

Understanding Concept Profile Distance Line to Line on space of Geometry High School Students Level IQ Normal in terms of Gender differences

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ABSTRAK: Geometry in particular the concept of distance is part of the metamatic science that is widely applied in the real world. The purpose of this research is to know the profile of distance understanding especially students high school student with normal IQ level in terms of gender difference. The research method used is explorative qualitative method, where the researcher as the main subject in the research. To describe the concept of distance, a study of four aspects, namely: 1) understanding aspect, 2) representation aspect, 3) non sample aspect, 4) application aspect to calculate distance. The results obtained from the study, female students in terms of understanding the concept of distance from line to line better than male students, while for the other three aspects, there is no significant difference between male students and female students. The results of this study differ from the results of previous research, which states that male students are better than female students in understanding the mathematical concepts. This result can give implication about opinion and treatment learning process for matemathics theacer's, that nothing differences for capacity mathematics as specially about distance concept line to line between male and female students.

KATA KUNCI: *profile, distance concept, geometry, IQ, gender*

INTRODUCTION

Mathematics as one of the basic science, both the applied aspect and the aspect of reasoning have an important role in the mastery of science and technology. Mastery of science and technology must be based on the mastery of mathematics, because mastering mathematics is the main key in mastering science and technology. Part of the branch of mathematics that plays an important role in the development of technology is Geometry Science. Geometry is a system, logical reasoning of facts or things accepted as truths in which new traits are discovered (Travers, 1987). In accordance with the nature of science that continues to experience development, especially related to spatial science.

Zalman Usiskin (1982) suggests that: 1) geometry is a branch of mathematics that studies visual patterns; 2) geometry is a branch of mathematics that links mathematics with the physical world or the real world; 3) geometry is a way of presenting phenomena that are invisible or not physical, and; 4) geometry is an example of a mathematical system. With regard to learning achievement, several studies show that in achievement of student achievement, it turns out there is a difference in the gender of students. Women almost always have a lower learning achievement than men. One study conducted by Meighan (1981) on the results of the General Certificate of Education (GCE) in America, it turns out to produce data. First, until the age of 11 years. Men and women generally have the same level of achievement. Second, the ratio of male and female students who score "A", on some subjects, shows results: Physics: 6: 1; Mathematics: 4: 1; Chemistry: 3: 1; Biology: 9: 8; Drawing: 200: 1; Language: 1: 2. In terms of learning achievement gender differences are not the only factors that affect student achievement, according to Sudjana (2009) Students' learning outcomes are influenced by two main factors: the factors within the students themselves and environmental factors.

Factors from within students other than gender are intellectual intelligence. Intellectual intelligence (IQ) is a factor that has a big role in determining student learning outcomes. In general a person who has a

high level of intelligence will be better achievement compared with someone who has moderate or low intelligence level. This is in accordance with the results of research Edward and Coleman showed a close relationship between the results of the test with the achievement of learning. (Slameto, 2010). Similarly, research results Bahctiar (2009) states that someone who has a high IQ there is a tendency to have higher achievement than students who have IQ below. This shows that IQ is a potential stock to facilitate learning.

Based on the background, the general research question is: "How does the profile of distance-to-line distance-level concept of geometry in a normal high school classroom (SMA) IQ level be viewed in terms of gender differences?"

therefore, the purpose is to find out the understanding of the concept of distance from line to line in the normal high school geometry of high school level IQ is viewed from the gender differences

LITERATURE REVIEW

James Hiebert (1992), suggests that what is meant by an understanding of a concept is a condition that describes the relationship between the information contained in the concept and the scheme that has been owned. The quality of understanding is determined by the large number of information networks and the strength of the relationships (interrelationships) between subnetworks (Barmby et al, 2007: 42). A concept can be comprehensively understood by an individual if the individual can build as many linking networks as possible between the attributes contained in the concept and the scheme it possesses, and the strong linkage with the network that the individual has.

Geometry occupies a special position in the middle mathematics curriculum, because of the many concepts contained in it. From a psychological point of view, geometry can be derived from visual and spatial experiences, such as fields, patterns, measurements and mappings. From a mathematical point of view, geometry provides approaches to problem solving, such as drawings, diagrams, coordinate systems, vectors, and transformations. Geometry is also an environment for studying mathematical structures. (Rahardjo Ismail, 2010)

The three elements of the base in geometry, namely the point, the line, and the plane. These three elements, can also be referred to as the three undefined elements. A point is thought of as a place / position in space. The point has no length or thickness. Former needle puncture, or pencil marks on paper, can be thought of as a physical model of a point. A point is represented by a node and named with a capital letter. A line is thought of as a set of bounded points of unlimited length, but has no width. A stretched thread, a pencil stroke following the edge of a ruler can be thought of as a model of a line. A line is represented by a ray image with arrows at both ends indicating that the line is endless. To name a line, can take advantage of two points on the line, or with a lowercase letter. (M. Karso, 2010).

Definition The distance between two wake-ups is the length of the shortest link segment connecting the two points on the builds. Marnat (1984) cites the opinion of some experts on the term intelligence as follows:

Stoddard, argued intelligence is the ability to perform activities that are difficult, complex / complex, abstract, efficient, adaptable to achieve goals, have social value, original. And try to maintain these activities in situations that require concentration, energy And are resistant to emotions.

Freeman, intelligence is the ability to adapt the individual to the environment as a whole or to the limited aspects of the environment, the ability to organize patterns of behavior in order to act more effectively in new situations, the extent to which a person can be educated, the ability to learn, abstract thinking, the use of concepts, Effectively in order to solve the problem.

Table 1: Classification of Intelligence

IQ	Klasifikasi	Proporsi pada kurve normal (teoritis)	Proporsi pada sampel
130 ke atas	Very superior	2,3	2,6
120 - 129	Superior	6,7	6,9
110 - 119	High average	16,1	16,6
90 - 109	Average	50,0	49,1
80 - 89	Low average	16,1	16,1
70 - 79	Borderline	6,7	6,4
69 lower	Mentally retarded	2,2	2,3

John W. Santrock (1996: 365) Gender is a sex that refers to a person's social cultural dimension to a person's social and cultural dimension as male and female. The concept of gender is the inherent trait of men and women formed by social and cultural factors.

RESEARCH METHODS

Type of Research

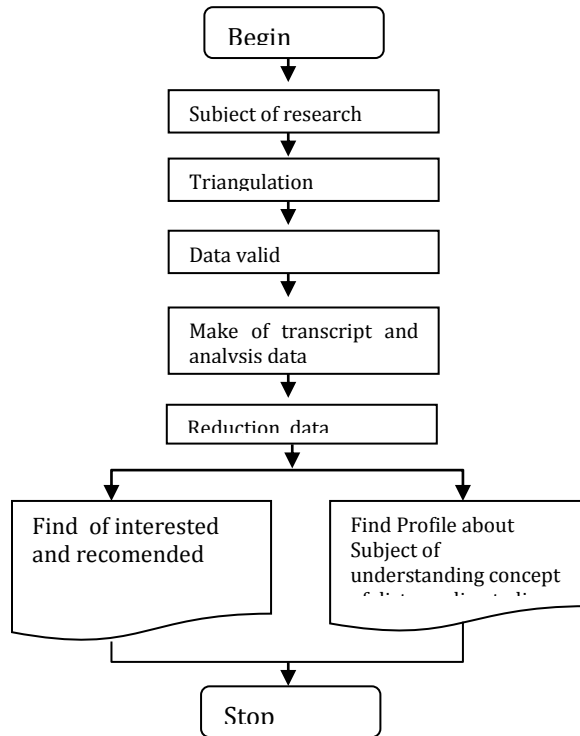
This type of research includes explorative research with qualitative approach. Called explorative research because researchers do exploration Profile of student understanding, with the main data in the form of words arranged into a sentence. While the qualitative approach seeks to generate descriptive data in the form of words written or spoken of each subject and behavior under study. Selection of qualitative approach is based on several reasons, namely: 1) is natural, meaning that research is done according to actual circumstances and researchers as the main instrument; 2) data is descriptive; 3) more emphasis on process than result; 4) data processing tends to be done inductively; 5) the main concern on every activity undertaken by the individual.

Research Subject

Research subjects are high school students who have obtained distance material on space geometry. Subjects will be selected as many as two students (1 male and 1 female) with the subject selection stage as follows "

- a) The subject of the study is class 11 (having received distance material on geometry)
- b) Normal IQ level (IQ scale 100-109)
- c) Selected students who have good communication skills (easier to describe the subject's ideas and thoughts)
- d) Subjects selected according to the criteria determined by researchers from some subjects that have been observed by researchers.

RESEARCH PROCEDURES



RESEARCH RESULTS

The comparison of normal male level IQ level profile (SLIN) with normal female IQ level (SPIN) subject profile includes four aspects, namely: understanding aspect, representational aspect, sample aspect not sample, and application aspect calculate distance. The comparison results are presented in the following table:

The description of the above findings can be explained through the following research results:

Table 1. Results of comparison of subject profiles

Profil Kognisi SLIN	Profil Kognisi SPIN
A) Aspect of understanding: SLIN understands the definition of line spacing (\overline{AB}) to line (\overline{CD}) is the long distance of a path connecting the center line of the line (\overline{AB}) the point of the line (\overline{CD})	A) Aspect of understanding: SPIN expresses the line distance (\overline{AB}) to the line (\overline{CD}) is the length of the line drawn from one of the points on the line (AB) and one of the points on the line (\overline{CD}) , so as to form a right angle, Must be parallel
B) Aspect of distance representation: SLIN illustrates, the distance of two parallel lines and two parallel lines, depicted as a perpendicular line from the midpoint of the first line to the midpoint of the second	B) Aspect of distance representation: The SPIN represents two straight lines parallel to each other, the line distance (\overline{AB}) to the line (\overline{CD}) is by drawing a perpendicular line from the midpoint (\overline{AB}) to the midpoint

Profil Kognisi SLIN	Profil Kognisi SPIN
line	of the line (\overline{CD})
<p>C) The example aspect is not an example: SLIN gives an example of line spacing (\overline{AB}) to line (\overline{GH}) on a beam, before calculating distance, the subject determines the point P as the midpoint of line (\overline{AB}), and point Q as the midpoint of line (\overline{GH}), distance is obtained By way of drawing a straight line from point P to point Q, whereas a slash (\overline{BG}) is said to be not an example of distance even though the line length (\overline{PQ}) and (\overline{BG}) are the same, for the reason that line (\overline{GH}) is not obtained through the point Middle line (\overline{AB}) and (\overline{GH})</p>	<p>C) The example aspect is not an example: The SPIN describes a known PQRS.EFPQ beam on each side, giving an example of the distance between the line (\overline{EF}) with (\overline{PQ}), both lines parallel to the beam, explaining the distance to the image, with the first completion stage: determining the point U As the center of the line (\overline{EF}), and the point V as the midpoint (\overline{PQ}), of the two midpoints is drawn perpendicularly, the length of the perpendicular line crossing the two midpoints is a representation of the distance between the line (\overline{EF}) and (\overline{PQ})</p>
<p>D) Aspect Application calculate distance: SLIN has done the process of solving the problem quite well, but the process is not efficient yet, because the cognitive understanding of the distance of a line must be measured through its midpoint. Although the final result is obtained the correct distance in the case of two parallel lines on a block, but the conceptual understanding is not strong enough, it will be difficult if faced with a line that is not parallel</p>	<p>D) Aspect Application calculate distance: SPIN calculates the distance correctly but has not been efficient in solving the distance problem from line to line, the subject's answer in this context is true because it could be because the case study is a block, but still not strong enough in the distance calculation with the other line position.</p>

Table 2. Result of Analysis of Understanding Concept

Distance concept material	Aspects of the Study	Subject		Information
		SLIN	SPIN	
Line to line	Understanding	√	√	SPIN is better
	Representation	√	√	No significant difference
	Examples are not examples	√	√	No significant difference
	Application calculates distance	√	√	No significant difference

In Table 2 there is an interesting finding, particularly on the matter of the concept of distance from line to line, that the female subject of normal IQ level (SPIN) has better outcomes compared to the normal male level IQ subject (SLIN) in terms of understanding Concept distance, although for 3 (three) other aspects there is no significant difference. This finding differs from the opinions of some earlier researchers and mathematicians, who argue that men's abilities are better than women in math lessons especially on spatial and visual abilities.

CONCLUSION

Based on the results of SLIN and SPIN cognition studies of four aspects in the above table, it is summarized as follows: a) Aspects of understanding: between SLIN and SPIN there is a difference, on the aspect of Understanding SPIN better than SLIN in understanding the concept of distance to line, the indicator is SPIN has the cognition of the distance to the line is the length of the perpendicular line that connects the first line to the second line, While SLIN is still conceptually weak. The indicator, that the cognition understands the distance of two parallel lines is the length of the line perpendicular through the midpoint of both, should be conceptually, if two lines are parallel, the distance can be obtained at any part of the line, as long as the distance is the length of the perpendicular line through two lines; b) Aspects of representation: between SLIN and SPIN substantively there is no significant difference in understanding the concept of distance to line; c) Aspects of the examples and not examples: between SLIN and SPIN there is no significant difference in giving examples and not examples of line spacing to lines; and d) Application aspect calculate distance: between SLIN and SPIN no significant difference. Both subjects are able to calculate the distance correctly, the distance from line to line.

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