

LEARNING STRATEGIES FOR STUDENTS WITH DIFFICULTY LEARNING MATHEMATICS (DISCALCULIA) IN CLASS XI

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ABSTRACT

This study aims to describe the learning strategies in learning approaches and learning methods and the impact of using these learning strategies for dyscalculia students in class XI of State Special Need School (SLBN) Tamanwinangun Kebumen in the 2018/2019 academic year. The subject of this study was a student of class XI Sate Special School (SLBN) Tamanwinangun Kebumen in the 2018/2019 academic year with the source of research data, namely a classroom teacher. This research's object is the mathematics learning strategy for students having difficulty learning mathematics (dyscalculia). Data collection techniques in the form of observation, interviews, tests, and documentation. The data analysis used an interactive model from Miles and Huberman, which describes conditions or phenomena as they are. The research conducted by researchers used a qualitative approach with a study design at SLBN Tamanwinangun Kebumen. The results showed that the teacher's learning strategies for dyscalculia consisted of learning approaches and methods. The learning approach includes a contextual approach, and an individual approach with an approach suitable for students is a contextual approach. The learning methods used include the lecture method, the question and answer method, the assignment method, and the visual method. The appropriate learning method for students is the visual method. The application of learning strategies in the form of approaches and methods used by the teacher in overcoming student dyscalculia impacts learning mathematics. This impact can be seen from the cognitive aspects of the students with dyscalculia, including memory, understanding, application, analysis, evaluation.

Keywords: Learning Strategies, Learning Approaches, Learning Methods, Dyscalculia

INTRODUCTION

Education is all learning experiences that take place in all environments and throughout life. Education is all life situations that affect individual growth (Mudyahardjo Redja, 2001: 3). There are various kinds of knowledge in education, one of which is mathematics. Abdurahman, Mulyono (2003: 253) states that mathematics is a field of study studied by all students from elementary to high school and universities. There are many reasons for the need for students to study mathematics. The National Research Council (1989: 1) argues that mathematics is an essential science with the following statement: Mathematics is the key opportunity. Mathematics is no longer just the language of science but also contributes directly and fundamentally to business, finance, health, and defense. However, the average person finds maths difficult to understand.

AM Mukhlisah (2015: 119) argues that in reality, mathematics is often the most feared subject in schools. According to Purwanto Sigit (2018: 122), the specter of complicated mathematics is not only felt by students but also by parents. Parents who have difficulty guiding their children to learn mathematics are not only because of their limited knowledge. According to Ahdiyati Maman et al. (2017: 176), education is one of the human needs that must reach all community citizens without exception, including children with learning difficulties or learning disorders. In connection with learning disorders in students, there are known learning disorders or disabilities, such as learning disorders or reading disabilities (dyslexia), writing disorders or disabilities (dysgraphia), and mathematical disorders or disabilities (dyscalculia).

According to Budi Azhari (2017: 61), the issue of learning disorders is not only an issue in our country but is an issue of education throughout the world, including developed countries such as the UK, especially the case of dyscalculia. Agustin Mubair (2011: 46) stated that in 1991, Dr. Karyadi Semarang

diagnosed 659 people with learning difficulties. The results showed that 18.6% experienced dysgraphia, dyslexia, and dyscalculia. Geary in Budi Azhari (2017: 61) argues that learning disorders are one of the problems that are often found in students. This problem can arise at school and outside of school with a 5% and 8% probability of school-age children experiencing dyscalculia learning disorders.

According to Suharmini Tin (2005: 76), children who experience learning disabilities in mathematics need to receive appropriate treatment so that their learning achievement and development can be optimal. The handling needed is the appropriate service, namely the learning strategy used by educators, according to Wena Made (2009 :), the strategy is very important because it makes it easier for students with dyscalculia to learn to get maximum results. Apart from educators, handling is also obtained from schools, places for dyscalculia students to study. Many think that children with dyscalculia should not be sent to special schools. However, because mathematics is an important science to inclusive schools, special schools are preferred as a solution for most parents because they are considered more appropriate. In this study, researchers chose to research in Kebumen because statistically, Kebumen is the second-lowest district in Central Java but has a budgetary bias towards inclusion.

Based on pre-research interviews with classroom teachers, it was found that the dyscalculia students studied with other students with several categories or particular needs and received special treatment in mathematics learning. Dyscalculia students have their material because they adjust to their abilities. Students with dyscalculia experience changes in achievement, which are relatively low, so that they often experience difficulties in learning mathematics. Students still do not understand how to do addition and subtraction as well as multiplication and division. Students experience psychological problems during mathematics learning hours, such as always getting angry and crying if they cannot work on the questions given.

From the description above, the researcher was interested in conducting a study entitled Mathematics Learning Strategies for Students with Mathematics Learning Difficulties (Dyscalculia) in Class XI SLB Negeri Tamanwinangun Kebumen for the 2018/2019 academic year, which aims to describe the learning strategies used by teachers to overcome students having difficulty learning mathematics (dyscalculia) and the impact of using these learning strategies for students with dyscalculia.

METHODS

This type of research is a descriptive study with a qualitative approach. This research has difficulty learning mathematics (dyscalculia) with a class teacher's data source. This research's object is the mathematics learning strategy for students having difficulty learning mathematics (dyscalculia). Data collection methods used were (1) Observation, (2) Interview, (3) Test, (4) Documentation. The research instruments used were (1) the observation sheet to determine the learning approach and learning methods used by the classroom teacher for dyscalculia students through classroom learning, (2) the interview sheet to determine the learning approach and learning methods used based on classroom teachers and students with dyscalculia, (3) Test sheets to determine the impact of the use of learning strategies that are used based on the results of the student's dyscalculia, (4) Documentation to check data that has been obtained through observation, interviews, and tests as well as complementary data in the form of documentation. The data analysis used is an interactive model from Miles and Huberman that describes conditions or phenomena as they are.

RESULTS AND DISCUSSION

The observations and interviews show that the classroom teacher's learning approach in overcoming student dyscalculia consists of 2 learning approaches: the contextual and individual approaches. The class teacher uses a contextual approach to instill a conceptual understanding that links the material with the real world (everyday life). The contextual approach is expected to make students able to connect and apply competency learning outcomes in everyday life. Simultaneously, the individual approach is used by classroom teachers to monitor students in understanding the material that has been taught and motivate students to be enthusiastic about learning mathematics. The individual approach is

expected to enable students to improve their achievement. Of the two approaches, the most appropriate approach in dealing with dyscalculia is the contextual approach because it makes students understand more about the material with things they usually do in everyday life.

In addition to the learning approach, the observations' results also showed that the class teacher's learning methods in overcoming students with dyscalculia consisted of 4 learning methods: the lecture method, the question, and answer method, and the assignment and the visual method. The lecture method helps students focus when the material is delivered, and the teacher can shorten the material more. The question and answer method aim to aim students' memory dyscalculia related to the material taught at that time and before. The method of giving assignments is used to aim that students with dyscalculia get used to learning mathematics. This method is expected to make students answer more questions correctly because the more students work on the questions, the more students will answer the questions correctly. The visual method is used to build the concept of thinking to help students understand the material easily so that students cannot only imagine but also experience themselves from each material being taught. Of the four learning methods, the most appropriate method in dealing with dyscalculia students is the visual method because students can better understand the material by seeing real objects presented directly or with existing pictures. Table 1 shows the analysis.

Table 1. Results of Learning Strategy Analysis

No.	Learning strategies	Results obtained	The most suitable strategy
1.	Learning approaches	Individual Approach	Contextual Approach
		Contextual Approach	
2.	Learning methods	Lecture method	The most suitable strategy
		Question and answer method	
		Assignment Method	
		Visual Method	

Students' strategy with dyscalculia is a strategy that suits the students' needs because students' understanding of dyscalculia is classified as low, so students need a learning approach that emphasizes more on daily life and learning methods present real objects so that students experience it themselves. Learning approaches and methods that are considered suitable for dyscalculia students are contextual approaches and visual methods. The results of observations, interviews, and written tests that were carried out showed that the use of learning strategies in the form of learning approaches and learning methods described above impacted or changed students' cognitive aspects with dyscalculia. Cognitive aspects include the realm of memory, where students with dyscalculia are still classified as low in remembering. Based on students with dyscalculia tests, they are still wrong in the basic calculation process, namely simple addition and subtraction operations. The realm of understanding is where students still need a long time to understand the teacher's material, and based on the tests conducted, and students write numbers with incorrect place values. In the realm of application, where students still need guidance in completing assignments given by the class teacher and based on tests conducted, students have difficulty distinguishing symbols and determining place values. The analysis realm based on observations, interviews, and tests conducted by students still needs guidance in distinguishing addition and subtraction sentences in-story questions. The realm of evaluating is where students have not been able to link and unify the knowledge taught so that it becomes a new pattern, and based on tests conducted, and students still make the same mistakes when given the same or the same questions.

CONCLUSION

Based on the results of the research and discussion of this study, it can be concluded that the learning strategy in the form of learning approaches and methods used by classroom teachers for students with dyscalculia consists of 2 learning approaches and four learning methods. The learning approach consists of a contextual approach and an individual approach with an approach that is considered suitable for students with dyscalculia is a contextual approach. The learning method consists of the lecture method,

the question and answer method, the assignment method, and the visual method. The method that is considered suitable for students with dyscalculia is the visual method. The application of learning strategies impacts students' cognitive aspects, consisting of memory, understanding, application, analysis, and evaluation.

REFERENCES

- Abdurrahman, Mulyono. 2003. Pendidikan Bagi Anak Berkesulitan Belajar. Jakarta: Pusat Perbukuan Departemen Pendidikan & Kebudayaan dan Rineka Cipta.
- Agustin, Mubiar. 2011. Permasalahan Belajar dan Inovasi Pembelajaran: Panduan untuk Guru, Konselor, Psikolog, Orangtua, dan Tenaga Kependidikan. Bandung: PT Refika Aditama.
- Ahdiyat, Maman, dkk. 2017. Model Pembelajaran Inklusif untuk Anak yang Mengalami Kesulitan Belajar. *Jurnal Kependidikan Islam* Vol. 6 No. 2.
- AM Mukhlisah. 2015. Pengembangan Kognitif Jean Piaget dan Peningkatan Belajar Anak Diskalkulia. *Jurnal Kependidikan Islam* Vol 6 No.2.
- Azhari, Budi. 2017. Identifikasi Gangguan Belajar Dyscalculia pada Siswa Madrasah Ibtidaiyah. *Al Khawarizmi: Jurnal Pendidikan dan Pembelajaran* Vol 1 No. 1.
- Mudyahardjo, Redja. 2001. Pengantar Pendidikan. Jakarta: PT. RajaGrafindo Persada
- National Research Council. 1989. Everybody Counts. A Report to the Nation on the Future of Mathematics Education. Washington, DC: National Academy Press.
- Purwanto, Sigit E. 2018. Pendampingan Orangtua Membimbing Matematika Anak di Jatiluhur, Jatiadih, Kota Bekasi. *Jurnal SOLMA* Vol. 7 No.1, 120-126
- Suharmini, Tin. 2005. Aspek-Aspek Psikologis Anak Dyscalculia. *Jurnal Pendidikan Khusus* Vol.1 No. 2
- Wena, Made. 2009. Strategi Pembelajaran Inovatif Kontemporer. Jakarta: PT Bumi Aksara.