

## ANALYSIS OF THE DIFFICULTIES OF GRADE VII H STUDENTS OF SMP NEGERI 6 PALU IN SOLVING SET STORY PROBLEMS IN TERMS OF LEARNING STYLE

Nurul Anisa<sup>1</sup>, Anggraini<sup>2</sup>, Gandung Sugita<sup>3</sup>, I Nyoman Murdiana<sup>4</sup>

1234 Mathematics Education Study Program, Faculty of Teacher Training and Education, Tadulako University  
Soekarno Hatta Road km. 9, Palu, Central Sulawesi  
e-mail: [nurulanisa16051996@gmail.com](mailto:nurulanisa16051996@gmail.com)

### Abstract

This study analyzes students' difficulties in solving set story problems, taking into account students' learning styles. The research approach used a qualitative approach. Data were obtained through questionnaires, written tests and interviews. The results showed that students with visual, auditorial, and kinesthetic learning styles experienced difficulties in solving set story problems. Students with visual learning styles experience two indicators of difficulty, namely difficulty learning concepts and difficulty applying principles. For difficulties in learning concepts, students cannot use formulas that are in accordance with the conditions of the problem, namely the formula for the combination and difference of three sets. As for the difficulty of applying principles, students make mistakes in calculation activities and do not solve the problem. Students with auditorial learning styles experience all indicators of difficulty, namely difficulty learning concepts, difficulty applying principles and difficulty solving verbal problems. In the difficulty of applying concepts, students cannot translate the form of the problem, do not know what is known from the problem, students also do not use formulas that are in accordance with the conditions of the problem. In difficulty applying principles, students make mistakes in calculation activities when solving problems. In the difficulty of solving verbal problems, students make mistakes in translating problems into mathematical form, students also cannot determine the data used, and do not check the answers obtained. Students with kinesthetic learning styles fulfill all indicators of difficulty, namely difficulty learning concepts, difficulty applying principles and difficulty solving verbal problems. In difficulties in learning concepts, students hesitate in using memorization or set notation. students cannot use formulas that are in accordance with the conditions of the problem. In difficulties in applying principles, students make mistakes in calculation activities. This happens because students do not know the formula and make mistakes in using the data used. In the difficulty of solving verbal problems, students make mistakes in determining the data used, students do not check their answers again.

**Keywords:** difficulty analysis, set story problems, learning styles

### Abstrak

Penelitian ini menganalisis kesulitan siswa menyelesaikan soal cerita himpunan, dengan mempertimbangkan gaya belajar siswa. Pendekatan penelitian menggunakan pendekatan kualitatif. Data diperoleh melalui angket, tes tertulis dan wawancara. Hasil penelitian menunjukkan bahwa siswa dengan gaya belajar visual, auditorial, dan kinestetik mengalami kesulitan dalam menyelesaikan soal cerita himpunan. Siswa dengan gaya belajar visual mengalami dua indikator kesulitan yaitu kesulitan mempelajari konsep dan kesulitan menerapkan prinsip. Untuk kesulitan mempelajari konsep siswa tidak dapat menggunakan rumus yang sesuai dengan kondisi soal yaitu rumus gabungan dan selisih tiga himpunan. Sedangkan untuk kesulitan menerapkan prinsip siswa keliru dalam kegiatan perhitungan dan tidak menyelesaikan soal. Siswa dengan gaya belajar auditorial mengalami semua indikator kesulitan yaitu kesulitan mempelajari konsep, kesulitan menerapkan prinsip dan kesulitan menyelesaikan masalah verbal. Pada kesulitan menerapkan konsep siswa tidak bisa menerjemahkan bentuk soal, tidak mengetahui apa yang diketahui dari soal, siswa juga tidak menggunakan rumus yang sesuai dengan kondisi soal. Pada kesulitan menerapkan prinsip, siswa melakukan kesalahan dalam kegiatan perhitungan pada saat menyelesaikan soal. Pada kesulitan menyelesaikan masalah verbal, siswa keliru dalam menerjemahkan soal kedalam bentuk matematika, siswa juga tidak bisa menentukan data yang digunakan, serta tidak memeriksa jawaban yang diperoleh. Siswa dengan gaya belajar kinestetik memenuhi semua indikator kesulitan yaitu yaitu

kesulitan mempelajari konsep, kesulitan menerapkan prinsip dan kesulitan menyelesaikan masalah verbal. Pada kesulitan dalam mempelajari konsep, siswa ragu dalam menggunakan pemisalan atau notasi himpunan. siswa tidak bisa menggunakan rumus yang sesuai dengan kondisi soal. Pada kesulitan dalam menerapkan prinsip siswa melakukan kesalahan dalam kegiatan perhitungan. Hal ini terjadi karena siswa tidak mengetahui rumus dan melakukan kesalahan dalam menggunakan data yang digunakan. Pada kesulitan menyelesaikan masalah verbal siswa melakukan kesalahan dalam menentukan data yang digunakan, siswa tidak memeriksa kembali jawabannya..

**Kata kunci:** analisis kesulitan, soal cerita himpunan, gaya belajar

## INTRODUCTION

Mathematics is a very important subject to learn. As stated by Widiantara (2014) that mathematics is one of the subjects studied from elementary school level to high school level and also studied in universities. This happens because mathematics is an activity of human life, meaning that every human activity always uses mathematics. So it is important that everyone knows the basic material about mathematics so that they can apply and solve problems related to everyday life. In line with this Soedjadi (Ratnamutia and Pujiastuti, 2020) suggests that the general purpose of mathematics is to prepare students to be able to use concepts from mathematics in daily activities or life.

Mathematics plays an important role in learning, so it is expected that students master mathematics subjects, but in reality until now the ability and learning achievement of students in mathematics subjects is still relatively low. It is evident from the 2018 PISA (Programme for International Student Assessment) results conducted by the OECD (Organization for Economic Cooperation and Development) that Indonesia is ranked 73 out of 78 countries with a score of 379 in mathematics and with an average score of 489. There are several things that cause Indonesian students' math achievement to be very low, one of which is the difficulty experienced by students in learning mathematics (Ratnamutia and Pujiastuti, 2020). Abdurrahman (Dewi et al, 2020) stated that of the various fields of study taught at school, mathematics is the field of study that is considered the most difficult for students to understand, especially for students who have difficulty learning mathematics.

Learning difficulty is an obstacle that is often faced by students. Mulyadi (Dewi, et al 2020) suggests that learning difficulties can be interpreted as a condition in a learning process characterized by certain obstacles to achieving learning outcomes. One of the difficulties experienced by students in solving math problems if the problem is presented in the form of a story. This can be seen based on the mistakes made by students in solving math problems. solve the story problems given. This is in line with research conducted by Muntaha, et al

(2020) that students' difficulties in solving story problems are the difficulty of students understanding the story, determining the existing quantities and their relationships so that a mathematical model is obtained and solving the mathematical model mathematically. According to Muncarno (Sudirman, et al. 2018) that students have difficulty working on story problems because students are less careful in reading and understanding sentence by sentence and about what is known in the problem and what is asked, and how to solve the problem correctly.

Based on the results of interviews that researchers have conducted with one of the teachers of SMP Negeri 6 Palu, researchers received information that most of the seventh grade students are weak and have difficulty working on story problems. Students have difficulty working on story problems because they find it difficult to understand the problem, one of the materials that are difficult for seventh grade students to understand is set material.

Mathematics story problems are presented in the form of a story or a series of simple and meaningful sentences (Widyaningrum, 2016). Mathematics story problems provide a real picture in everyday problems for students and to train students' ability to solve mathematical problems in everyday life. (Nurajizah & Fitriani, 2020). Many things related to mathematics are in the surrounding environment in everyday life, for example, when paying for groceries purchased at a market or supermarket, exchanging money, determining time, and many more (Ratnamutia and Pujiastuti, 2020).

According to Syah (Fatmawati, 2019) several factors will occur if the completeness of student learning outcomes is low, especially internal factors and external factors. Factors that are in students are internal factors that also affect learning outcomes. Some of the internal factors that are still not seen by teachers are learning styles. So it can be said that learning styles can affect student learning difficulties, this is supported by Dewi and Bahar (2021) that there are many factors that influence students' difficulty in solving math problems, one of which is influenced by the habits of the mathematics teaching and learning process carried out in class, one of which is the student's own learning style.

According to Rosyida (2016) learning style is a combination of how a person absorbs and then organizes and processes information. In line with the opinion of Rosyida (2016), learning style according to Fleming and Mills (Wassahua, 2016) is the tendency of students to

adapt a certain way to their learning as a form of their obligation to get a learning approach that suits the demands of learning in class or school and the demands of the subject.

DePorter & Hernacki (2007) state that there are three learning styles that a person has, namely visual, auditorial and kinesthetic learning styles. Basically, every individual has a learning style but not all of them develop in a balanced manner but some dominate their learning style.

Based on the above background, the researcher is interested in conducting a study entitled "Analysis of the Difficulties of Class VII Students of SMP Negeri 6 Palu in Solving Story Problems on Set Material in View of Learning Style".

## **METHODS**

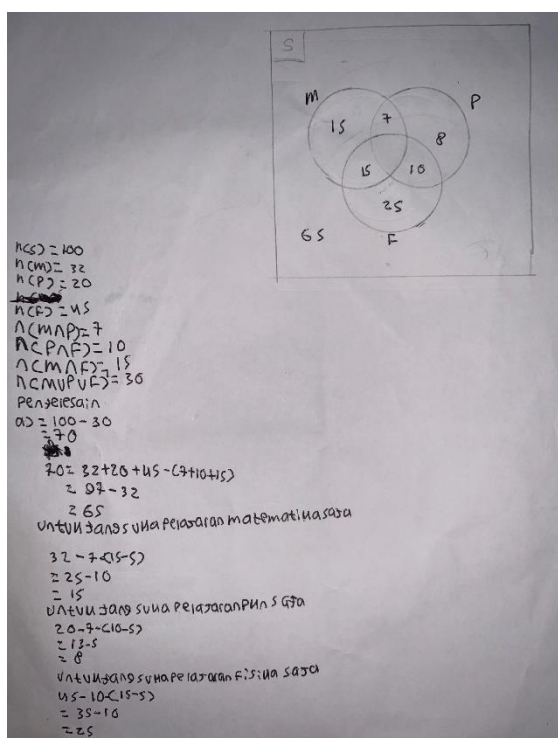
This research uses qualitative research methods with a descriptive approach. With the aim to describe students' difficulties in solving set story problems based on students' learning styles. This research was conducted at SMPN 6 PALU, Jalan Dewi Sartika No.71, Birobuli Selatan, Kec. Palu Selatan, Palu City, Central Sulawesi. This research was conducted in the odd semester of the 2023/2024 school year.

The subjects of this study were 3 students of class VII SMPN 6 PALU. The three students in question are low-ability male students with visual learning styles, auditorial learning styles and kinesthetic learning styles. The subjects were selected based on report card scores and teacher consideration, as well as based on the results of a questionnaire that had been conducted by researchers through a learning style questionnaire.

The instruments used in this research are learning style questionnaires, assignment sheets and interviews. The questionnaire was used to determine the learning style of each student. The results of the questionnaire are used as a guide to determine which students will be studied. The task sheet in this study is a test in the form of a description and contains questions related to the set story problems that have been studied. This aims to find out the difficulties in solving story problems. To find out more clearly the causes of students' difficulties in solving story problems on the set, interview techniques are carried out so that any difficulties obtained can be clearly known. The interviews used in this study were unstructured and open-ended interviews.

## RESULTS AND DISCUSSION

This research was conducted in class VII H SMP Negeri 6 Palu with 36 students, consisting of 19 girls and 17 boys. This study aims to determine students' difficulties in solving story problems in terms of their learning styles. The implementation of the subject collection began with the administration of a learning style questionnaire on Thursday, January 11, 2024 which was attended by 30 students. The learning styles in question are visual, auditorial and kinesthetic learning styles. After that the researcher gave 1 story problem set containing 3 indicators of difficulty. Indicators of difficulty according to Cooney (Yusmin, 2017) are categorized into 3 types, namely: a) difficulty in learning concepts (difficulty in learning concepts in one material), b) difficulty in applying principles (difficulty in applying concepts which means difficulty in linking concepts between materials), c) difficulty in solving verbal problems (difficulty in solving problems related to verbal problems or story problems). Based on the results of the subject's work can be seen in the following figure.

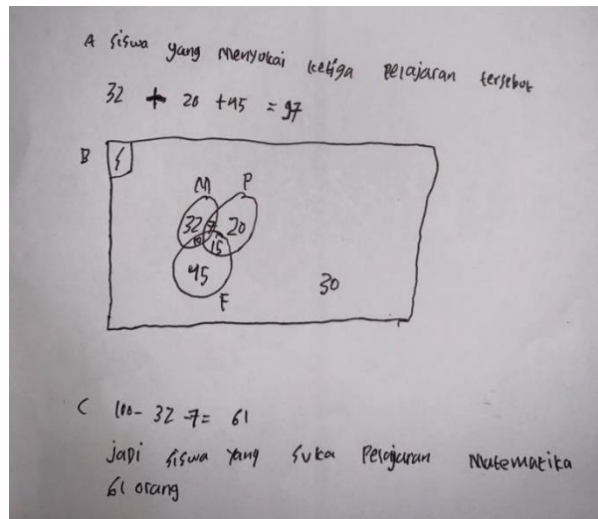


Picture 1. Answers of Subjects with Visual Learning Style (GV)

Based on the picture above, on the difficulty of learning concepts, GV can translate the form of the problem, can do the memorization and what is known from the problem, but GV

cannot use the formula that matches the condition of the problem, namely the formula for the combination, slice and difference of three sets. This is in line with Darmono, et al's (2021) research where students with visual learning styles have difficulty learning concepts. In the difficulty of applying principles, GV made mistakes in calculation activities and did not solve the problem. In the difficulty of solving verbal problems, GV can translate the problem into mathematical form and can determine the data used, GV also checks the results of his answers but is slightly wrong.

Based on the explanation above, it can be concluded that subjects with visual learning styles experience 2 indicators of difficulty, namely difficulty learning concepts and difficulty applying principles. The subject is only able to master 1 indicator, where 1 indicator is that the subject can solve verbal problems. The results of this study are in line with Widyaningrum, (2016) where the most dominant error made by students with visual learning styles is language interpretation errors, namely students have not been able to interpret the problem into mathematical language. Meanwhile, as a result of this, students also make technical errors, conceptual errors, and inference errors.



Picture 2. Answers of Subjects with Auditorial Learning Style (GA)

Based on the picture above, on the difficulty of learning the concept, GA could not translate the form/illustration of the problem, GA did not write what was known and asked from the problem, but by reading the problem during the interview GA knew what was known and asked from the problem. GA also could not use formulas that were appropriate to the conditions of the problem, namely the formulas for the combination, intersection and

difference of three sets. In the difficulty of applying principles, GA made mistakes in calculation activities where GA immediately completed without steps in solving the problem. GA also had difficulty in solving the problem. In the difficulty of solving verbal problems, GA made mistakes in translating the problem into mathematical form. GA also could not determine the data used, and had difficulty checking the answers obtained.

Based on the explanation above, it can be concluded that subjects with an auditorial learning style fulfill all indicators of difficulty, namely difficulty learning concepts, difficulty applying principles and difficulty solving verbal problems. The results of this study are in line with (Nuriza, et al 2020) where the difficulty that tends to be experienced by students with an auditorial learning style is making mathematical models so that in the end there are incorrect calculations.

Diketahui : Seluruh siswa = 100  
 Siswa matematika = 32  
 Siswa PKN = 20  
 Siswa Fisika = 45  
 matematika dan PKN = 7  
 PKN dan Fisika = 10  
 matematika Fisika = 15  
 tidak menyukai ketiganya = 30

a. siswa yang menyukai ketiga pelajaran tersebut  
 $100 - 30 = 70$   
 $70 - 32 - 20 - 45 = 97$   
 $97 - 70 = 13$

b. yang matematika saja  
 $32 - 7 - 15 = 10$   
 yang PKN saja  
 $20 - 7 - 10 = 3$   
 yang Fisika saja  
 $45 - 10 - 15 = 20$

c. yang hanya menyukai pelajaran matematika saja  
 $32 - 7 - 15 = 10$   
 jadi, siswa yang hanya menyukai pelajaran matematika sama 10 orang

b.

Venn diagram showing three overlapping circles labeled M (Matematika), P (PKN), and F (Fisika). The regions are labeled with numbers: M only is 10, P only is 3, F only is 20, M ∩ P is 7, M ∩ F is 15, P ∩ F is 10, and the intersection of all three (M ∩ P ∩ F) is 7. The region outside all three circles is labeled 30.

Picture 3. Answers of Subjects with Kinestetik Learning Style (GK)

Based on the picture above, on the difficulty of learning the concept, GK subject can translate the form/illustration of the problem, but the subject is hesitant in using memorization or set notation. GK cannot use a formula that matches the condition of the problem. So in this case it can be concluded that GK has difficulty in learning concepts. In the

difficulty of applying principles, GK made mistakes in calculation activities. This happened because GK did not know the formula, causing errors in using the data that should be used. So in this case it can be concluded that GK has difficulty in applying principles. In the difficulty of solving verbal problems, GK could translate the problem into mathematical form but made mistakes in determining the data used, GK did not recheck his answers so in this case it can be concluded that GK had difficulty in solving verbal problems.

Based on the explanation above, it can be concluded that subjects with kinesthetic learning styles fulfill all indicators of difficulty, namely difficulty learning concepts, difficulty applying principles and difficulty solving verbal problems. However, in the difficulty of applying principles, GK made mistakes in calculation activities. This happened because GK did not know the formula and made mistakes in using the data used. However, GK can complete the calculation, so in this case it can be concluded that GK has difficulty in applying principles. The results of this study are in line with Widyaningrum, (2016) where the most dominant error made by students with kinesthetic learning styles is language interpretation errors, namely students have not been able to interpret problems into mathematical language. Meanwhile, as a result of this, students also make technical errors, conceptual errors, and errors in the use of data.

From the data above, it shows that students' abilities in solving problems, both GV, GA, GK, have different abilities, one of the factors that influence the ability to solve problems is learning style. Likewise, the results of research conducted by Johson and Miller (Sari, 2021) where a person's learning style can be determined by the learning experience and the field of study studied. Where students in the disciplines of physics, mathematics, chemistry are more likely to have a visual learning style. In Susanti's research, et al (2020) stated that the learning difficulties experienced by students vary based on their learning style. Students with auditory learning styles have difficulty in receiving material with low proportions and explanations or discussions. Students with kinesthetic learning styles have difficulty in understanding writing or images and the lack of practice problems given. While students with a visual learning style have difficulty in understanding material with a low level of visuality.



## CONCLUSION

Based on the results of research and discussion, the conclusion is obtained related to the analysis of the difficulties of students of class VII H SMPN 6 Palu on the problem of set stories in terms of learning styles, namely:

1. Students with visual learning styles experience two indicators of difficulty, namely difficulty learning concepts and difficulty applying principles. For difficulties in learning concepts, students cannot use formulas that are in accordance with the conditions of the problem, namely the formula for the combination and difference of three sets. As for the difficulty of applying principles, students make mistakes in calculation activities and do not solve the problem. students are only able to master one indicator of difficulty, namely difficulty solving verbal problems.
2. Students with auditorial learning styles experience all indicators of difficulty, namely difficulty learning concepts, difficulty applying principles and difficulty solving verbal problems. In the difficulty of learning concepts, students cannot translate the form of the problem, do not know what is known from the problem, students also cannot use formulas that are in accordance with the conditions of the problem, namely the formula for the combination and difference of three sets. In difficulty applying principles, students make mistakes in calculation activities when solving problems. In the difficulty of solving verbal problems, students make mistakes in translating the problem into mathematical form. Students also cannot determine the data used, and do not check the answers obtained.
3. Students with kinesthetic learning styles experience all indicators of difficulty, namely difficulty learning concepts, difficulty applying principles and difficulty solving verbal problems. In difficulties in learning concepts, students hesitate in using memorization or set notation. Students cannot use formulas that match the conditions of the problem, namely the formula for the combination and difference of three sets. In difficulties in applying principles, students make mistakes in calculation activities. This happens because students do not know the formula and make mistakes in using the data used. In the difficulty of solving verbal problems, students make mistakes in determining the data used, students do not check their answers again.

## ACKNOWLEDGMENTS

Thank you to my supervisor who has helped a lot in the preparation of this final project and has also taken the time to provide guidance. Thank you also to the examining lecturers who have provided advice and input for this final project. Furthermore, thanks to the school, teachers and students who have helped in this research, namely SMP Negeri 6 Palu and to every component involved in the research and preparation of this final project.

## REFERENCES

- Darmono, P. B., Wijayadi, M., & Kurniasih, N. (2021). Analisis Kesulitan Siswa SMA dengan Gaya Belajar Visual dalam Menyelesaikan Soal HOTS. *SAP (Susunan Artikel Pendidikam)*, VI(2).
- Deporter, B., & Hernacki, M. (2007). *Quantum Learning: Membiasakan Belajar Nyaman Dan Menyenangkan*. Bandung: Penerbit Kaifa.
- Dewi, N. K., Untu, Z., & Dimpudus, A. (2020). Analisis Kesulitan Menyelesaikan Soal Matematika Materi Operasi Hitung Bilangan Pecahan Siswa Kelas VII. *Jurnal PRIMATIKA*, IX(2).
- Dewi, N., & Bahar, E. E. (2021). Analisis Kesulitan Siswa dalam Menyelesaikan Soal Matematika Pokok Bahasan Persamaan Garis Lurus Ditinjau dari Gaya Belajar pada Kelas VIII MTs. DDI Walimpong Kabupaten Soppeng. *Jurnal Pendidikan Matematika*, II(2), 21-23.
- Fatmawati, N., A.K., R., & Kurniati, T. (2019). Analisis Kesulitan Belajar Berdasarkan Gaya Belajar Siswa Kelas X IPA pada Mata Pelajaran Kimia di Mas Al-Mustaqim Arang Limbung. *Ar-Razi Jurnal Ilmiah*, VII(1), 66-67.
- Muntaha, A., Wibowo, T., & Kurniasih, N. (2020). Analisis Kesulitan Siswa Dalam Mengonstruksi Model Matematika Pada Soal Cerita. *MAJU*, VII(2), 53-58.
- Nurajizah, S., & Fitriani, N. (2020). Analisis Kesulitan Peserta Didik dalam Menyelesaikan Soal Cerita pada Pembelajaran Matematika Kelas VII. *Jurnal Maju*, VII(1), 77.
- Nuriza, I., Yusmin, E., & Bistari. (2020). Analisis Kesulitan Siswa Menyelesaikan Soal Cerita Materi Program Linear Berdasarkan Gaya Belajar Siswa SMA. *Jurnal Pendidikan dan Pembelajaran Khatulistiwa*, IX(7). doi:<http://dx.doi.org/10.26418/jppk.v9i7.41198>

- OECD. (n.d). *PISA 2018 Result : Combined Executive Summaries, I, II & III*. OECD Publishing.
- Ratnamutia, S. A., & Pujiastuti, H. (2020). Analisis Kesulitan Siswa SMP dalam Mengidentifikasi dan Menyelesaikan Soal Cerita Persamaan Linear Satu Variabel. *Jurnal Pendidikan dan Ilmu Pengetahuan*, XX(2), 190.
- Rosyida, E. M., Riyadi, & Mardiyana. (2016). Analisis Kesalahan Siswa dalam Pemecahan Masalah Berdasarkan Pendapat John W. Santrock pada Pokok Bahasan Bangun Ruang Sisi Lengkung Ditinjau dari Gaya Belajar dan Gaya Berpikir Siswa. *Jurnal Elektronik Pembelajaran Matematika*, IV(10), 974. Diambil kembali dari <http://jurnal.fkip.uns.ac.id>
- Sari, N. (2021). Analisis Kesulitan Siswa dalam Menyelesaikan Soal Cerita Pokok Bahasan Sistem Koordinat Kartesius Ditinjau dari Gaya Belajar pada Kelas VIII SMP Negeri 33 Makassar. *Jurnal Digilibadmin Unismuh*.
- Sudirman, Cahyono, E., & Kadir. (2018). Analisis Kemampuan Koneksi Matematis Siswa SMP Pesisir Ditinjau Dari Perbedaan Gender. *Jurnal Pembelajaran Berpikir Matematika*, III(2).
- Susanti, E., Andreyanto, F., Faizah, R. S., Indriani, R., & Afifah, N. (2020). Analisis Kesulitan Belajar Matematika Siswa Kelas X Sma N 1 Tenganan Ditinjau Dari Gaya Belajrnya. *ProSANDIKA UNIKAL(Prosding Seminar Nasioanal Pendidikan Matematika Universitas Pekalongan)*, I(1), 351.
- Wassahua, S. (2016). Analisis Gaya Belajar Siswa Terhadap Hasil Belajar Matematika pada Materi Himpunan Siswa Kelas VII SMP Negeri Karang Jaya Kecamatan Namlea Kabupaten Buru. *Jurnal Matematika dan Pembelajarannya*, IV(1), 90-91.  
doi:<http://dx.doi.org/10.33477/mp.v4i1.310>
- Widiantara, K., Sedanayasa, G., & Dibia, I. K. (2013). Pengaruh Model Pembelajaran Kooperatif Tipe Group Investigation (GI) Berbantuan Media Realita Terhadap Hasil Belajar Matematika Siswa Kelas IV SD. *Mimbar PGSD Undiksha*, I(1), 2.  
doi:<https://doi.org/10.23887/jjpgsd.v1i1.734>
- Widyaningrum, A. Z. (2016). Analisis Kesulitan Siswa dalam Mengerjakan Soal Cerita Matematika Materi Aritmatika Sosial Ditinjau dari Gaya Belajar Siswa Keelas VII SMP Negeri 5 Metro Tahun Pelajaran 2015/2016. *Jurnal Iqra' Kajian Ilmu Pendidikan*, I(2).

- 
- Wijayadi, M., Darmono, P. B., & Kurniasih, N. (2021). Kesulitan Siswa Gaya Belajar Kinestetik Dalam Menyelesaikan Soal HOTS. *SAP (Susunan Artikel Pendidikan)*, VI(2).
- Yusmin, E. (2017). Kesulitan Belajar Siswa pada Pelajaran Matematika (Rangkuman Dengan Pendekatan Metaethnography). *Jurnal Visi Ilmu Pendidikan*.