

Analysis of Mathematics Learning Difficulty for Grade XI's Students during Online Study on SPLDV

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ABSTRAK

Penelitian ini bertujuan untuk mendeskripsikan: (1) kesulitan belajar matematika siswa kelas XI SMA N 1 Rowokele pada materi SPLDV menggunakan sistem pembelajaran daring, (2) faktor-faktor yang mempengaruhi kesulitan belajar matematika siswa kelas XI SMA N 1 Rowokele pada materi SPLDV menggunakan sistem pembelajaran daring. Jenis penelitian ini adalah deskriptif kualitatif. Sumber data primer dalam penelitian ini adalah siswa kelas XI SMA N 1 Rowokele. Sumber data sekundernya adalah hasil tes dan hasil wawancara. Teknik pengumpulan data menggunakan observasi dan wawancara. Instrumen penelitian ini adalah lembar soal tes, lembar wawancara, dan media social (Whatsapp). Dalam penelitian ini, peneliti menggunakan uji keabsahan kredibilitas menggunakan triangulasi. Teknik analisis data yang digunakan dalam penelitian ini menggunakan model analisis interaktif Miles and Huberman yang terdiri atas pengumpulan data, reduksi data, penyajian data, dan penarikan kesimpulan. Hasil penelitian ini menunjukkan bahwa, (1) subjek mengalami kesulitan dalam memahami materi SPLDV terutama karena pembelajaran secara daring. Permasalahan subjek berada pada metode penyelesaian yaitu penyusunan model matematika dan perhitungannya. (2) Faktor faktor yang mempengaruhi kesulitan belajar siswa adalah karena kondisi lingkungan tempat subjek berada dan umumnya hal yang sering dialami adalah kesulitan mencari jaringan internet yang lancar, sehingga menghambat subjek dalam mengakses informasi dari sumber-sumber lain. Saran yang di berikan dari pihak sekolah adalah peneliti harus bisa lebih dalam mengendalikan kelas dan juga mempersiapkan instrumen penelitian serta koordinasi tentang jam pembelajaran harus lebih jelas.

Kata Kunci: kesulitan belajar matematika; pembelajaran daring, SPLDV.

ABSTRACT

This study aims to describe: (1) the difficulty of learning mathematics in class XI students of SMA N 1 Rowokele on the SPLDV material using an online learning system, (2) the factors that affect the difficulty of learning mathematics in class XI students of SMA N 1 Rowokele on the SPLDV material using the system. online learning. This type of research is descriptive qualitative. The primary data sources in this study were students of class XI SMA N 1 Rowokele. The secondary data sources are test results and interview results. Data collection techniques using observation and interviews. The research instruments are test question sheets, interview sheets, and social media (Whatsapp). In this study, researchers used the validity of the credibility test using triangulation. The data analysis technique used in this study uses the Miles and Huberman interactive analysis model which consists of data collection, data reduction, data presentation, and drawing conclusions. The results of this study indicate that, (1) the subject has difficulty in understanding the SPLDV material mainly because of online learning. The subject matter is in the method of completion, namely the preparation of mathematical models and calculations. (2) The factors that influence student learning difficulties are due to the environmental conditions in which the subject is located and generally what is often experienced is the difficulty of finding a smooth internet network, thus preventing the subject from accessing information from other sources. The advice given from the school is that researchers should be able to control the class more and also prepare research instruments and the coordination of learning hours should be clearer.

Keywords: difficulty learning mathematics; online learning, SPLDV.

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INTRODUCTION

Mathematics is a branch of science that is taught at every level of education from basic education to higher education. Mathematics is included in the universal science that underlies the development of modern technology and has an important role in various disciplines to advance the power of human thought. According to Sembiring (2020) in the field of mathematics, the goal is to prepare students to face a dynamic world change. Therefore, in learning mathematics, it must be oriented to the development of logical, rational, and critical reasoning abilities and can provide skills in using mathematics in everyday life (Azhimuh, 2021).

According to Bonar (2021) explains that the teaching and learning process is an aspect of an organized school environment with interactions between teachers and students. The environment is supervised so that learning activities are directed and in accordance with educational goals. However, with a condition, online learning is carried out by almost all schools which results in student learning activities cannot be fully supervised and directed at learning objectives (Prawiyogi, 2020).

Online learning is considered not effective enough for students' mathematics learning at the high school level. This is because students are not used to learning independently, are not accustomed to actively collecting information and there are limitations of students in understanding the material (Hadiprasetyo, 2020). In addition, online learning that uses the internet network often has technical problems such as poor signal conditions and internet connection failures, resulting in delays in information reaching students. However, seen from the positive side, online learning methods are more efficient and practical than face-to-face learning, because learning activities can be accessed anywhere and anytime as needed (Alfiyah, 2021).

Based on the preliminary study, namely the analysis of the odd PTS (Middle Semester Assessment) scores at SMA N 1 Rowokele, it was found that there were still many students who had difficulty learning mathematics. This finding is reinforced by data obtained from mathematics teachers who stated that almost 80% of their students experienced a decrease in PTS scores where the percentage of completeness of student learning outcomes in class was not more than 40%. The cause is influenced by several things including students having difficulty in learning, the lack of student motivation to learn mathematics or there are other factors such as learning systems and learning models in the classroom (Fernandes, 2019). However, what is more prominent in this case tends to lead to a learning system that shifts from face-to-face learning to an online learning system (Darimi, 2016). This study

aims to describe the difficulties in learning mathematics and to find out the factors that influence the difficulties in learning mathematics for class XI students of SMA N 1 Rowokele in the SPLDV material using an online learning system.

METHOD

This research use descriptive qualitative approach. The object used in this research is SMA Negeri 1 Rowokele, Kebumen Regency, Central Java. The research subjects were 10 students and 1 teacher of SMA Negeri 1 Rowokele. In this study, data collection techniques used 3 techniques, namely, observation, interviews, and documentation.

In this study, the data analysis technique used Miles and Huberman analysis which consisted of three stages, namely, data reduction (data reduction), data display (presenting data), and conclusion drawing/verification (conclusions) (Sugiyono. 2014). In the data reduction stage, the researcher summarized and focused the results of the interviews on the theme that was carried out. In the data presentation stage, the researcher presents the research results in the form of a table. The last stage of data analysis is drawing conclusions after doing data reduction and data presentation (Nurhikmayati. 2017).

In qualitative research, the validity of the data is needed to prove that whether the research conducted is really a scientific research as well as to test the data obtained. The first stage is the credibility test with triangulation (source triangulation, technical triangulation, and time triangulation), the second stage is Transferability Testing, the third stage is Dependability Testing, the last stage is Confirmability Testing (Waskitoningtyas, 2016).

RESULT AND DISCUSSION

This research was conducted at SMA N 1 Rowokele Kebumen which is located at Jalan Jatijajar KM. 04 Rowowungu Hamlet, Rowokele, Rowokele District, Kebumen Regency, Central Java. The research carried out cannot be separated from various learning tools, so there is a need for supervision and assessment carried out during the research. implementation of research in schools which is divided into three aspects, namely planning of mathematics learning models, implementation of mathematics learning models and assessment of mathematics learning models. These three aspects as a whole achieve a 100% implementation percentage.

The learning process in this study was provided using online methods considering that learning activities during the COVID-19 pandemic did not allow researchers to carry out

research directly. Therefore, researchers use social media and applications that can help researchers interact directly such as zoom meetings and whatsapp.

The first meeting was held on Monday, April 5, 2021 with material introducing the SPLDV concept using social media whatsapp assisted by learning videos via youtube about the introduction of the SPLDV concept. The second meeting was held on Wednesday, April 7, 2021 through zoom with material on determining variable values in a two-variable linear equation system. The third meeting was held on Monday, April 12, 2021. At this meeting a final evaluation was carried out to see the subject's ability to solve problems related to SPLDV. Evaluation activities were carried out using WhatsApp social media. The fourth meeting was held on Wednesday, April 15 and Monday, April 19 2021, which was used for interactive interviews via WhatsApp.

Based on the results of observations during online learning activities, researchers found several things that underlie the emergence of difficulties in the learning process, namely: (1) Subjects tend to be passive during the online learning process; (2) Subjects had problems in finding more information related to the material being taught due to technical problems such as intermittent/unstable cell phone signals; (3) Lack of interest in mathematics; (4) Subjects tend to look for quick methods in working on problems without knowing the basis of the method used.

Based on the results of interviews with the subject revealed that learning using online methods is very difficult to do, especially in learning mathematics. This is based on the recognition of two subjects where learning mathematics will be easier if you meet face-to-face with the teacher (teacher) than online. In addition, the condition of the internet network greatly limits the subject to seek information related to the material provided by the educator. Based on the results of data triangulation, it can be obtained the results of data analysis that the subject still has difficulties in understanding the SPLDV material, especially because of online learning. The basic reason is because of the conditions and environment in which the subject is located and generally what is often experienced is the difficulty of finding a smooth internet network, thus preventing the subject from accessing information from other sources. Based on the results of the research conducted, it shows that there is a difficulty in learning mathematics for class XI students of SMA Negeri 1 Rowokele with online learning methods. This research consists of several processes including determining the subject which is carried out randomly with the help of a mathematics teacher, determining the learning media to be used, compiling learning tools, collecting information, analyzing data from information and drawing conclusions.

The subjects in this study were students of class XI SMA Negeri 1 Rowokele which consisted of 10 students. Subject determination is carried out by the subject teacher on the grounds of better understanding the character and abilities of students. This can make it easier for researchers to be able to conduct research because with an overview of the ability of research students it becomes easier to choose and determine the right research method so that the data collection process becomes more leverage.

The next stage in this research is the determination of the right learning media as a tool in the data collection process. Based on the current learning conditions, which are still in the COVID-19 pandemic and do not allow direct research in the classroom, researchers use social media and interactive learning media such as zoom meetings as research aids. This is based on the high enthusiasm of students in using social media in everyday life.

The next stage is the preparation of learning tools consisting of determining the material, preparing the Learning Implementation Plan (RPP) and evaluation questions. In this study, it was focused on one of the compulsory mathematics materials for class XI, namely SPLDV. For the RPP used In this study, there were two online RPP meetings. The form of delivery of the material used in this study was delivered using several media such as Whatsapp, youtube, and zoom meetings, while the preparation of evaluation questions was related to the research material.

The next step is to collect information or research data. The research data are divided into two categories for analysis. The first data is primary data which consists of the results of interviews and observations. The results of the subject interview were carried out after the researchers conducted an evaluation as a form of follow-up to find out the learning difficulties experienced. As for the observations carried out in learning activities.

Based on the results of interviews with the subject revealed that learning using online methods is very difficult to do, especially in learning mathematics. This is based on the recognition of two subjects where learning mathematics will be easier if you meet face-to-face with the teacher (teacher) than online. In addition, the condition of the internet network greatly limits the subject to seek information related to the material provided by the educator. So it is necessary to review the selection of appropriate media and learning methods so that online learning becomes easier for students to do and follow.

Meanwhile, the results of observations showed that subjects who had learning difficulties showed less activity and enthusiasm in learning study. This can be seen when learning activities take place where the subject tends to be silent and doesn't ask a lot of questions.

The second data is secondary data obtained from the results of the final evaluation carried out. Judging from the learning outcomes on the final evaluation test, it shows that almost all of the subjects have not been able to interpret the information from the questions into the form of mathematical modeling, so that most of the subjects have not been able to provide an appropriate solution to the problem. This can be seen from the answers of the subjects who only wrote down the final results without making mathematical models. In addition, there are still errors in the calculation principle after the subject makes a mathematical model so that the resulting solution from the calculation becomes less precise.

The student's calculation principle error is based on an error in understanding the basic concept of calculation. In this study, it shows that the subject still does not understand the basic operations of algebraic calculations so that the subject has difficulty when there are so many calculation operations in solving mathematical cases on SPLDV material. Therefore, there is a need for improvements in the delivery of algebraic operations learning methods on the previous subject. This is because the subject's ability in algebraic operations must be mature in order to solve SPLDV problems. (Jumal, F. 2014)

There is a difficulty factor in learning mathematics with online learning methods. This learning difficulty factor is in accordance with the opinion of Putra (2020), where the factors that cause learning difficulties found in this study are divided into two factors, namely: 1) Internal factors are things or circumstances that arise from within the subject himself. The internal factors of the subject found in this study are divided into two characteristics, namely: a. Cognitive (the realm of creativity), such as the low intellectual capacity / intelligence of the subject itself, this factor can be seen from the ability of the subject to answer a given problem. b. Effective (sense domain), such as emotional instability and subject attitudes in understanding or receiving learning material, this factor can be seen from the subject's activeness to interact with the teacher during the learning process. This research was conducted through observation. 2) External factors of the subject are things or circumstances that arise from outside the student. Student external factors include all situations and environmental conditions that do not support learning activities subject. In this study, the external factors found include: a. The environment of the association/community, In this case, the researcher concludes that there is an influence from the subject's association in the community that affects the subject's motivation in learning and is shown by the attitude of the subject during learning activities such as lack of focus and tend not to be enthusiastic about learning. b. School environment, In this case, the researcher concludes that there is an influence from online learning conditions. Where this learning process can cause social

jealousy between students who come from different schools. This is due to the different policies of each school so that it can affect the motivation in students to learn. c. Supporting Media Online learning certainly requires the help of a stable internet network. However, not all student residences can access the internet easily. In addition, the use of inappropriate or interesting media can affect students' interest in learning (Husn, 2019).

From the subject's statement regarding the difficulties of online learning, especially in mathematics, it shows that there is a need for innovation in the learning process during the pandemic. It aims to increase the attractiveness of students in learning, so that students can easily understand the material provided (Herliandry, 2020).

The efforts of educators to overcome student learning difficulties in mathematics subjects need preparation and understanding in analyzing student situations and conditions. One of the methods or steps to overcome student learning difficulties can follow the theory of Hasibuan (2018), namely: 1) Analyzing the results of the diagnosis, namely examining the parts of the problem and the relationship between these parts to obtain a correct understanding of the problems of learning difficulties faced by students. 2) Identify and determine specific skill areas that need improvement. 3) Develop a test or improvement program, especially the remedial teaching program (teaching improvement).

CONCLUSION

Based on the results of the research and discussion that have been presented, it can be concluded that the forms of difficulty in learning mathematics for SMAN 1 Rowokele students in the SPLDV material using an online learning system include difficulties in compiling sentences, understanding questions, and converting question sentences into the form of mathematical models in the SPLDV material. Factors that affect the difficulty of learning mathematics for class XI students at SMAN 1 Rowokele on SPLDV material using an online learning system are more influenced by internal and external factors, internal factors are student disinterest in mathematics while external factors include: family, school, media social and environmental.

REFERENCES

Alfiyah, Z, N., Hartatik, S., Nafiah,. Sunanto. 2021. Analisis Kesulitan Belajar Matematika Secara Daring Bagi Siswa Sekolah Dasar. Jurnal Basicedu, 5(5), 3158-3166.

- Azhimuh, A. B, Turmuzi, M, Wahidaturrahmi. 2021. Analisis kesulitan belajar matematika materi sistem persamaan linear dua variabel. *Griya Journal of Mathematics Education and Application*. Vol 1. No. 2
- Bonar, N, Repo, F. M. Calesti, N. 2021. Kesulitan Belajar Matematika Siswa Pada Masa Pandemi Dengan Metode Pembelajaran Jarak Jauh (PJJ). Vol 1 No. 2
- Darimi, I. 2016. Diagnosis kesulitan belajar siswa dalam pembelajaran aktif di sekolah. *JURNAL EDUKASI: Jurnal Bimbingan Konseling*, 2(1), 30-43.
- Fernandes, L., Appulembang, O, D., Winardi, Y. 2019. Hambatan Belajar Matematika Studi Kasus Di Kelas VIII Suatu sekolah disemarang. *JOHME: Journal Of Holistic Mathematics education*, 3(1), 16-31.
- Hadiprasetyo, K, Exacta A P, Maharani, A. 2020. Analisis Kesulitan Belajar Pada Mata Pelajaran Matematika Dengan Pembelajaran Dalam Jaringan (Daring) Selama Masa Darurat Covid-19 Pada Siswa Kelas Viii Smp Negeri 2 Ngadirojo Tahun Ajaran 2019/2020. *Jurnal Pendidikan, Sains Sosial dan Agama*. Vol 6 No.2
- Hasibuan, Eka Khairani. 2018. Analisis Kesulitan Belajar Matematika Siswa Pada Pokok Bahasan Bangun Ruang Sisi Datar di SMP Negeri 12 Bandung. *AXIOM*. Vol 7 No 1
- Herliandry, L, D., Nurhasanah., Suban, M, E., Kuswanto, H. 2020. Pembelajaran Pada Masa Pandemic Covid-19. *Jurnal Teknologi Pendidikan*, 22(1), 65-70.
- Husn, R.A., Rohaeti, E.E., Senjayawati, E. 2019. Analisis Kesulitan Belajar Pada Materi Spldv Siswa Kelas X Smk Bina Insan Bangsa Di Tinjau Dari Segi Kemampuan Komunikasi Matematik. *Journal On education*. Vol 1 No. 2
- Jumal, F. 2014. Analisis Kesulitan Belajar Siswa Dalam Mata Pelajaran Matematika Pada Materi Peluang Kelas Xi Ipa Sma Muhammadiyah Meulaboh Johan Pahlawan. *Jurnal MAJU (Jurnal Pendidikan Matematika)*, 1(1), 18-36
- Nurhikmayati. 2017. Analisis Kesulitan Belajar Matematika Pada Mata Kuliah Matematika Dasa. *The Original Research of Mathematics* 2(1):74–85.
- Prawiyogi, A, G., Purwanugraha, A., Fakhry, G., Firmansyah, M. 2020. Efektifitas Pembelajaran Jarak Jauh Terhadap Pembelajaran Siswa Di Sdit Cendekia Purwakarta. *JPD: Jurnal Pendidikan Dasar*, 11(1), 94-101.
- Putria, H., Maula, L, H., Uswatun, D, A 2020. Analisis Proses Pembelajaran Dalam Jaringan (DARING) Masa Pandemi COVID-19 pada Guru Sekolah Dasar. *Jurnal Basicedu*, 4(4), 861-872.
- Sembiring, D Y, Siregar, R. M R, Sitepu, D R, 2021. Analisis Kesulitan Siswa Dalam Menyelesaikan Soal Cerita Sistem Persamaan Linear Dua Variabel (Spldv) Melalui Pembelajaran Online di Masa Pandemi Kelas X SMK Negeri 2 Binjai. *Jurnal serunai Matematika* Vol 13 No. 1.
- Sugiyono. 2014. *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif, dan R&D*. Bandung Alfabeta.
- Waskitoningtyas, R, S. 2016. Analisis Kesulitan Belajar Matematika Siswa Kelas V Sekolah Dasar Kota Balikpapan Pada Materi Satuan Waktu Tahun Ajaran 2015/2016. *Jurnal Ilmiah Pendidikan Matematika*, 5(2), 24-32.