Analysis of Students' Difficulties in Solving Spatial Problems With Website-Based Guided Discovery Learning At State High School 1 Silangkitang

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ABSTRACT

This research aims to find out: 1) Increase the spatial ability ofstudents after the application of *website-based* guided discovery learning and 2) Kesulitan students in spatial problem solving in *website-based*guided discovery learning. This research is included in the type of descriptive qualitative research. The study subjects were 32 students. Instruments in the data collection process are interview guidelines and spatial question tests compiled on the website. The study uses data collection techniques including test methods, interview methods and documentation. The results of the research process obtained that students 1) Difficulty determining the buildingnets, 2) Difficulty determining the shape of the rotation of thewake, 3) Difficulty understanding the shape of the building ofspace, 4) Difficulty Workingprocedures, 5) Unable to mention buildingspace, 6) Not understanding the concept of diagonals. Other difficulties that affect test results include: 1) The questions displayed are unclear, 2) Carelessness in choosing options, 3) Environment that is not conducive and 4) Poor student health

Keywords: *Analysis, Spatial Ability, Guided Discovery, Website.*

I. INTRODUCTION

Education is one of the efforts to improve quality human resources and those that have certain characteristics such as extensive knowledge insight, the ability to solve everyday problems faced and positive attitudes and behaviors towards the surrounding natural environment.

Gufron [1] reveals that education is a conscious effort made to improve an individual's ability to determine life independently. The purpose of education in general is to prepare individuals who can form people with insight and creative thinking, so as to be able to solve the problems faced, and can provide solutions to a problem.

In the world of education, matematika is one of the subjects that quite play an important role in helping develop the potential of. Muijis dan Reynolds [2] revealed *"Mathemathics is also a prime vehicle for* developing *children's logical thinking and higher* order cognitive *skills.*" This means that the ability to think logically andhigh levels of cognitive impairmentcan be learned through mathematics.

Some experts reveal the reasons why mathematics needs to be studied and what the benefits of learning mathematics are. Abdurrahman [3] says there are five reasons why students need to learn mathematics, namely 1) Mathematics is a means of thinking clearly and logically, 2) Mathematics is a means to solve problems of daily life, 3) Mathematics is a means of knowing patterns of relationships and generalization of experience, 4) Mathematics is a means of developing creativity, and 5) Mathematics is a means to increase awareness of cultural development.

Herlanti [4] said thatthe quality of Indonesian mathematics education is stillrelatively low, this can be seen from the results of the Trend in International Mathematics and Science *Study* (TIMSS) test, an institution that measures and compares the mathematical ability of students between countries, mastery of mathematics of students level 8 of 1999 Indonesia was ranked 32nd out of 38 countries studied. In 2003

Indonesia was ranked 36th out of 45 countries studied, in 2007 Indonesia was ranked 41st out of 48 countries studied, the average score obtained by Indonesian students was 397. This score is still far from the international score of 500.

In line with the data above, pisa results [5] show that Indonesia is ranked 63 out of 71 countries with a score of 397, while the overall average score is 493. Then at PISA [6] showed Indonesia ranked 72 out of 78 countries with a score of 379.

NCTM [7] mentions in mathematics learning there are five content standards, namely: Numbers and Their Operations, Algebra, Geometry, Measurement, Data Analysis and Probability. Geometry is the study of points, lines, fields, space objects of nature, size and relationship to one another. One part of geometry in mathematics is the geometry of three-dimensional space. When studying geometric materials, especially three dimensions, each student has a different experience. The difficulty often faced when studying third dimensional matter is imagining an object that exists in the third dimension itself. In reality in the field, geometry becomes the subject matter that has not satisfied his mastery.

According to Puspendik [8] the acquisition of geometric material scores is very low in the Computer-Based National Examination 2019/2020 at Sma Negeri 1 Silangkitang which is 29.67 for the average Education Unit. This confirms that the mastery of geometric material of 1 Silangkitang State High School students is still very low.

To solve a geometry problem requires good spatial ability. This is because in three-dimensional material students are required to be able to visualize and construct space. Suyadi [9] says that *spatial* intelligence is the ability to see an object in great detail. Then, he was able to record what he saw in his brain memory for a very long period of time. In addition, if at any time he wants to explain what he sees to others, he is able to re-describe the object in a piece of paper very perfectly.

Gardner suggests that spatial ability is the ability to precisely capture the space world or in other words the ability to visualize images, which includes the ability to precisely recognize shapes and objects, make changes in an object in its mind and recognize those changes, describe a thing or object in the mind and change it in real form, revealing data in a graph. sensitivity to balance, relationships, colors, lines, shapes, and spaces [10]

According to Amanda and Syahputra [11] spatial ability in math learning is one of the factors that influence students' learning success. Spatial ability itself is the ability of individuals to see and imagine space objects by simply making pictures of those space objects on paper.

Various efforts to be able to improve students' abilities are done one of them by maximizing the teaching and learning process by using learning models, one of which is guided discovery learning. According to Arsefa [12] guided discovery learning is a teaching model that focuses on student activities in learning. In the learning process with this model, the teacher only acts as a guide and facilitator who directs students to find concepts, propositions, procedures, algorithms and the like.

In guided discovery methods, the teacher acts as a facilitator who guides the student through questions that lead the student to connect past knowledge with the knowledge he is gaining. Students are encouraged to think for themselves, analyze for themselves, so that they can find concepts, principles, or procedures based on teaching materials that have been provided by teachers.

In addition, Slavin [13] guided discovery learning, students also learn self-solving and critical thinking skills, as they must analyze and manipulate information. But in the process of discovery guided students get help or guidance from teachers so that they are more targeted, so that both the learning process and the goals achieved are carried out properly.

In addition to the use of learning models, the use of learning media can also increase the quality of liveliness and learning outcomes of students, one of which is *the media website*. Web-based learning *media* is a learning that utilizes internet technology without any space and time restrictions. It is not just that the material on the web can then be accessed through a computer or *smartphone*, and the web is not solely used as an alternative to paper to store documents or information. The use of such media has several uses and advantages Setyadi and Qohar [14] stated that the use of web-based learning media can reduce a static atmosphere and can create an effective, interesting, interactive learning process, and can evoke learning motivation learners.

Web-based learning *media* can combine a wide variety of media. This diversity of media includes text, images, audio, video, animation and even simulations. Web-based learning *media* is one form of application of *e-learning* system *(Electronic Learning).*).

Based on the above description can be formulated the problems in this study are as follows:

1. What is the level of spatial ability of students after the implementation of *website-based*guided discovery learning?
2. How difficult students have in solving spatial problems in *website-based* guided discovery learning

Based on the formulation of the above problems, the purpose of this research is:

1. To analyze the level of students' spatial abilities after the application of *website-based*guided discovery learning.
2. To analyze students' difficulties in spatial problem solving in *website-based* guided discovery learning

2. LITERATURE REVIEW

2.1. Spatial Ability

According to Hamzah & Masri [15] spatial intelligence is the ability to understand more deeply the relationship between objects and space as well as the ability to imagine a real form. The ability that stands out in this type of intelligence is the ability to imagine a real form.

Yus [16] suggests that visual-spatial intelligence is concerned with the ability to accurately capture color, direction, and space, that "children who are intelligent in visual-spatial have sensitivity to colors, lines, shapes, and buildings" children who have visual-spatial abilities can recognize the identity of objects when the object exists from different points of view, and are able to estimate the distance and intelligence from it with an object.

According to Masykur and Fathani [17] spatial ability contains a person's ability to understand more deeply the relationship between objects and space. Students with this ability will have the ability for example, creating the imagination of shapes in his mind or the ability to create three-dimensional forms. These spatial abilities are characterized among others by:

1. Provide a clear visual picture when explaining something;
2. Easy to read maps or diagrams;
3. Drawing the figure of a person or object similar to the original;
4. Enjoy visual activities, such as puzzles or the like;
5. Scribble on paper or schoolwork books; and
6. Better understand information through images than words or descriptions.

Maier [18] states that there are five elements of space viewing ability based on several theories of intelligence, metaanalysis, and a number of studies of space-looking ability. The five elements are as follows:

1. *Spatial Perception*

The perception of space is the ability to observe a building space or its parts that are placed in a horizontal or vertical position. This ability requires a static mental process. Static mental processes mean that the subject's relationship with the object changes, but the spatial relationship between the objects themselves does not change.

2. Visualisation

Visualisation is the ability to visualize a form that you want to manipulate. It can also be interpreted as the ability to imagine or give an idea of the shape of building space whose parts experience change or displacement. The mental process of this element is a dynamic mental, where the relationship between objects changes.

3. *Mental Rotation*

Mental Rotation is the ability to quickly and precisely rotate a 2nd or 3rd dimensional bagun. Nowadays this ability is even more important because many people work with different graphics software. Similar to *visualisation*, *mental rotation* requires a dynamic process and a person's spatial position is not part of the task.

4. *Spatial Relation*

The relationship of room is the ability to understand the shape of an object or its parts and understand the relationship between one part and another. For example, one must recognize the identity of an object displayed in a different position. In contrast to mental rotation, the spatial mental processes of relationships are static. Nevertheless, the spatial position of the person itself is also an important part of the problem.

5. *Spatial Orientation*

Spatial orientation is the ability to seek one's own guidelines physically or mentally within space, or oriented from a person in a situation of privileged space. The mental process of this element is dynamic. For example, a wake is seen from different directions.

Begle says in Hudojo [19] that: "The goal or object of mathematical study is a fact, a concept, an operation, and a principle." The objects or objects of mathematical research then become characteristic of mathematics. Therefore, to know and understand mathematics can be learned from its characteristics.

Mathematical objects are also referred to as basic objects in mathematics. Soejadi [20] says that the basic objects studied in mathematics are (1) facts in the form of confvesies revealed with certain symbols; (2) a concept that is an abstract idea that can be used to classify or clarify a set of objects; (3) Operations or relationships in the form of calculation work, algebraic work and other mathematical work; and (4) principles that can consist of several facts, some concepts associated by a relationship or operation. From the basic object that can be arranged a mathematical pattern and structure.

According to Djamarah [21] Learning difficulties are a condition in which students cannot learn reasonably, due to threats, obstacles or disturbances in learning. Threats, obstacles or disorders are cited as the cause of learning difficulties. And these things result in children learning unnaturally or can be called children can not learn effectively.

Jamaris [22] who says that learning difficulties or *learning disability* is a disorder that makes it difficult for the individual concerned to learn effectively. Students who have difficulty learning difficulty to learn effectively which means students do not get good understanding, intelligence, perseverance, quality and can not apply it in life, and ultimately do not experience

changes in behavior as the purpose of learning that has been expressed first.

Shah [23] also said the factors that cause learning difficulties consist of two types:

1. Internal factors of students, namely things or circumstances that arise from within the student himself. Internal factors of students include the student's psycho-physical disorder or inability, namely:

a) Cognitive (copyright realm), such as low intellectual capacity / intelligence of students;

b) Which is affective (the realm of taste), such as the unstable emotions and attitudes;

c) Psychomotor (karsa realm), among others such as the disruption of the sense of sight and listener (eyes and ears).

2. External factors of students, namely things or circumstances that come from outside the student. External factors of students include all situations and environmental conditions that do not support students' learning activities. This factor can be divided into three types.

a. Family environment, for example: disharmony of the relationship between father and mother, and low economic life of the family

b. The neighborhood / community, for example:*slum area (slum area),*and naughty*peer group.*

c. School environment, for example: poor condition and location of school buildings such as near the market, teacher conditions and low-quality learning tools

According to Abdurrahman [24] broadly speaking learning difficulties can be classified into two categories:

1. Developmental learning *disabilities.* Developmental-related difficulties include motor and perception disorders, difficulty learning language and communication, and learning difficulties in social behavior adjustment.

2. Academic learning *difficulties (academic learning disabilities).* Academic learning difficulties refer to failures in achieving academic achievement in accordance with the expected capacity. These failures include mastering skills in reading, writing, and/or mathematics.

Sani [25] said that guided discovery is cooperative learning that requires teachers to be more creative in creating situations that make the rest of the learning actively find their own knowledge. So, the discovery of terbinbing is one of the learning approaches that train students to actively discover a concept of learning material under the supervision of a teacher.

According to Karim [26] that the discovery method is a way to convey ideas / ideas by finding, in this process students try to find concepts, formulas and the like with the guidance of teachers.

The method of discovery will take a considerable amount of time if the student is not accompanied by guidance by the teacher. Therefore, it takes a method of discovery that can simultaneously guide students. This method is a guided invention. According to Sutrisno [27] that guided discovery method is a method of learning that gives students the opportunity to compile, process, organize a data provided by the teacher. Through the process of guided discovery, students are required to use the ideas and understanding they already have to discover something new..

While Rahman and Maarif [28] suggest that one of the learning models that has recently been widely used in advanced schools is the guided discovery learning. This is because of this model:

1. It is a way to develop an active way of learning students.
2. By finding yourself, investigating yourself, then the results obtained will be faithful and durable in memory, not easily forgotten by children.
3. Self-found understanding is a completely mastered and easy to use or transfer in other situations.
4. By using a guided discovery model children learn to master one of the scientific learning models that will be able to be developed on their own.

With this model also, children learn to think analytically and try to solve problems faced by themselves, this habit will be transferred in public life.

In guided discovery teachers can use intervention models that allow students to construct their own understanding. This model helps students find facts, explain and synthesize facts. According to Kuhlthau [29] the strategies in question are as follows:

1. *Stimulation*

Asking questions that can trigger students' curiosity about something

2. *Problem Statement* (Identification)

Determinea situation or problem in the form of questions about the learning topic to be studied

3. Data *Collection*

Collect data by conducting various activities both observations and measurements and analyzing the data obtained

4. *Data Processing*

Make a conjecture (forecast) from the results of analysis conducted by students

5. *Verification*

Checking the correctness of estimates by presenting the results of group discussions

6. *Generalization* (Conclusion Withdrawal)

Make inferences about what students have discovered through conjecture verbalization

Hidayat [30] describes the *web* as a collection of pages used to display text, still or motion images, animations, sounds, and a combination of all static or bdinamis that form a series of interrelated buildings, each of which is connected to a network of pages. According to Setianto [31] the *web* is a place on the internet consisting of a collection of images, videos and other files placed in a *web server*, so that it can be accessed online by anyone through the internet network.

Rusman [32] states that *web-based* learning popularly known as *Web-Based-Education* (WBE) or sometimes called *e-learning (electronic learning)* can be defined as the application of *web* technology in the world of learning to an educational process. Simply put, it can be said that all learning is done by utilizing internet technology and during the learning process is felt to occur by those who follow it, then the activity can be referred to as *web-based learning.*

Rosana [33] says the process of learning using the *web* is not actually a new item and also not a new theory or a problem. Konsepsi and jargon called *WBL (web based learnig), eLearning, web based teaching and learning, web based distance education,* and so on have been scattered since the era 15 years ago. Along with advances in the field of information and communication technology, the world of education in Indonesia has also started to use the *web* as a learning medium.

3. RESEARCH METHODS

This research uses descriptive qualitative research using case study methods. This type of qualitative research means that this type of research aims to describe students' spatial abilities in website-basedguided discovery learning. The resulting data is in the form of words or speeches obtained from the results of interviews and writings or numbers obtained from interview results.

According to Moleong [34] that "Qualitative research is research that intends to understand what phenomena are experienced by the subject of research e.g. behavior, perception, motivation, action, etc., holistically, and by means of description in the form of words and language, in a special context that is natural and by utilizing various natural methods". Sugiyono [35] argues that "Qualitative research is research whose findings are not obtained through statistical procedures or the form of count". This means that even if there is a use of statistical procedures only limited to tools to collect data so that it can be described.

The subject of this study involved class XI MIA 2 Sma Negeri 1 Silangkitang which was given guided learning treatment based on the website of the 2020/2021 school year which amounted to 32 students. While the learning material provided is the material to build space. . The object in the study was the spatial abilities of students who were given guided discovery learning on a three-dimensional subject. The object of this study was obtained from the results of tests of students' visual thinking skills and through interviews and transkip recordings of sounds or videos of subjects.

4. RESULTS OF RESEARCH AND DISCUSSION

4.1. Research Results

4.1.1. Description of Research Data

The study was conducted at SMA Negeri 1 Silangkitang. The implementation of learning using guided discovery learning based on the website for 4 (four) meetings. After that, a spatial ability test was administered by 32 students. In this study used data analysis miles and huberman method. In data collection on qualitative research is divided into: tests of students' spatial abilities, interviews, and triangulation. In the implementation of triangulation obtained the validity of the results of the study so that conclusions can be determined.

4.2. Data Analysis

The presentation of data is done by organizing the reduction data in the form of narrative in the form of a description of the student's answer process. The data is interpreted and evaluated to be able to plan further actions combined with interview results in the form of brief descriptions, charts, images and relationships between categories. Furthermore, the conclusion pullers are followed by checking the validity of the results of analysis or interpretation of data by having discussions with colleagues as research partners, reviewing field records and rethinking important writing charts. While verification is validation of the data concluded where the activity carried out is to test the truth, robustness, and match of the meanings that arise from the data

4.2.1 Student Spatial Ability Level

After carrying out learning for 4 (four) meetings continued tests against students to see the spatial abilities of students. Awaban is stored in the website data and corrected based on the guidelines of suspension assessed based on the principle of valid, objective, fair, integrated, thorough and sustainable, systematic, an kriteria, accountable (Permendikbud No. 23 Chapter IV article 5 of 2016). From the corrected test results (attachment of spatial ability test results presented in the table below i.e. grouping the level of spatial ability of students as follows:

Table 1. Group of Student Spatial Ability Levels

Score Interval	Number of students	Percentage	Category
$0 \leq SK < 65$	15	47%	Low
$65 \leq SK < 80$	13	41%	Medium
$80 \leq S < 100$	4	12%	High

Based on the results of the student's spatial ability test as many as 32 people, the level of spatial ability of the student was obtained into three levels, namely high, medium and low. The diagram of the level of the student's spatial ability is presented in the following Figure:

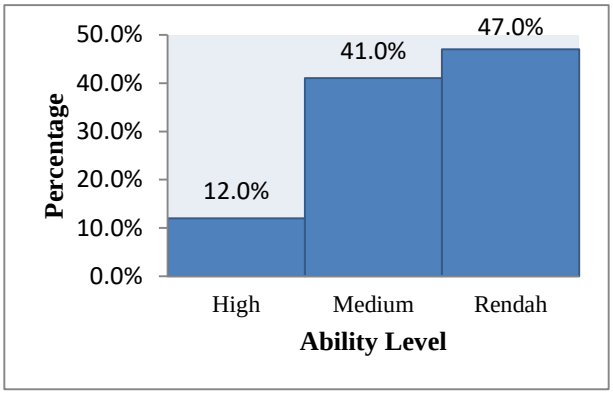

Figure 2. Level of Student Spatial Ability

Of the 32 students, it can be seen that the level of spatial ability of"low" studentshas the most number of students, namely 15 students with a percentage score of 47%. As for the level of spatial ability of students with "high" ability as many as 4 students with a percentage score of 12%, for the level of visualthinking ability of students with"moderate"abilityas many as 13 students with a percentage of 41%

4.2.2. *Students' Spatial Abilities Each Indicator*

The average percentage of a student's spatial ability varies. The highest spatial ability of students on average percentage scores is Spatial *Perception* with a percentage score of 82%, while spatial *relations* the lowest average percentage score is 45%. *Mental Rotation* with a percentage value of 56%. The average percentage score for Spatial *Orientation* is 74%and the *ability* of M*enthal Rotation* is 43.5%. For the average percentage of each indicator of a student's spatial ability is presented in the table as follows:

Table 2. Average Percentage of Each Student Spatial Ability Indicator

Spatial Ability Indicators	Percentage (%)
Spatial Perception	82%
Visualisation	66%
Mental Rotation	56%
Spatial Orientation	74%
Spatial Relation	45%

The above percentage can also be displayed in Figure 2 below:

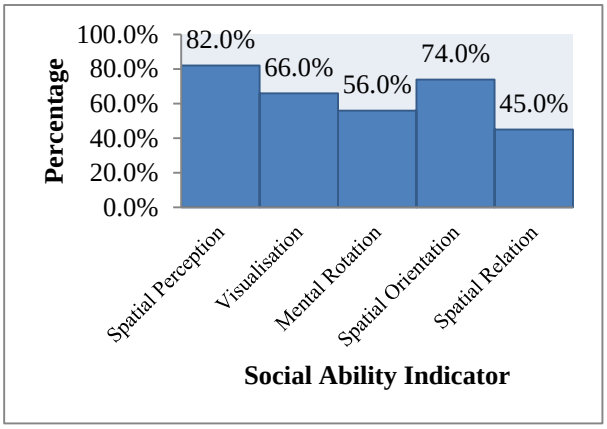

Figure 2. Student Spatial Ability Level Each Indicator

4.3. *Percentage of Truth Per Item*

Of the 20 questions tested, the average value per item was different. The highest average is obtained in the numbers 1 and 2, which is 100%. That means 32 people or all students can answer correctly. Then the lowest average is obtained on the number 6, which is 30%. This means that of the 32 students, only 10 people were able to answer it correctly. The full results of the 20 questions are presented in Table 3 below:

Table 3. The results of the 20 questions

No	*Percentage*	*No*	*Percentage*
1	*100%*	*11*	*38%*
2	*100%*	*12*	*59%*
3	*63%*	*13*	*69%*
4	*69%*	*14*	*69%*
5	*69%*	*15*	*78%*
6	*31%*	*16*	*75%*
7	*97%*	*17*	*66%*
8	*63%*	*18*	*34%*
9	*59%*	*19*	*34%*
10	*69%*	*20*	*44%*

4.4 *Subject Retrieval*

The criteria for taking the subject of the interview using the criteria, which is based on indicators of the student's ability. Subjects are taken based on indicators of student ability. Subjects taken based on indicators of students' abilities are grouped into four categories, namely (1) High, (2) Medium and (3) Low. The three categories of students are each analyzed (observed) to determine the patterns of student answers. Then based on the dominant answer pattern selected students as

subjects subject to interviews. The error of the entire student answer sheet is analyzed (observed), then selected the student answer sheet in which there are many errors, then analyzed errors based on answer sheets and interviews so that difficulties in the process of student spatial ability are triangulated based on students' answers doing the student's spatial ability test.

Based on the results of the students' spatial ability tests that have been corrected according to the guidelines for the suspension of students' visual thinking skills that have been designed, then 32 students selected 6 subjects to be subject to interviews according to the level of students' spatial thinking skills. Selected research subjects interviewed based on students' level of visual spatial ability can be seen in the table below:

Table 4. Subjects Selected For Wawancaara Students Spatial Ability

Student Code	Subject Appointments Reviewed From Aspects
S3 dan S5	High Capability
S16 dan S20	Medium-Capable
S21 dan S25	Low-Capable

4.5. Conduct of Interviews

The conduct of interviews on subjects is conducted on each grouping of answer patterns raised through indicators (high, medium, and). Analysis of data from the results of the student's spatial ability test is calculated by identifying the problems that students are doing.

Analysis of the difficulty of the student's visual thinking process is determined according to the level of the student's Spasial ability.

1. Analysis of Difficulties of High SpatialLy Capable Students
2. Analysis of The Difficulties of Medium Spatially Capable Students
3. Analysis of The Difficulty of Low SpatialLy Capable Students
4. Analysis of Difficulties and Factors Causing Difficulties

Based on the results of the analysis of errors in the student's spatial ability test and the results of interviews conducted, the difficulties experienced by students from each problem number are as follows:

a. Tribalness determines the nets of wake

Some students are unable to determine the nets properly. The wake in question is a cube and a triangular limas. For triangular limas, students cannot determine simple triangular limas nets. Then some students are unable to determine the slightly shaped cube nets (cut in some parts) and are given certain characters on the sides.

b. Difficulty determining the shape of the rotation of the wake.

Some students are unable to determine the correct rotation of a building space.

c. Difficulty understanding the shape of building space

Students do not properly understand the shape of the cube. Students only see the shape of the cube according to the image. Students are also unable to present cube changes into 2D.

d. Difficulty of workmanship procedures

Students have difficulty in some procedures. As in rotation, students only rotate one part / side only. Also on the number 6, before being asked to determine the nets students should be asked to do some things such as folding, tearing / cutting off only some parts.

e. Unable to mention building space

Students mis-mention the name of building space, such as a triangular limas referred to as a triangle

f. Not understanding the concept of diagonals

Students find it difficult when diagonals are added to the question of rotation. Diagonals are considered difficulty-enhancing elements on rotation which, according to some students, is a fairly easy matter.

In addition to the above difficulties, based on interviews and observations, difficulties are found that can affect the test results, among others.

a. The question displayed is unclear

This is a mistake that researchers make. The problem is displayed in unclear, blurred and displayed in a size that is too small. So that students have difficulty reading and determining the correct options

b. Carelessness in choosing options

Students are careless and not meticulous in determining the correct options. When retested, students are able to answer correctly.

c. The environment is not conducive.

Students get disturbance from their surrounding friends while doing tests. It is also a mistake that is not able to create a calm circumstances during the test.

d. Poor student health

At the time of the test, students are not in good condition so as to reduce focus when answering questions.

The factors that cause the above difficulties include:

a. Lack of mastery of the material taught

Lack of mastery of material regarding building space is seen from the results of spatial ability tests tested to students. The average score of 32 students was 64,125 which resulted in the average of students' spatial abilities being relatively low. Of the 32 students, only 4 were

highly capable, 14 were moderately capable and 15 were low-skilled with the highest score being 85 and the lowest was 45.

b. Poor understanding of concepts

The lack of understanding of concepts in students is seen in incomprehension on some basic concepts such as diagonal space, diagonal fields, rotation and webs building space such. As a result, there are many related questions that cannot be answered correctly.

c. Difficulty following instructions

Some students also do not understand what the intentions, orders or instructions about. As a result, students do not know what steps and concepts are needed to be able to answer the question.

In addition to the above factors, there are also factors that do not come from within the student, among others:

A. It's hard to focus.

Many reasons students can not focus on solving problems one of which is a less conducive environment. Students experience focus disorders can be due to the disruption of their friends, the surrounding environment is too noisy, the weather is too cold or hot or the smell that interferes with the student's focus. S25 students for example, when working on spatial problems, he was disturbed by friends sitting around him. Another factor that makes it difficult for students to focus is due to health problems. Students do not focus because they are sick like S21 students experience.

B. The given problem is unclear or difficult to read

Some students have difficulty completing certain problems on the spatial tests tested. Difficulties experienced due to problems that are made difficult to read, the size is too small and not bright or blurry, as experienced by students of S16, S20 and S25.

Based on the results of observations, interviews, tests and documentation obtained information that to overcome the difficulties of students in solving spatial problems in State High School 1 SIlangkitang there are several solutions that can help this, among others:

When starting the teacher's learning should remind about the necessary prerequisite material.

1. As a teacher to overcome this, every start of lessons is needed to use prerequisite materials such as triangles, quadrilaterals and angles that help students in understanding the concept of geometry.

2. As a teacher you should use strategies and learning media that are in accordance with the material to make it easier for students to master the material.

Learning strategies and media are very necessary in a learning process. In addition to making it easier for children to understand the material, learning strategies and media will make children feel that learning is varied and children get shadows in real terms through the learning media. In this case researchers have used the website, but it would be even better if it combines with geometric animations that make it easier for students to understand the concept of geometry.

3. Establish good communication with the parents of students, to control student learning when in the family environment (home).

To overcome the learning difficulties of students, especially in math learning materials, in addition to teachers, parents also play a role in this, because when children are in school, their learning process can be supervised by the mother / father of teachers at school, but when at home parents can control their main activities are learning.

4. Interactive dialogue

Interactive dialogue between teacher and student that gives rise to closer relationships between students and teachers

5. Learning that actively engages students.

Students tend to perform better if they are actively involved in lessons. Teachers can use cooperative methods and practical projects.

5. CONCLUSION

Based on the analysis of research data and discussions that have been outlined in this study, several findings were obtained, namely the achievement of the research objectives that have been set. As for the ability obtained, namely:

1. Out of 32 students, there are as many as 4 people who belong to the category of students with high spatial ability, 13 people with moderate abilities and 15 people with low abilities.
2. Difficulties experienced by students in solving spatial problems include 1) Difficulty determining the building nets, 2) Difficulty determining the shape of the rotation of thewake, 3) Difficulty understanding the shape of the building of space, 4) Difficulty working procedures, 5) Not being able to mention buildings pace, 6) Not understanding the concept of diagonals. Other difficulties that affect the test results are: 1) The problems displayed are unclear, 2) Carelessness in choosing options, 3) The environment is not conducive and 4) The health of students is not good.

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