

LEMBAR HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW

KARYA ILMIAH : Disajikan dalam seminar internasional/Nasional dan dimuat dalam *proceeding*

Judul Prosiding : Student Difficulties in Learning Mathematics Based on Learning Styles

Penulis Prosiding : Nirmala Dewi, Ahmad Talib, Nurwati Djam'an (Co.Author)

Identitas Prosiding : a. Judul Prosiding : Proceeding ICoESM
 b. DOI : 10.2991/assehr.k.211211.003
 c. Tahun Terbit : 2021
 d. Penerbit : Atlantis Press
 e. Terindeks di : Google Scholar

Kategori Proceeding (beri pada kategori yang tepat) :

<input type="checkbox"/>	Jurnal Ilmiah Internasional Bereputasi
<input type="checkbox"/>	Jurnal Ilmiah Internasional
<input type="checkbox"/>	Jurnal Ilmiah Nasional Terakreditasi
<input type="checkbox"/>	Jurnal Ilmiah Nasional tidak Terakreditasi
<input type="checkbox"/>	Jurnal Ilmiah Nasional Terindeks DOAJ dll.
<input checked="" type="checkbox"/>	Prosiding Forum Ilmiah Internasional
<input type="checkbox"/>	Prosiding Forum Ilmiah Nasional
<input type="checkbox"/>	Laporan Penelitian

I. Hasil Penilaian Peer Review :

Komponen Yang Dinilai	Nilai Maksimal Jurnal Ilmiah/ (isikan di kolom yang sesuai)										Prosiding Forum Ilmiah Ilmiah				Laporan Penelitian		Nilai Akhir Yang Diperoleh	
	Internasional Bereputasi		Internasional		Nasional Terakreditasi		Nasional Tidak Terakreditasi		Nasional Terindeks DOAJ dll.		Internasional		Nasional					
	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2	P1	P2		
Kelengkapan dan Kesesuaian unsur isi jurnal (10%)	4,5	4,25									1,45	1,4					1,425	
Ruang lingkup dan kedalaman pembahasan (30%)	4,25	4,1									4,25	4,3					4,275	

Kecukupan dan kemutakhiran data/ informasi dan metodologi (30%)	4,35	4,3								4,35	4,3						4,325
Kelengkapan unsur dan kualitas penerbit (30%)	4,25	4,3								4,25	4,3						4,275
Total (100%)	14,30	14,3								14,3	14,3						14,3
Kontribusi Pengusul (Penulis Pertama Anggota)																	0,4 x 14,3 = 5,72
KOMENTAR/ULASAN PEER REVIEW																	
•Kelengkapan dan Kesesuaian Unsur:	ok																
•Ruang Lingkup dan Kedalaman Pembahasan :	ok																
•Kecukupan & Kemutakhiran Data & Metodologi:	ok																
•Kelengkapan Unsur & Kualitas Penerbit	ok																
•Indikasi Plagiasi	ok																
•Kesesuaian Bidang Ilmu	ok																

Makassar, | 2 Mei 2023

Penilai 1



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LEMBAR REVIEW
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : PROSIDING

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 Prosiding Seminar Internasional Terindeks pada Scopus, IEEE Explore, SPIE.
 Prosiding Seminar Internasional.
 Prosiding Nasional Terakreditasi.
 Prosiding Nasional tidak terakreditasi.

(Beri √ pada kategori yang tepat)

Hasil Penilaian Peer Review :

Komponen yang dinilai	Nilai Maksimal Prosiding = 15					Nilai Akhir Yang Diperoleh
	Internasional terindeks scimagojr dan Scopus	Internasional terindeks pada scopus, IEEE, Explore, SPIE	Internasional	Nasional Terakreditasi	Nasional Tidak Terakreditasi	
Kelengkapan Unsur Isi Prosiding (10%)	1,15					1,45
Ruang lingkup dan kedalaman pembahasan (30%)	4,5					4,25
Kecukupan dan kemutahiran data/informasi dan	4,5					4,35

metodologi (30%)						
Kelengkapan Unsur dan Kualitas Penerbit (30%)	4,5					4,25
Total (100%) =	2,5					14,30
Kontribusi Pengusul (Penulis Pertama/Anggota Utama $0,4 \times 14,30 = 5,72$)						
Komentar/Ulasan Peer Review						
Kelengkapan dan Kesesuaian Unsur:	Unsur ² tulisan lengkap dan sesuai dengan landasan teoritik internasional					
Ruang Lingkup dan Kedalaman Pembahasan	Ruang lingkup pembahasan bagus					
Kecukupan dan ketepatan Data & Metodologi	Data & metodologi yang digunakan mutakhir					
Kelengkapan Unsur dan Kualitas Penerbit	Kualitas penerbit baik					
Indikasi Plagiasi	Indikasi plagiasi sangat rendah					
Kesesuaian Bidang Ilmu	Sesuai dengan bidang ilmu penulis					

Makassar, 12 Mei 2023

Reviewer 1

Prof. Dr. Nurdin Arsyad, M.Pd.
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**LEMBAR REVIEW
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KARYA ILMIAH : PROSIDING**

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Prosiding Seminar Internasional.

Prosiding Nasional Terakreditasi

Prosiding Nasional tidak terakreditasi.

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Kelengkapan Unsur Isi Prosiding (10%)	1,5					1,4
Ruang lingkup dan kedalaman pembahasan (30%)	4,5					4,3
Kecukupan dan						

kemutakhiran data/informasi dan metodologi (30%)	4,5					4,3
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Komentar/Ulasan Peer Review						
Kelengkapan dan Kesesuaian Unsur:	Unsur-unsur dalam prosiding internasional lengkap dan sesuai					
Ruang Lingkup dan Kedalaman Pembahasan	Kajiannya bagus, penjelasan tabel perlu lebih detail.					
Kecukupan dan kemutakhiran Data & Metodologi	Data dan metodologi yang digunakan cukup baik					
Kelengkapan Unsur dan Kualitas Penerbit	Penerbit menggunakan platform open access journals system.					
Indikasi Plagiasi	Indikasi plagiasi sangat rendah					
Kesesuaian Bidang Ilmu	Kajiannya sesuai dengan bidang ilmu pengusul					

Makassar, 10 Mei 2023

Reviewer 2



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NIP 197202021997021002

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Student Difficulties in Learning Mathematics Based on Learning Styles

*Nirmala Dewi¹, Ahmad Talib², Nurwati Djam'an³

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ABSTRACT

This study aims to determine the description of the difficulties of visual, auditory, and kinesthetic students in learning mathematics on the subject of linear equations in the eighth grade of MTs DDI Walimpong, Soppeng Regency. This research is a case study with a qualitative approach. There are 3 students selected as subjects, namely students with visual learning style, auditory learning style, and kinesthetic learning style; each has the most significant difficulties in solving linear equation tests. Data collection includes learning style questionnaires, written test sheets, and interviews. The test sheet used to see students' problems is 5 questions: difficulty understanding concepts, difficulty understanding principles, and difficulty of skills. Students have difficulty understanding concepts if they cannot restate a concept and provide examples and not examples. The difficulty of understanding the principle is indicated by students' difficulty applying the directions in axioms/postulates, theorems, and properties. Students have difficulty with skills if they cannot turn story problems into mathematical models and cannot use concepts and principles in solving mathematical problems. The results showed that students with visual, auditory, and kinesthetic learning styles have the same difficulties solving linear equation problems. The most dominant difficulty experienced by students is the difficulty understanding concepts.

Keywords: Difficulties, Understanding Concept, Learning Styles.

1. INTRODUCTION

Mathematics is one of the important materials in education taught from elementary school to university level. Mathematics learning materials and concepts are hierarchical so that there are sustainability aspects that affect the knowledge transfer process when students learn [1].

Linear equations are one of the prerequisites for the next mathematical concept, especially linear equations. Based on the results of previous observations of thinking on linear equations, many students have difficulty in thinking, and students still look confused in trying to solve the problem.

The causes of learning difficulties faced by students are very diverse. Some come from the students themselves, for example, the lack of prerequisite knowledge, social problems, lack of motivation, and others. As for student learning difficulties caused by the teacher, for example, the teacher in the learning process

does not involve students in active learning. Students are only told to memorize formulas, accept existing concepts, and do not do it themselves. So the results are less meaningful and not appropriately recorded in the students' brains [2].

The object of learning mathematics is in the form of facts, concepts, operations, and principles that are abstract [3]. Direct things in learning mathematics include facts, concepts, skills, and principles. In this study, the data were analyzed based on the indicators of learning difficulties. That is, (1) Difficulty in understanding concepts, the indicators being the ability to restate a concept and the ability to give examples instead of examples; (2) Difficulty in understanding principles, the indicators are difficulties in applying principles in the form of axioms/postulates, theorems, and properties; (3) Difficulty of skills, the indicators are the ability to turn story problems into mathematical models and the ability to use concepts and principles in problem-solving.

Many factors influence students' difficulties in solving math problems that are carried out in class, one of which is the student's own learning style. Learning style is important to know how students understand lessons at school, especially mathematics. Every student has a unique and different learning style. Knowing the right learning style for themselves is important because each student will more easily absorb the information. By recognizing the dominant learning style, each student will be smarter in determining a more effective way of learning for himself. Thus, each student can maximize their learning abilities to be optimal for the learning outcomes [4].

Learning style is a combination of how a person absorbs and then organizes and processes information. Everyone has a different learning style to get the best results in achieving learning targets. There are three types of learning styles, That is visual, auditory, and kinesthetic. Visual learning styles tend to learn by what they see, auditory students learn through what they hear, and kinesthetic learning styles learn a lot through movement, touching, and doing [5].

2. RESEARCH METHOD

The type of research used is qualitative research using case studies. This research was conducted at MTs DDI Walimpong, Soppeng Regency. The research subjects were three students at Class VIII of MTs DDI Walimpong, Soppeng Regency, who had visual, auditory, and kinesthetic learning styles.

Data collection techniques used are questionnaires (questionnaire), test techniques, and interview techniques. The questionnaire (questionnaire) aims to get an idea of the student's learning style, which is carried out before the test. The test technique in this study is a way of collecting data by giving a series of tasks in the form of a written test in the form of an essay given to the subject under study to get an answer or value, which is used to find out the difficulties experienced by students in solving linear equation. Interviews are a way of collecting data by digging up data directly from the source by holding face-to-face meetings directly between the person in charge of collecting data and the person who is the source of the data or research subject. The interview used is unstructured.

Then from the data collected, the researchers analyzed the following: (1) a learning style questionnaire (questionnaire) depending on the number of scores obtained for each learning style. The learning style that has the highest score is the student's learning style; (2) the learning outcome test was analyzed in detail to analyze the difficulties experienced by students in completing the linear equation test, That is the difficulty of understanding the principle, the difficulty of understanding the principle, and the difficulty of skill; and (3) the interviews were analyzed with the following

stages of data reduction, data presentation, and conclusion drawing.

3. RESULTS AND DISCUSSIONS

3.1. Visual Learning Style (SV) Student Learning Difficulties

3.1.1. Difficulty in Understanding SV Concepts

Subjects with visual learning styles have difficulty restating a linear equation graphic concept because they have not been able to state the meaning of linear equations in their own words and have difficulty giving examples that are not linear equations.

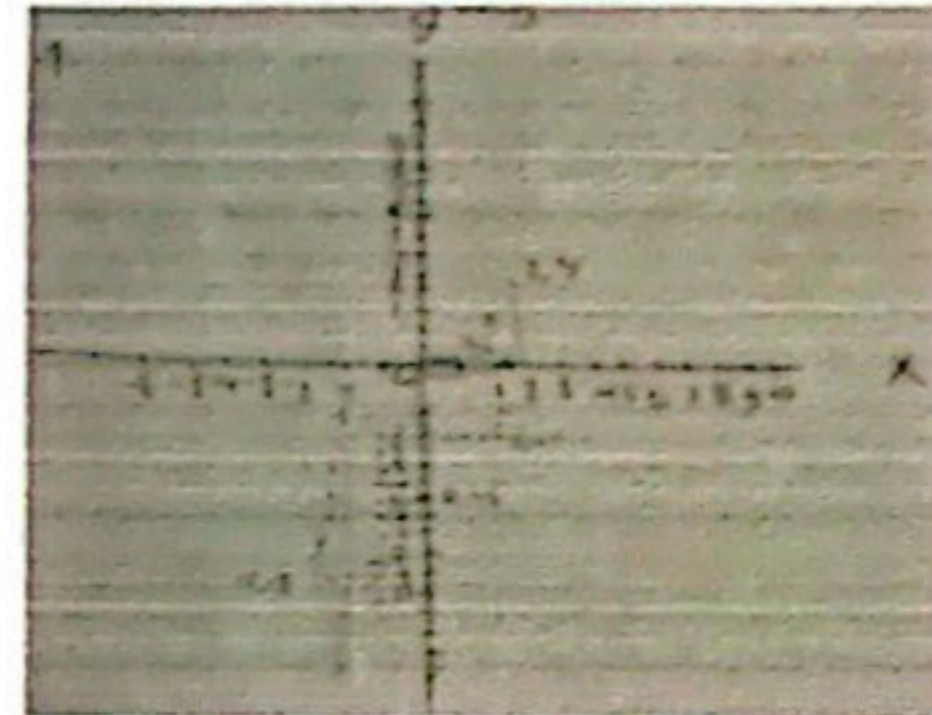


Figure 1. Difficulty in Understanding the Concept of Graphs of Linear equation Subjects SV

Based on the results of the things above, it can be seen that the subject can draw a Cartesian diagram by making the X -axis the horizontal axis and the Y -axis as the vertical axis. However, the scale drawn by the subject is not quite right because the distance of the points is not the same. As a result, the subject cannot show a straight line through the image. In addition, the subject had difficulty writing down the exact coordinates of the point. That is, the subject did not use symbols in brackets.

Based on the results of the interview, it was found that the subject was able to show one by one the coordinate points referred to in the problem. However, the subject had difficulty in drawing straight-line graphs and in naming the concept of Cartesian coordinates. Subjects call line x , which should be the abscissa, and call line y , the ordinate. The subject also has difficulty writing the name of the point coordinates; point x and point y are paired to form point coordinates. The subject also had difficulty stating the meaning of the equation of a straight line in his own words. So that the subject also has difficulty in giving examples that are not linear equations.

In addition, visual learning style subjects also have difficulty restating a slope concept in their own words and giving examples of line gradients.

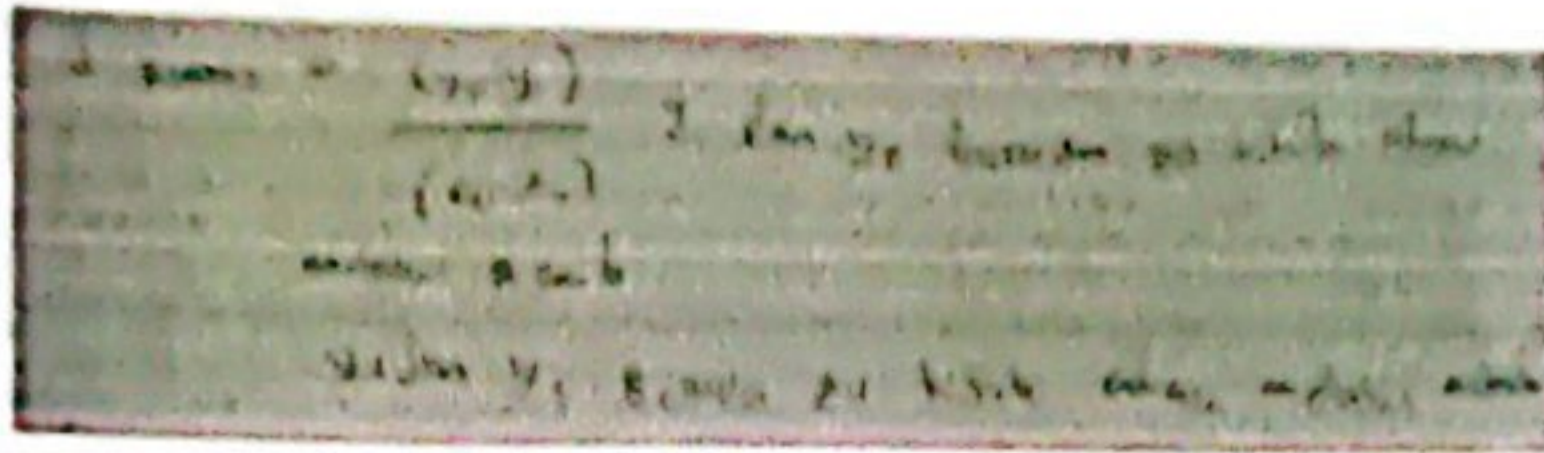


Figure 2. Difficulty in Understanding the Concept of Slope of Subjects SV

Based on the results of the things above, it can be seen that the subject can only determine the location of y_1 and y_2 , that is, at points A and B. This means that the subject has difficulty defining the gradient in his own words.

Based on the results of the things above, it can be seen that the subject can only determine the location of y_1 and y_2 , which is at points A and B. This means that the subject has difficulty defining the gradient in his own words.

Based on the results of the interview, it was found that the subject interpreted $m = \frac{(y_2 - y_1)}{(x_2 - x_1)}$, meaning that y_1 and y_2 were at the point or through A and B. The subject knew that m was a symbol of the gradient, but the subject did not explain the meaning of gradient in his own words and could not give examples of gradients by himself. Although the subject has difficulty explaining the meaning of gradient, he can mention that $y_2 - y_1$ is the y component and $x_2 - x_1$ is the x component.

3.1.2. Difficulty Understanding SV Principles

Subjects with visual learning styles have difficulty mentioning and proving the conditions for the two straight-line graphs to be parallel, perpendicular, and coincide with each other.



Figure 3. Difficulty in Understanding the Principle of Determining the Equation of a Straight Line Subject SV

Based on the results of the things above, it can be seen that the subject wrote mg_1 or the gradient of the equation $g_1: ax + by + c$ is $-\frac{a}{b}$ dan mg_2 or the gradient of the equation $g_2: px + qy + r$ is $-\frac{p}{q}$. The subject can write the conditions for the two graphs to be parallel to each other, That is $mg_1 = mg_2$, the two graphs are perpendicular to each other, That is $mg_1 \times mg_2 = -1$, but the subject has difficulty writing the conditions for the two graphs to coincide with each other, it can be seen from the answer written by the subject, That is $-\frac{a}{p} = \frac{b}{q}$ it does not match the conditions for the two graphs that

coincide with each other, which is correct. That is $\frac{a}{p} = \frac{b}{q} = \frac{c}{r}$.

Based on the interview results, it was found that the subject was able to describe the description of the two-line graphs that were parallel to each other, perpendicular to each other, and coincided with each other. For parallel line graphs, the subject can state the terms of the parallel line graph, That is, $m_1 = m_2$, but the subject has difficulty proving that the parallel line graph is $\frac{a}{p} = \frac{b}{q} \neq \frac{c}{r}$. For perpendicular line graphs, the subject was able to state the conditions for the perpendicular line graph, that is $m_1 \times m_2 = -1$, but the subject had difficulty proving the perpendicular line graph was $ap + bq = 0$. For line graphs that coincide here, the subject is only guessing for the answer he wrote. This means that the subject has great difficulty mentioning that the two-line graphs coincide with each other.

3.1.3. SV Skill Difficulty

Subjects with visual learning style have difficulty in using the concepts and principles of linear equation graphs in problem-solving, this can be seen from the way the subject reads the questions that are still inaccurate and the difficulty in converting story problems into mathematical models because they cannot determine the intended linear equation.

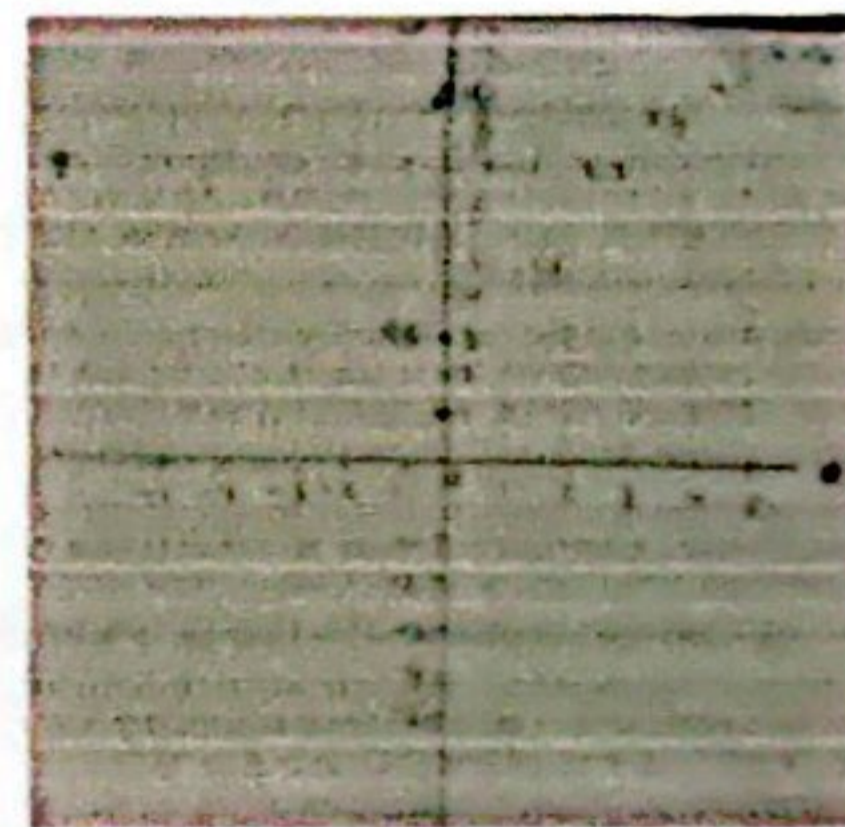


Figure 4. The Difficulty of Skill Graph Linear Equation Subject SV

Based on the results of the things above, it can be seen that the subject can determine which is the t line (horizontal) and the V line (vertical) if the form of the equation is $V = at + c$. The subject can also determine the coordinate points referred to in the problem, but still, the subject has difficulty drawing a graph as seen from the subject who does not describe the graph in the answer. In addition, the subject also did not write down the equation of the graph referred to in the problem.

Based on the interview results, it was found that the subject had not been able to read the questions or tables on the questions correctly. However, the subject can change x into t and y into V according to the equation in the problem, that is, $V = at + c$. The subject is also able to show the points referred to in the problem. However, according to the results of the things of the subject who

did not draw a graph, it can be seen that the subject had difficulty describing the graph of a straight line equation.

In addition, the subject also had difficulty determining the linear equation because the subject had difficulty converting story questions into models and had not been able to use the concepts and principles of linear equations correctly in problem-solving.



Figure 5. Difficulty in Determining the Line Equation Subjects SA

Based on the results of the things above, it can be seen that the subject can only write correctly what is known in the problem. Although there are attempts that the subject has tried to write to determine the first equation and the second equation that will be eliminated, the equation written by the subject is still not quite right.

Based on the interview results, it was found that the subject understood what was known in the questions, that is, the age of the man or the age of the present father and the present age of the child. In accordance with the results of the subject's things in determining the equation, after being traced through interviews, it was found that the subject wrote this because 2 years ago it meant that $x - 2$ and $6y$ meant 6 times the age of his son. Likewise, with the second equation, $x + 18$ means 18 years ahead, and $2y$ means 2 times the child's age. It can be seen that the subject has difficulty in converting story questions into mathematical models. In addition, errors made by the subject in determining the equation caused the subject to have difficulty in eliminating and substituting the two equations at a later stage.

3.2. Learning Difficulties of Student with Auditory Learning Style (SA)

3.2.1. Difficulty in Understanding SA Concepts

The subject has difficulty in explaining the meaning of a straight line. It has difficulty explaining the relationship between the points and the graph of a straight line that he describes, and the subject has difficulty naming the concept of Cartesian coordinates. The subject has difficulty restating a straight line equation graph concept in his own words and still has difficulty understanding the concept of Cartesian coordinates.



Figure 6. Difficulty in Understanding the Concept of Graphs of Linear equation Subjects SA

Based on the results of the things above, it can be seen that the subject can draw a Cartesian diagram by making the X -axis as the horizontal axis and the Y -axis as the vertical axis. The scale drawn by the subject is correct so that the subject can also draw a straight line formed by the coordinates of the points on the problem. In addition, the method of writing dots by the subject is also correct. The subject also wrote clearly that the graphic image formed was a straight line.

Based on the interview results, it was found that the subject could show the coordinates mentioned by the researcher, explain how to determine the point, draw a straight line graph as requested in the problem, and mention examples and not examples of linear equations. However, after further investigation, the subject had difficulty explaining the meaning of a straight line in his own words and the relationship between point coordinates and the straight-line graph he described. In addition, the subject had difficulty in naming the concept of Cartesian coordinates. Subjects call the line x that should be the abscissa and call the line y that should be the ordinate. The subject also has difficulty writing the name of the point coordinates; point x and point y are paired to form point coordinates.

In addition, subjects with auditory learning styles also have difficulty restating a slope concept in their own words and providing examples of non-gradients.

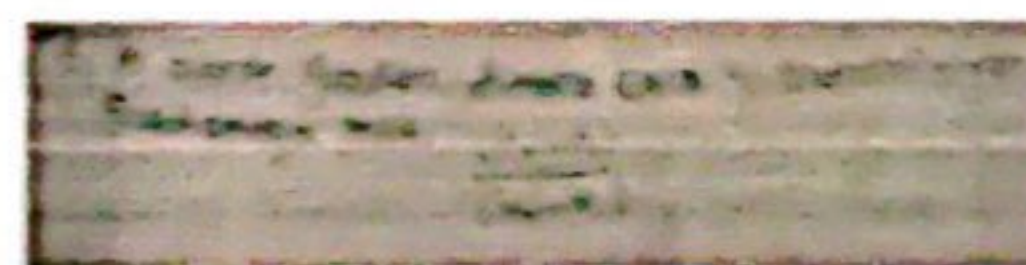


Figure 7. Difficulty in Understanding the Concept of Slope of Subjects SA

Based on the things above, it can be seen that the subject wrote that m is a gradient and wrote one way to find the gradient of a line. That is $m = \frac{y_2 - y_1}{x_2 - x_1}$.

Based on the results of the interview, it was found that the subject interpreted $m = \frac{(y_2 - y_1)}{(x_2 - x_1)}$ as one way to get the gradient value of a line. The subject also mentions another way to get the gradient value of a line $= \frac{-y}{x}$. In addition, the subject also provides examples of line gradients. However, it cannot provide non-gradient examples. After being traced through interviews, the subject also had difficulty explaining the meaning of gradient in his own words.

3.2.2. Difficulty in Understanding SA Principles

Subjects with auditory learning styles have difficulty understanding the principles in the form of the properties of linear equations.



Figure 8. Difficulty in Understanding Principles of Determining Linear equation Subject SA

Based on the results of the things above, it can be seen that the subject wrote mg_1 or the gradient of the equation $g_1: ax + by + c$ is $-\frac{a}{b}$ and mg_2 or the gradient of the equation $g_2: px + qy + r$ is $-\frac{p}{q}$. In addition, the subject wrote down the condition that the two graphs were parallel to each other, That is, $mg_1 = mg_2$, the two graphs were perpendicular to each other, That is, $mg_1 \times mg_2 = -1$. Subjects can also write down the condition that the two graphs coincide with each other, That is, $\frac{a}{p} = \frac{b}{q} = \frac{c}{r}$. However, the subject did not write the proof so that the requirements for the two graphs were parallel, perpendicular to each other, and coincided with each other, as written in the subject's answer.

Based on the interview results, it was found that the subject was able to describe the description of the two-line graphs that were parallel to each other, perpendicular to each other, and coincided with each other. For parallel line graphs, the subject can state the terms of the parallel line graph, That is, $m_1 = m_2$. For a line graph perpendicular to each other, the subject can state the lines graph's conditions to be perpendicular to each other, That is $m_1 \times m_2 = -1$. For the line graph that coincides with each other, the subject mentions the condition of the line graph that coincides with each other, That is, $\frac{a}{p} = \frac{b}{q} = \frac{c}{r}$. The subject can also explain the meaning of $\frac{a}{p} = \frac{b}{q} = \frac{c}{r}$. It can be seen that the subject has difficulty distinguishing line graphs that are parallel and coincide because the subject has not been able to prove the conditions he knows

3.2.3. Difficulty Understanding SA Skills

The subject had difficulty converting the story problem into a mathematical model because the subject had not been able to complete all the instructions from the problem, which was asked to determine the equation of the points referred to in the question table.



Figure 9. The difficulty of Skill Graph Straight Line Equation Subject SA

Based on the results of the things above, it can be seen that the subject can determine which is the t line (horizontal) and the V line (vertical) if the form of the equation is $V = at + c$. The subject can also determine the coordinate points referred to in the problem and draw a straight graph. However, the subject did not write down the equation of the graph referred to in the problem.

Based on the interview results, it was found that the subject was able to read the contents of the table on the question correctly. The subject can also change x into t and y into V according to the equation in the problem, that is $V = at + c$. The subject is also able to show the points referred to in the problem. The subject also answered loudly and confidently that the graph he described as a straight line graph.

In addition, the subject also experienced difficulty in determining the skill of a straight line equation because the subject had difficulty in eliminating and substituting the two equations.



Figure 10. Skill Difficulty in Determining the Equation of a Straight Line Subject SA

Based on the results of the things above, it can be seen that the subject did not write down what was known and what was asked in the question. However, the subject could write down the two equations correctly, that is, $x - 2 = 6(y - 2)$ and $x + 18 = 2(y + 18)$. However, the subject has not been able to eliminate and substitute the two equations perfectly. The subject did not simplify the two equations before eliminating the two equations, which resulted in the subject also experiencing errors in substituting the y value.

Based on the interview results, it was found that the subject understood what was known in the questions, that is, the age of the man or the age of the present father and the present age of the child. In accordance with the results of the subject's things in determining the equation, after being traced through interviews, it was found that the subject wrote this because 2 years ago it meant that $x - 2$ and $6y$ meant 6 times the age of his son. Likewise, with

the second equation, $x + 18$ means 18 years ahead, and $2y$ means 2 times the child's age. It can be seen that the subject has difficulty in converting story questions into mathematical models. In addition, errors made by the subject in determining the equation caused the subject to have difficulty in eliminating and substituting the two equations at a later stage.

3.3 Learning Difficulties of Students with Kinesthetic Learning Style (SK)

3.3.1. Difficulty in Understanding SK Concepts

Kinesthetic learning style subjects have difficulty restating a linear equation graph concept in their own words and giving examples of non-linear equations.

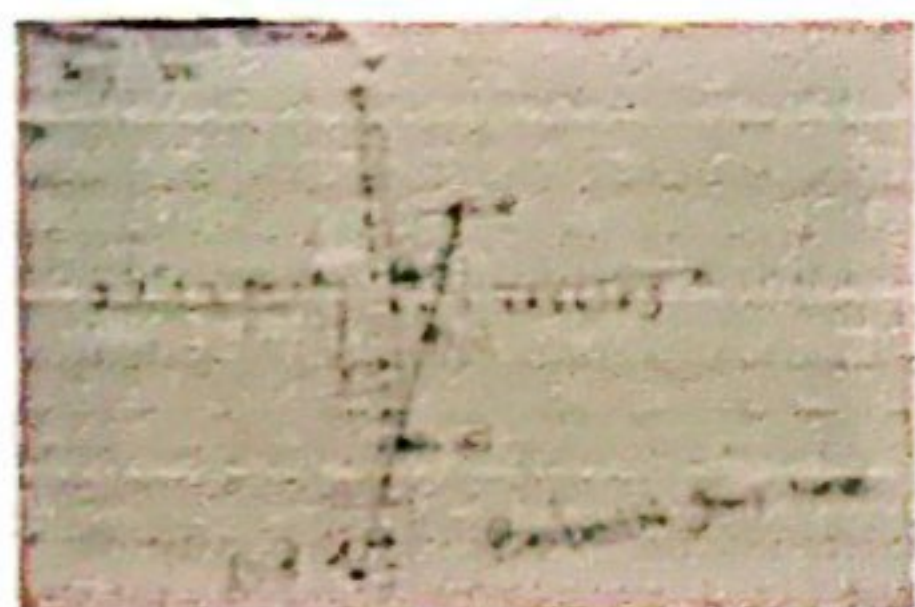


Figure 11. Difficulty in Understanding the Concept of Graphs of Linear equation Subjects SK

Based on the results of the things above, it can be seen that the subject can draw a Cartesian diagram by making the X -axis as the horizontal axis and the Y -axis as the vertical axis. The scale drawn by the subject is correct so that the subject can also draw a straight line formed by the coordinates of the points on the problem. In addition, the method of writing dots by the subject is also correct. The subject also wrote clearly that the graphic image formed was a straight line.

Based on the interview results, it was found that the subject could indicate the coordinates mentioned by the researcher. In addition, the subject also explains how to determine the point, that can draw a straight line graph as requested in the problem and show it to the researcher. However, after further investigation, the subject had difficulty defining or explaining the meaning of a straight line in his own words. The subject also has difficulty giving an example that is not straight lines; he can only give examples of linear equations. The subject also had difficulty explaining the relationship between the points and the straight-line graph he described. Subjects have difficulty in naming the concept of Cartesian coordinates. The subject calls the line x , which should be, and the ordinate calls the line y , which should be the ordinate. Subjects also have difficulty naming the concept of coordinate points, that is, point x and point y which are paired to form coordinate points.

In addition, kinesthetic learning style subjects also have difficulty restating a slope concept in their own words. They have not been able to provide examples of gradients and examples of non-line gradients.

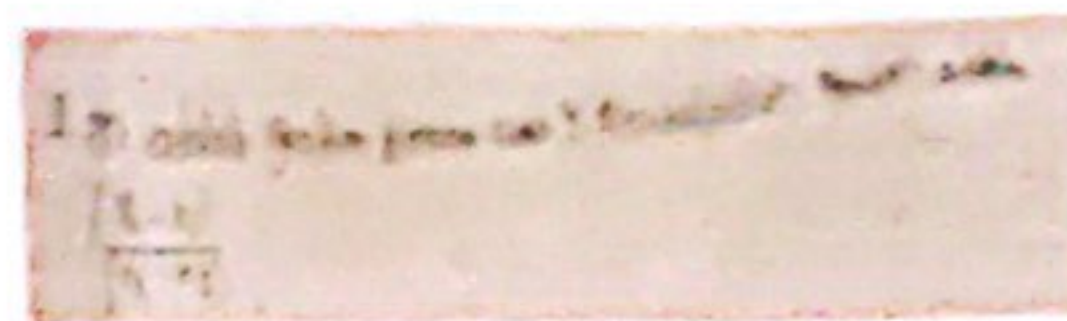


Figure 12. Difficulty in Understanding the Slope Concept of Subjects SK

Based on the things above, it can be seen that the subject wrote that m is a gradient and wrote one way to find the gradient of a line, That is $m = \frac{y_2 - y_1}{x_2 - x_1}$.

Based on the results of the interview, it was found that the subject interpreted that $m = \frac{(y_2 - y_1)}{(x_2 - x_1)}$ is one way to get the gradient value of a line that passes through points $A(x_1, y_1)$ and (x_2, y_2) . The subject also mentions another way to get the gradient value of a line $= \frac{-y}{x}$. However, after being traced through interviews, the subject had difficulty explaining the meaning of gradient in his own words. In addition, the subject also had difficulty in providing examples of gradients and examples of non-linear gradients.

3.3.2. Difficulty in Understanding SK Principles

The subject has difficulty proving the terms of the two straight-line graphs being parallel, perpendicular to each other, and coincident with each other.



Figure 13. Difficulty in Understanding Principles of Determining Linear equation Subject SK

Based on the results of the things above, it can be seen that the subject wrote mg_1 or the gradient of the equation $g_1: ax + by + c$ is $-\frac{a}{b}$ and mg_2 or the gradient of the equation $g_2: px + qy + r$ is $-\frac{p}{q}$. In addition, the subject wrote down the condition that the two graphs were parallel to each other, that is $mg_1 = mg_2$, the two graphs were perpendicular to each other, that is $mg_1 \times mg_2 = -1$. Subjects can also write down the condition that the two graphs coincide with each other, That is, $\frac{a}{p} = \frac{b}{q} = \frac{c}{r}$. However, the subject did not write the proof so that the requirements for the two graphs were parallel, perpendicular to each other, and coincided with each other, as written in the subject's answer.

Based on the interview results, it was found that the subject was able to describe the picture of the two-line graphs that were parallel to each other, perpendicular to each other, and coincided with each other when interviewed. For parallel line graphs, the subject can state the terms of the parallel line graph, $m_1 = m_2$, but the subject has difficulty proving that the parallel line graph

is $\frac{a}{p} = \frac{b}{q} \neq \frac{c}{r}$. For perpendicular line graphs, the subject could state the conditions for the perpendicular line graph, That is, $m_1 \times m_2 = -1$, but the subject had difficulty proving that the perpendicular line graph was $ap + bq = 0$. For line graphs that coincide, the subject knows that the condition for two graphs to coincide is $\frac{a}{p} = \frac{b}{q} = \frac{c}{r}$. However, the subject had difficulty explaining the meaning of what he wrote. It can be seen that the subject only guessed the answer or cheated on his friend, so that the subject experienced this difficulty when interviewed.

3.3.3. Difficulty Understanding SK Skills

The subject had difficulty converting the story problem into a mathematical model because the subject had not been able to complete all the instructions from the problem, which was asked to determine the equation of the points referred to in the question table.

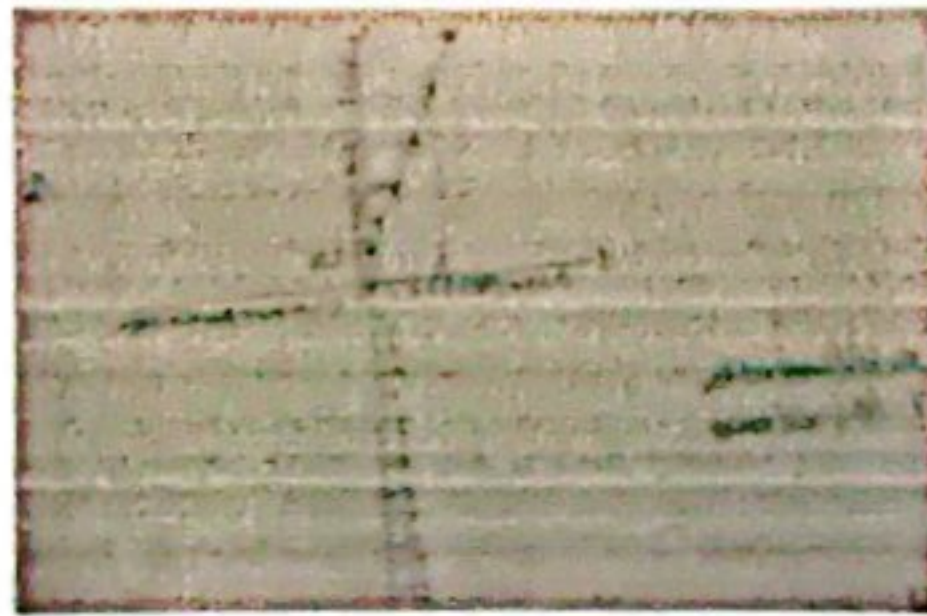


Figure 14. The difficulty of Skills Graph of Straight Line Equation Subject SK

Based on the results of the things above, it can be seen that the subject can determine which is the t line (horizontal) and the V line (vertical) if the form of the equation is $V = at + c$. The subject can also determine the coordinate points referred to in the problem and draw a straight graph. However, the subject did not write down the equation of the graph referred to in the problem.

Based on the interview results, it was found that the subject had not been able to read the contents of the table on the question correctly. However, the subject changed x into t and y into V according to the equation in the problem, $V = at + c$, and explained it in detail to the researcher. After further exploration through interviews, the subject was able to show the points referred to in the question. The subject also answered loudly and confidently that the graph he described as a straight line graph.

In addition, the subject also had difficulty using the concepts and principles of determining linear equations in problem-solving. The subject had difficulty in eliminating and substituting the two equations.

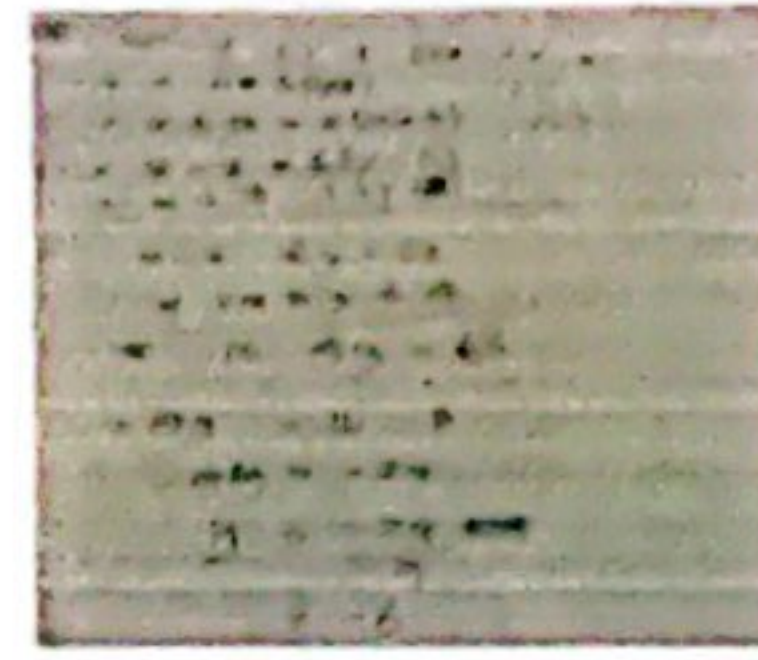


Figure 15. Skill Difficulty in Determining the Equation of a Straight Line Subject SK

Based on the results of the things above, it can be seen that the subject did not write down what was known and what was asked in the question. However, even though that was the case, the subject could correctly write down the two equations, that is $x - 2 = 6(y - 2)$ and $x + 18 = 2(y + 18)$. However, the subject has not been able to eliminate and substitute the two equations correctly because it seems that the subject did not simplify the two equations before eliminating the two equations, which resulted in the subject also experiencing errors in substituting the y value so that the subject got a minus answer. It is known that no age is worth minus.

Based on the interview results, it was found that the subject understood what was known in the questions, that is, the age of the man or the age of the present father and the present age of the child. In accordance with the results of the subject's things in determining the equation, after being traced through interviews, it was found that the subject wrote this because 2 years ago it meant that $x - 2$ and $6y$ meant 6 times the age of his son. Likewise, with the second equation, $x + 18$ means 18 years ahead, and $2y$ means 2 times the child's age. It can be seen that the subject has difficulty in converting story questions into mathematical models. In addition, errors made by the subject in determining the equation caused the subject to have difficulty in eliminating and substituting the two equations at a later stage.

4. CONCLUSION

4.1. Learning Difficulties of Students with Visual Learning Style

Subjects with visual learning styles have difficulties: (1) Understanding the concept of a straight line equation graph and understanding the slope concept. Subjects have difficulty restating a concept in their own words and have difficulty giving examples and non-examples and gradients of linear equations. (2) Understanding the principle of slope because it is still difficult to mention and prove the conditions for the two straight-line graphs to be parallel, perpendicular to each other, and coincide with each other. (3) Skill in graphing linear equations and skill difficulty in determining linear equations. The subject has difficulty using concepts and principles in problem-solving and converting story problems into mathematical models.

4.2. Learning Difficulties of Students with Auditory Learning Style

Subjects with auditory learning styles have difficulty: (1) Understanding the concept of a straight line equation graph and understanding the concept of slope. Subjects have difficulty restating a concept in their own words. (2) Understanding the principle of linear equations is the difficulty in understanding the principles in the form of the properties of linear equations. (3) The skill of graphing the straight line equation and the difficulty of determining the equation of a straight line. The subject has difficulty in using concepts and principles in problem-solving.

4.3. Learning Difficulties of Students with Kinesthetic Learning Style

Kinesthetic learning style subjects have difficulty: (1) Understanding the concept of a straight line equation graph and slope. Subjects have difficulty restating a concept in their own words and giving examples and non-examples of equations of straight lines and gradients. (2) Understanding the principle of linear equations is the difficulty in understanding the principles in the form of the properties of linear equations. (3) Skill on the graph of linear equations the difficulty of skills in determining linear equations. Subjects have difficulty converting story problems into mathematical models and using concepts and principles of determining linear equations in problem-solving.

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