not been resolved" that requires attention to be resolved.

Therefore that's the problem can understood as a opposition between existing theories with reality that requires solution. According to Dwinta, problem arise from conditions that create question or challenges that need to be overcome completed. In general general, problem can shared into two categories based on internal and external factors. First, related problems with internal factors. These factors covers potential physical, skills, knowledge and emotions that are possessed student since born. For example includes :

1. Various developing streams and understandings in public,
2. Influences that come from outside school, and
3. Low level knowledge student in forum discussion.

Second, there is problems caused by factors external. External factors covers elements from outside, such as Parental teaching at home is possible No in accordance with need children, and environment in schools and communities. If the three component This each other Work The same with okay then aspect cognitive (knowledge), affective (development

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), and psychomotor (experience) of participants educate will develop optimally. However, if no, thing This Can cause significant problems.

a. Influence culture foreign through films, videos and strangers That Alone ;
b. The influence of social media ; and
c. Very few meetings with strangers

Learning Strategy

initial strategy used among military and interpreted as art in planning (operations) of warfare, especially close ones the relation with movement troops and navigation to in police the war that is seen as the most profitable For to obtain victory. Strategy determination must be preceded by a study about strength opponents, which include amount personnel, strength weapons, conditions terrain, location enemies, and others. In its implementation, this strategy will expanded and explained more carry on become action concrete in the field. (Abu Ahmadi, and Joko Tri Prasetya, 1997: 11).

Nowadays, the term strategy is widely used used in various discipline science, including in the world of education. In general, strategies can interpreted as A framework big action For reach the goals that have been achieved determined. If connected with the learning process teaching, then the strategy in context special can interpreted as pattern general activities carried out between teachers and students in frame reach the goals that have been determined. (Abu Ahmadi, and Joko Tri Prasetya, 1997: 12).

For create quality education is important For have an effective strategy in the learning process. Therefore that, the determination of relevant strategies become a necessity. The right learning strategy will push student For think in a way independent, creative, and adaptive to various existing situation, including possible appear in the future. On the other hand, choosing the wrong strategy can result negative and inhibiting achievement objective education. For example, if a lecturer aiming For develop creativity student but use method authoritarian and rigid teaching, things This naturally will impact bad for development student the.

In choosing the right strategy, it is very important For ensure that teaching nature inspiring and not force students. In many case, approach rigid leadership even Possible No required.For create and implement effective learning strategies, you must consider component base or stages step following : In planning and implementing activity learning, goals always become reference main For determine qualification change behavior. Therefore that, the goal learning must formulated with clear so that they can measured. Select approach learning, namely method view in convey what has been planned For reach the goals that have been determined. During implementation activity learning, need considered and selected approach the main one which is considered the most effective, most appropriate and most adequate For reach objective the. Select and set methods, techniques, and procedure learning is step important in the educational process.

1. Method refers to the approach chosen For convey material, which is in line with objective learning that you want achieved.

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2. Technique, on the other hand, is method For implement method said, with utilise means learning that has been determined. In case this is important For consider speed and accuracy Study student use reach optimal results.
3. Next, design evaluation also becomes part not inseparable from this process.
4. Designing Treatment and
5. Designing Enrichment.

In general general, there are three different types of learning strategies: Inductive strategy, which begins from things special For reach better understanding general; Deductive strategy, which moves from draft general going to application to things special; and 3) Mixed strategies, which combine element from second approach the. Apart from that, there are also known learning strategies as regressive. This strategy start analysis from condition moment This For understand the past, the later build base for progress in the present.

Problems of Learning Strategies

The problem in implementation of learning strategies is a process implementation of learning strategies that have been explained No can accessed. For example, teachers design learning strategies based on project For Student often show instability, laziness, and lack motivation, so that the learning strategies applied often fails. One of the challenge the biggest problem faced by teachers at the moment explain material inside class is an atmosphere that is not support. Condition This make implementation of the strategy that has been planned become No effective. Students experience difficulty in understand material Because some teachers don't fully control the method they use teach. In addition to the lack of competence, many facilities, equipment and resources learning is also not available adequate. As expressed by Darmawan (2014:43), the availability of source adequate learning is very important For overcome constraint space and time in the learning process.

On the other hand, teachers also face difficulty in arrange situation class in accordance with hope them. Often, even though learning strategies has arranged with Good previously, the implementation hampered or even stopped in the middle the way, so that desired result No achieved. One of the reason why learning strategies No effective is character different students. Each student own characteristics unique and distinctive, and in A class, possibility there are various characters students are broad. Differences This often influenced by various factors, such as background behind social, culture, way learning, situation economy, level intelligence, and many again. For example, there is... a very smart student but quiet, active student socialize but lazy, students who don't too involved in activity class, and students who do not too involved in activities If the teacher uses approach learning in class, obviously they consider difference This.

Remote Sensing

Sensing Far is science and art For get information about object, area, or phenomenon through analysis of the data obtained without do contact direct with object, area, or the phenomenon being studied. According to Lillesand and Kiefer (2004), sensing Far is discipline the science and art of collecting information about a object or phenomenon with use tool without touch direct with object, area, or phenomenon The tool in question is tool

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sensor or sensors mounted on the vehicle ; this usually balloon, airplane, plane repeat alik, or satellite (Sutanto, 1994) stated that sensing Far is technique created For get and analyze information about earth, which is shaped radiation reflected electromagnetic or emitted from surface earth. Sensing techniques Far can give information No only about surface object, area, or the phenomenon seen above surface earth, but also at depth certain that can detected / sensed (Sutanto, 1994). Objects, areas, or phenomenon This also includes those outside earth, like the moon and other planets, as well as those beyond atmosphere.

Danoedoro (2012) explains that in development, technology sensing Far at first originate from technique interpretation Photo air in the year 1919. Technology This new develop For needs civil After the War World II. In Indonesia, the use of Photo air For mapping source Power started in the early 1970s. Because of sensing done from distance far, needed power connector For send data about object to the sensor. This data can collected and recorded through three method based on variations :

1. Distribution force,
2. Distribution wave sound, and
3. Distribution power electromagnetic.

Objects, areas, or phenomena on the surface earth can recognized in results the recording because each has characteristics unique in the interaction with power, wave sound, or power electromagnetic.

Sensing far, based on the existing definition is a science that focuses on collecting data and information about surface earth without do interaction direct with object of study. Example tools used in sensing Far covering Photo air, satellites and aircraft kite hanging that utilizes radiation electromagnetic or spectrum energy other.

Sensing process Far involving four component main : source radiation, the observed object, the atmosphere, and the sensor. Among component The light and heat emitted by the surface earth play a role as source radiation electromagnetic. Next, let's We discuss fourth component important This in a way more detailed.

Energy used in sensing Far can classified into two categories, namely system passive and system active. On the system passive, energy sun System sensing Far utilise radiation as source information. In case Here, there are two types system : passive and active. System passive depend on radiation natural, while system active use credit energy, such as radar. Objects detected on the surface earth covering various elements, such as land, water, plants, results managed nature humans, and phenomenon others on the surface.

However, when energy electromagnetic across atmosphere, he can experience distortion and scattering consequence particles like water vapor, gas and dust contained in it. Sensing sensors Far functioning For record radiation interacting electromagnetics with surface earth and atmosphere. These types of sensors covering camera air, scanners, and radiometers, which are capable of accept information in various form — start from wave sound, power electromagnetic, up to ray light.

This sensor can also track, detect and record objects in a certain area, and categorized based on method data collection. One of them is a photographic sensor, which captures energy electromagnetic, recording it on film emulsion, and processing it For produce photo.

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Final result in the form of Photo air, which can arrested Good use airplanes and vehicle others. If taking pictures done from outside space, the result called Photo satellite. Electronic Sensors, in the form of operating device in a way electric with data processing using computer. The final result in the form of visual data or digital/ numerical data (Meurah, et.al, 2012).

Framework Of Thinking

In research Here, there are two variables that will discussed :

1. Problems of Learning Strategies : Problems in learning strategies refers to various obstacles that can be hinder, complicate, or even result in failure in reach objective learning.
2. Sensing Far : Sensing Far is a technique For to obtain information about object, area, or phenomenon without do contact direct with observed object..
3. Sensing far also known as remote sensing in Language English.

CONCLUSION

Based on the research results, it can be concluded that there are a number of obstacles faced by geography teachers in implementing remote sensing material learning strategies at the high school level. These obstacles include the lack of mastery of the material by teachers, limited learning media, and the lack of variation in learning methods that can help students understand abstract concepts. In addition, teachers often have difficulty integrating material with a broader context, as well as limited adequate training to deepen knowledge and skills in teaching remote sensing. This has a direct impact on the quality of learning, where students have difficulty understanding the material and have low interest in learning, thus affecting the effectiveness of learning. To overcome these problems, collaboration between various parties is needed. Some steps that can be taken include improving teacher competency through continuous training, providing adequate learning facilities and media, and developing a more relevant and innovative curriculum. Full support from schools, education offices, and the community is also very important in creating a better learning environment. With this joint effort, it is hoped that remote sensing learning can be more effective, interesting, and in accordance with students' needs, so that they can gain a better understanding and be ready to face future challenges.

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