

Teacher's Perception Of Student's Mathematics Learning Difficulties

Alfiah Nurfadhilah AM. Hindi^{1*}, Isma Muthahharah²

¹Pendidikan Matematika STKIP Pembangunan Indonesia

Email: alfiahnurfadhilah2@gmail.com

²Pendidikan Matematika STKIP Pembangunan Indonesia

Email: muthahharahisma@gmail.com

(Received: 28-10-2021; Reviewed: 2-11-2021; Revised: 15-11-2021; Accepted: 20-11-2021; Published: 20-12-2021)



©2021–Daya matematis: Jurnal inovasi pendidikan matematika. This article open access by licenci CC BY-NC-4.0 (<https://creativecommons.org/licenses/by-nc/4.0/>)

Abstract

Difficulties in learning mathematics can be experienced by students with any level of ability from any circle or group. With the students' learning difficulties in mathematics, the question arises why this can happen and as educators, what is the teacher's perception of learning difficulties in mathematics. The purpose of this study was to describe Teacher's Perception of Students' Mathematics Learning Difficulties. This research used a descriptive qualitative approach with non-test data collection techniques through questionnaires and interviews. The results showed that: (i) the mathematics teacher's perception of the dominant causes of learning difficulties revealed psychological causes, including low interest or motivation and understanding of basic concepts as the cause of students' mathematics learning difficulties; (ii) the mathematics teacher's perception of the symptoms that are indicators of learning difficulties in mathematics, the most widely disclosed is the low ability of students to complete the tasks given by the teacher; (iii) the teacher's perception of the method used to investigate the existence of difficulties in learning mathematics, the most commonly done is through observation, interviews and documentation by looking at the results of tests or assignments of each student; (iv) the teacher's perception of examples of difficulties experienced by students in learning mathematics, which is widely revealed in the competency standard for understanding the properties of arithmetic operations and their use in problem solving being taught; and (v) teachers' perceptions of the efforts made to overcome students' mathematics learning difficulties vary according to their respective experiences. There are only a few teachers who do group guidance and individual guidance.

Keywords: Teacher Perception; Learning Difficulties

INTRODUCTION

Mathematics plays an important role in education, therefore improving the quality of education is carried out continuously, especially mathematics education. Given the importance of mathematics in learning at various levels of formal education, it is necessary to pay serious attention so that students' achievement in learning mathematics is as expected. In mathematics learning activities in schools, teachers are faced with diverse student characteristics. There are students who can carry out their learning activities smoothly and successfully without experiencing difficulties, but on the other hand, there are not a few students who actually experience various difficulties in learning. Students' learning difficulties are indicated by the existence of certain obstacles to achieving learning outcomes, and can be psychological, sociological, or physiological, so that in the end it can cause their learning achievements to be below what they should be (Ayele, 2016). Students who have difficulty in learning mathematics do not mean they are unable to learn, but have certain difficulties that make them unprepared to learn. Students have difficulty at all levels of education understanding the mathematical concepts being taught.

In general, learning difficulties are not experienced only by students with below average abilities or who are known to have real learning difficulties, but can be experienced by students with any level of ability from any circle or group (Wijaya, et al., 2019). In particular, the reality on the ground shows that students often have difficulty solving mathematical problems. The difficulties experienced by students both in learning and during the process of solving mathematical problems allow students to make mistakes in solving math problems. Soedjadi said that difficulties were the cause of errors (Sugiarti & Retnawati, 2019). A lot of research has been done for error analysis in solving mathematical problems. The treatment of errors in mathematics classes is starting to receive attention, with many researchers suggesting that errors should be used as a starting point for investigating the difficulties experienced by students in learning mathematics (Schleppenbach, et al., 2007). From this statement, it can be seen that a lot has been done to diagnose errors and difficulties experienced by students in learning mathematics. For this reason, research is also needed on the causes of students' learning difficulties in mathematics, which specifically consists of three main causes, namely epistemological, psychological, and pedagogical.

Difficulties in learning mathematics also occur in high school students. This is based on information from several mathematics teachers who have been interviewed previously. With students learning mathematics difficulties, questions arise as to why this can happen and as educators, what is the teacher's perception of learning difficulties in mathematics, including the causes of students' learning difficulties in mathematics, symptoms that are indicators of difficulties in learning mathematics, how to investigate difficulties in learning mathematics, examples of difficulties faced by students in learning mathematics, and the efforts made to overcome students' difficulties in learning mathematics. As educators of the nation's young generation, teachers are obliged to seek and find learning problems faced by students (Preciado, et al., 2016). The unique position of the teacher in front of the community, with the various attentions given to the teacher, demands a competence that is greater than in other professions. For that reason, the professionalism of the teacher needs to be improved. Based on the explanation above, the authors are interested in conducting research with the title "Teachers' Perceptions of Students' Mathematics Learning Difficulties".

Based on the above background, the purpose of this study is to describe the teacher's perception of students' mathematics learning difficulties. Thus, it is necessary for teachers to understand students' mathematics learning difficulties in order to pay attention to the selection of appropriate learning methods for learning mathematics, including the use of a fun learning approach so as to increase students' interest and motivation in learning mathematics.

RESEARCH METHODS

This study is a qualitative descriptive study that aims to describe mathematics teachers' perceptions of students' learning difficulties. The location of this research will be carried out at public high schools in Makassar for the academic year 2021/2022 odd semester. The subjects in this study will be selected by several mathematics teachers and are willing to be subjects in this study. The instruments used are questionnaires and interview guidelines.

Data analysis in this research was carried out at the time the data collection took place, and after completing data collection within a certain period. Analyses were carried out on each of the test questions they were working on. If the answer to the interviewee after being analyzed is considered unsatisfactory, the researcher will continue the question again until a certain stage in order to obtain data that is considered saturated. The data obtained was analyzed descriptively. According to Miles, et al. (2014) stated that the activities in qualitative data analysis were carried out interactively and continued to completion, so that the data was saturated. The steps in data analysis are: (1) data condensation, (2) data presentation (data display), and (3) drawing conclusions.

RESULTS AND DISCUSSIONS

Results

This section will describe the results of research and discussion of teachers' perceptions of students' mathematics learning difficulties. The data from this study was obtained from the results of giving

questionnaires and interviews with several high school mathematics teachers in Makassar City as subjects. Next, each subject was coded R1-R20. The results of the analysis of the subject's response to the questionnaire for each focus of this research are as follows:

1. The teacher's perception of the causes of students' mathematics learning difficulties

The results of the questionnaire were analyzed based on categories of causes of student learning difficulties, namely epistemological causes, psychological causes, pedagogical causes and other causes. From the research shows that the teacher considers the psychological causes of students' difficulties in learning mathematics are that there are 8 subjects who respond to a lack of initial/basic knowledge from students, especially multiplication and division, there are 5 subjects who respond to students' low interest and motivation, and there are 2 subjects who respond to the lack of understanding of the concepts possessed by students.

The results of the analysis data it shows that the pedagogical causes of students' difficulties in learning mathematics are that there are several sub-categories that the subject gave to the questionnaire. This means that students' difficulties in learning mathematics tend to be caused by students' pedagogical abilities. The results of the analysis related to other causes of students' difficulties in learning mathematics were not found in the results of the questionnaires that had been filled out by the existing subjects. In this case, the researcher continued to collect data by conducting interviews with one of the subjects who were willing to answer several questions at the time of the interview. Excerpts from the interview with Subject R2 are as follows:

- P : What is your opinion regarding the condition and economic level of the student's family? Does it affect students' mathematics learning difficulties?
R2 : It's influential.
P : Sorry mom, what kind of effect?
R2 : If the economic level of the student's family is low, it could be Impeded students can learn with the support of learning facilities.

The results of the interview above show that R2 mentions that it is included in the category of other causes of students' difficulties in learning mathematics. Based on the results of the research that has been analyzed above along with interviews, it can be concluded that students' difficulties in learning mathematics can be caused by epistemological causes, psychological causes, pedagogical causes and other causes.

2. Teachers' perceptions of the symptoms that are indicators of students' learning difficulties in mathematics

From the result data analysis shows that the teacher's perception, which is an indicator of the difficulties experienced by students in learning mathematics, is that they are slow in doing assignments, show an unnatural attitude, and have low learning achievement. From the teacher's answers to the open questionnaire, there is not a single answer that the researcher can put into the symptoms that the learning achievement achieved by students is not balanced with the efforts made and always achieves high learning, but at other times it decreases drastically, as the theory that is the main reference in this study suggests.

3. Teachers' perceptions of how to investigate students' mathematics learning difficulties

The results of the analysis of the teacher's answers on how to investigate the existence of students' mathematics learning difficulties can be shows that, in general, teachers investigate difficulties in learning mathematics by means of documentation, such as analyzing test results or assignments that have been given to students. Some teachers conduct interviews and observations such as student activities in class to investigate the difficulties in learning mathematics experienced by students. From the answers of all the teachers who were the subjects in this study, none of them revealed a diagnostic test as a way to investigate the difficulties in learning mathematics experienced by students.

4. Teachers' perceptions of examples of difficulties experienced by students in learning mathematics

The results of the analysis of the teacher's answers regarding examples of difficulties experienced by students in learning mathematics in Class VII SMP can be shows that there are several standards that are not disclosed by the teacher in providing examples of the difficulties experienced by students in learning mathematics. The learning difficulties experienced by students are the lack of understanding of basic concepts, both basic integer and algebraic operations. In addition, students' mathematics learning difficulties also occur if students are given story questions that are less able to be solved because students do not understand the meaning of the story questions. In this case, the researchers continued to ask questions to subjects who were willing to give responses related to examples of students' difficulties in learning mathematics. The excerpts from interviews conducted with R16 are as follows:

P : What is your opinion if students are given practice in the form of story questions?

R16 : Sometimes some students are not able to solve the questions given if they are in the form of story questions. Generally, students are not able to model the story problems.

This is due to the lack of understanding of students' concepts so that they are unable to understand the meaning of the story questions given.

5. Teachers' perceptions of the efforts made to overcome the difficulties experienced by students in learning mathematics

The results of the analysis of the teacher's answers regarding the efforts made to overcome the difficulties experienced by students in learning mathematics can be shows that mathematics teachers provide very diverse answers regarding the efforts made to overcome students' learning difficulties in mathematics according to their respective experiences. Of the three ways that become the main reference in analyzing teacher answers, it appears that there are only a few teachers who overcome students' mathematics learning difficulties through group guidance, individual guidance, and remedial. The diversity of methods used by teachers is caused by the differences in the difficulties experienced by students in learning mathematics.

Discussion

1. Teachers' Perceptions Regarding the Causes of Students' Mathematics Learning Difficulties

The data presented in the research results are related to the psychological causes of the mathematics teacher's perception that low interest or motivation is the cause of students' learning difficulties in mathematics. Based on the narratives of several teachers during interviews, information was found that one of the causes of the low interest or motivation of students in learning mathematics is the existence of a complete learning system, so that students seem to feel no need to learn because in the end students will reach the criteria of completeness set by the school. . In addition, one of the teachers also revealed that the school's policies had a negative impact, such as the ease with which answer keys circulated during exams as the cause of students' low interest or motivation in learning mathematics.

From the results of the questionnaire, it was found that only a small number of teachers revealed epistemological causes as the cause of learning difficulties in mathematics. This is a rebuttal to the sources of categories cited in this study, that if the abstract nature of mathematical concepts is considered as the cause of difficulty in learning mathematics, then it is certain that mathematics will always be difficult to learn. Meanwhile, the material taught at every level of formal education has been analyzed by experts from the National Education Standards Agency (BSNP) in the preparation of Competency Standards, Basic Competencies, and Indicators that will be taught every semester in all subjects, including mathematics. Although epistemological causes are the causes that are least revealed by teachers in this study, epistemological causes are still a cause of learning difficulties in mathematics. This is supported by the opinion of Cockcroft (Sholohah, 2017) which states that: "mathematics is a difficult subject both to teach and to learn". The reasons Cockcroft expresses this opinion are: (a) mathematics is a very hierarchical subject, so that almost every material taught will be a prerequisite for the next material, and that means if a prerequisite material is not understood, then a

student will have difficulty understanding the next material; and (b) the varying speed of students or students in understanding the material or concepts taught by the teacher. One of the reasons is in line with the information revealed by some teachers, such as too many mathematical formulas that must be known, very broad and complicated concepts, and in solving problems using many operations.

The category of pedagogical causes illustrates that the lack of availability and utilization of student learning facilities is one of the causes of students' learning difficulties in mathematics. In addition, the cause of learning difficulties revealed by the teacher is because the teacher is the only source of information for students. Although in general, the assumption is that teachers believe that students are the main cause of learning difficulties in mathematics, assigning blame entirely to students is also not true. The role of the teacher as a source of problems in learning also cannot be ignored. Furthermore, an analysis of the teacher's answers for other categories of causes, outside of the three main categories (epistemological, psychological, and pedagogical causes) illustrates that the family's economic condition and the education level of students' parents are one of the causes of learning difficulties in mathematics based on the perception of mathematics teachers.

The results showed that teachers tend to impose the majority of the causes of mathematics learning difficulties on students and pay less attention to other causes. It is very possible that the teacher deliberately denied other factors or was less aware of them. There are differences in the perceptions of each teacher regarding the causes of learning difficulties in mathematics. These are caused by several things, including differences in teacher knowledge and understanding.

2. The Teacher's Perception of Symptoms of Mathematical Learning Difficulties in Students

The results of giving questionnaires and perception-based interviews after being given a questionnaire, it can be explained that the symptoms that are indicators of students' learning difficulties in mathematics that are mostly revealed by teachers in this study are slow in doing assignments, showing inappropriate attitudes, and poor learning achievement. low. Furthermore, from the teacher's answers both on the open questionnaire and at the time of the interview, there was not a single teacher's answer that researchers could include in the symptoms of learning achievement achieved by students that was not balanced with the efforts made and always had high learning achievements, but at other times decreased drastically as the theory suggested. This has become the main reference in this research. The results showed that there were several symptoms expressed by the teacher that were different from the theory that became the reference.

3. A Teacher's Perception on How to Investigate Students' Difficulties in Learning Mathematics

Based on the analysis of the teacher's answers to the questionnaire and perception-based interviews after being given an open questionnaire, it can be explained that the most common way used by teachers to investigate the difficulties in learning mathematics experienced by students is by means of documentation, including by looking at the results of tests or assignments of each student. The test results referred to by the teacher are the results of giving quizzes, daily tests, mid-term exams and semester exams and the tasks referred to by the teacher are exercises in the learning process and homework. There are several teachers who conduct interviews to investigate the existence of students' learning difficulties in mathematics, including conducting interviews with students who have learning difficulties and through home visits conducted by guidance and counseling teachers with homeroom teachers. In addition, there are also several teachers who make observations such as observing student activities in class and performance on the blackboard. From the teacher's answers to the questionnaire and the results of searches through interviews, all teachers stated that they had never done a diagnostic test to specifically investigate students' learning difficulties in mathematics.

4. The Teacher's Perception of Examples of Students' Difficulties in Learning Mathematics

Based on the analysis of the teacher's answers to the questionnaire and perception-based interviews after being given an open questionnaire, it can be explained that the teacher generally states that students have difficulty in learning mathematics in all the materials taught, both difficulties in understanding concepts, difficulties in solving story problems which are characterized by difficulty in translating in mathematical sentences. and difficulty in solving problem solving problems.

Furthermore, the material that is widely revealed by teachers as examples of difficulties in learning mathematics is in the standard of competence in understanding the properties of arithmetic operations and their use in problem solving and algebraic operations.

5. The Teacher's View of Efforts Made to Help Students Overcome Math Learning Difficulties

From the results of giving questionnaires and interviews based on perceptions, it can be seen that the efforts made by many teachers to overcome the difficulties in learning mathematics of students are very diverse. There are only a few teachers who do group guidance by applying peer guidance and providing group tutoring. In addition, there are several teachers who provide individual guidance to overcome students' learning difficulties in mathematics, including by paying special attention to solving problems. From the teacher's answers, not much was revealed about the implementation of remedial as an effort to overcome the difficulties of students' learning mathematics. There are differences in teacher perceptions regarding the efforts made to overcome the difficulties in learning mathematics of students according to the experience of each teacher.

CONCLUSIONS

1. The perception of mathematics teachers regarding the dominant causes of learning difficulties reveals psychological causes, including low interest or motivation as the cause of students' mathematics learning difficulties. Mathematics teachers' perceptions of the causes of students' mathematics learning difficulties are basically different from one another.
2. The mathematics teacher's perception of the symptoms that are indicators of learning difficulties in mathematics that is most widely revealed is the low ability of students to complete the tasks given by the teacher. Furthermore, students showed an unnatural attitude and low mathematics learning achievement achieved by students.
3. The teacher's perception of the method used to investigate the existence of learning difficulties in mathematics, which is most commonly done is through documentation by looking at the results of tests or assignments of each student. The teacher also revealed that the method used to investigate the existence of students' learning difficulties in mathematics was interviews, including conducting interviews with students who had learning difficulties.
4. The teacher's perception of examples of difficulties experienced by students in learning mathematics which is widely revealed is in the standard of competence in understanding the properties of arithmetic operations and their use in problem solving.
5. Teachers' perceptions of the efforts made to overcome students' mathematics learning difficulties are very diverse. There are only a few teachers who do group guidance by applying peer guidance and providing group tutoring.

REFERENCES

- Ayele, M. A. (2016). Mathematics teachers' perceptions on enhancing students' creativity in mathematics. *International Electronic Journal of Mathematics Education*, 11(10), 3521-3536.
- Bingolbali, E., Akkoç, H., Ozmantar, M. F., & Demir, S. (2011). Pre-service and in-service teachers' views of the sources of students' mathematical difficulties. *International Electronic Journal of Mathematics Education*, 6(1), 40-59.
- Cahyono, Y. (2010). Upaya Mengatasi Kesulitan Belajar Matematika Melalui Pendekatan Pembelajaran Aktif Inovatif Kreatif Efektif Dan Menyenangkan (PAIKEM) Pada Siswa Kelas VII SMP Negeri 2 Gemolong (PTK Pembelajaran Matematika di Kelas VII SMP Negeri 2 Gemolong) (Doctoral dissertation, Universitas Muhammadiyah Surakarta).
- Lembang, S. T. (2015). Deskripsi Tingkat Kesesuaian Persepsi Guru dan Pengalaman Siswa Tentang Penyebab Kesulitan Belajar Matematika Pada Kelas X SMA Negeri Kota Rantepao. *Jurnal Keguruan dan Ilmu Pendidikan*, 4(1), 787-798.
- Mahrus, A. (2013). Mengatasi Kesulitan Belajar melalui Klinik Pembelajaran (Studi Analisis pada Mata Pelajaran Fisika). *KONSELING RELIGI: Jurnal Bimbingan Konseling Islam*, 4(2), 263-294.
- Miles, Mathew B, et al.. (2014). *Qualitative Data Analysis: A Methods Sourcebook*. Arizona State University. Third Edition, SAGE Publication, ISBN 978-1-4522-5787.

- Nasional, D. P. (2019). Kamus besar bahasa Indonesia.
- Parsons, S. A., Hutchison, A. C., Hall, L. A., Parsons, A. W., Ives, S. T., & Leggett, A. B. (2019). US teachers' perceptions of online professional development. *Teaching and Teacher Education: An International Journal of Research and Studies*, 82(1), 33-42.
- Preciado-Babb, A. P., Aljarrah, A., Sabbaghan, S., Metz, M., Pinchbeck, G., & Davis, B. (2016). Teachers' perceived difficulties for creating mathematical extensions at the border of students' discernments. In *Proceedings of the 38th annual meeting of the North American chapter of the International Group for the Psychology of Mathematics Education* (pp. 514-517).
- Schleppenbach, M., Flevaris, L. M., Sims, L. M., & Perry, M. (2007). Teachers' responses to student mistakes in Chinese and US mathematics classrooms. *The elementary school journal*, 108(2), 131-147.
- Sholihah, S. Z., & Afriansyah, E. A. (2017). Analisis kesulitan siswa dalam proses pemecahan masalah geometri berdasarkan tahapan berpikir Van Hiele. *Mosharafa: Jurnal Pendidikan Matematika*, 6(2), 287-298.
- Slameto, B., & yang Mempengaruhinya, F. F. (2011). Edisi Revisi. Jakarta: Rineka Cipta.
- Sugiarti, L., & Retnawati, H. (2019, October). Analysis of student difficulties on algebra problem solving in junior high school. In *Journal of Physics: Conference Series* (Vol. 1320, No. 1, p. 012103). IOP Publishing.
- Wijaya, A., Retnawati, H., Setyaningrum, W., & Aoyama, K. (2019). Diagnosing Students' Learning Difficulties in the Eyes of Indonesian Mathematics Teachers. *Journal on Mathematics Education*, 10(3), 357-364.
- Yeni, E. M. (2017). Kesulitan belajar matematika di sekolah dasar. *Jurnal Pendidikan Dasar (JUPENDAS)*, 2(2).