

# Approaches for Enhancing Mathematics Learning of Students with Learning Difficulties

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## **Abstract**

Mathematics, commonly taken as a complicated subject, has been further challenging for students with learning difficulties. Learning difficulties are the difficulties of learners acquiring the knowledge and skills to the average level expected of those of the same age, primarily because of mental disability or cognitive disorder. Effective teaching approaches are required to meet the needs of diverse students in enhancing mathematics learning. This paper explores the approaches for enhancing mathematics learning for students with learning difficulties. The armchair research adopts document study or library study to explore the techniques to enhance students' mathematics learning with learning difficulties. The findings showed students' perception of the learning of mathematics greatly affects students' motivation to engage in learning mathematics and achievement. The positive perception of students encourages them for effective learning. Some of the approaches to enhance mathematics learning for students with learning difficulties include: giving praise at the appropriate time; developing problem-solving abilities; guiding to identify the reasons other than personal factors; finding the reasons for lacking effort in the subject, providing opportunities for students to showcase their abilities in the classroom; encouraging and supervising learning habits and analyzing the attributions of success and failure after each exam. These approaches are useful to enhance the learning of students with learning difficulties in our classroom situation, and they become helpful to the teachers.

## **Introduction**

Many students in school struggle to understand, investigate, generalize, acquire math skills, solve problems, and apply math to the mathematics indifferent situations. The evidence can be seen in students' fear, and the Secondary Education Examination (SEE) results in mathematics. Many of the students have no interest in mathematics study (Research Centre for Educational Innovations and Development [CERID], 1999). The reason behind this tragic situation in mathematics could be because of content issues in curriculum, evaluation system and classroom instruction. CERID (1999) found that the average score of grade eight students in Mathematics is 28.87, which is less than Science (29.62), English (34.29) and Nepali (68.80). This shows that students score poor in mathematics. They have learning difficulties, or there is a teaching difficulty with teachers harmonizing their teaching to students' learning strategies.

Learning difficulties are the difficulties of learners in acquiring the knowledge and skills

to the normal level expected of those of the same age, mainly because of mental disability or cognitive disorder (Learning Difficulties,n.d.). A National Assessment of Students' Achievement in Mathematics and Nepali for Grade 5 conducted by the Education Review Office (ERO, 2019) explored those students who obtained support in their study from home and extra tutorial support outside school achieved better in mathematics. Furthermore, Park (2001) mentions that teachers could address the learning needs of all students with various learning opportunities, providing the picture that mathematics classes generally consist of diverse learners. Hence, effective teaching approaches are required to meet the needs of diverse students in enhancing mathematics learning. Panthi and Belbase (2017) have highlighted the problem of dealing with poor students and untrained and unprepared teachers, leading to students' poor performance. For effective learning, there should be a match between teaching styles/strategies and learning strategies (Khanal, 2011, 2015).

All the above facts present the teachers' role seems to be extensive in adding up to students learning of mathematics which ultimately contributes to the nation's development. Understanding students' learning difficulties in relation to their learning strategies and timely feedback plays an important role in promoting learning. Many research works have been conducted on "learning difficulties" (Qian, 1996). It is important for students to work hard, use effective learning skills, and have good analytical thinking skills in order to perform well in mathematics classes. However, there are many other factors that can lead the students having difficulties with mathematics classes. For instance, students with poor performance may fail in mathematics, being unable to make sense of mathematics learning. There are different types of learning difficulties in mathematics in high schools in Nepal. To improve their learning, it is, therefore, necessary to use appropriate approaches.

### **Methods of Helping Students with Learning Difficulties**

Slavin (2003) addresses four accommodating common standards for supporting students' with an inclination to acknowledge failure: (1) Complement the positive: get it the student's qualities and utilize these to create their certainty; (2) eliminate the negative: deal with the student's shortcomings thoughtfully and conversation to the student and develop a plan to improve learning; (3) go from the familiar to the new, utilizing advanced organizers or guided discovery; and (4) make challenges in which students effectively create issues and solve them utilizing information. The National Research Council (2001) focuses on the standards for helping students with learning difficulties: (1) Learning with understanding includes interfacing and organizing knowledge; (2) Learning builds on what children now know, and (3) Formal school instruction needs to take advantage of children's casual ordinary information of mathematics.

### **Reasons for Students' Poor Performance in Mathematics**

Students' experience in learning mathematics led to an apparently negative trend in learning based on their personal circumstances. A possible reason for their unsatisfactory results in learning mathematics is their learning skills not being suitable for learning mathematics. Furthermore, low-performing students relied on recalling specific outcomes and concrete approaches to solve problems, bypassing grasp of mathematics ideas in high school, and being less centred on the outline of the strategy for solving problems.

Therefore, these kinds of students would like to practice some topics using a series of fixed and connected steps. They would not be able to deal with it when changing topics, even if they did a problem right, and they always doubted it. Poor performing students personally believed that their weak foundation in mathematics led to their failure. Teachers need to develop effective strategies to enhance students' learning in mathematics.

### **Approaches for enhancing mathematics learning for students**

There are different approaches to addressing students' learning difficulties in mathematics; the following approaches could be helpful to bring expected changes to their learning.

#### **Enhance the confidence of the student by giving praise at the appropriate time**

Mathematics teachers should praise students so that they can build their *confidence* and will have hope in improving learning. In addition, the teacher often has to show students the process of thinking and tell them how to “think” and study the topic. Then students will not be afraid to solve mathematics problems.

#### **Encourage the development of problem-solving abilities**

The teacher has to point out students' weaknesses in *learning* skills and require them to exchange ideas with classmates via communication. Poor performing students found many of their classmates always re-solve mathematics problems that they could not solve the first time and note problem-solving strategies in their notebooks so that they could review them before exams. So, the teacher should tell them to write down the reasons why they could not solve problems and the key factors in solving these problems via doing various practices to master them. In high school, there should be a greater emphasis on thinking rather than merely following examples. More focus should be on trial-and-explore solving methods. The students then start to explore methods of solving problems and learn how to think mathematically, not only remember results while doing mathematics.

#### **Guide to identify the reasons other than personal factors**

Mathematics teachers should train students to objectively *organize* positive aspects and to realize that successful learning depends on various factors. It does not only include personal work, ability, learning strategies but also relates to the level of tasks, teachers, teaching methods, and family background, etc. Finally, the teacher needs to help students develop some methods to deal with these factors.

#### **Encourage the student to find the reasons for lacking effort in the subject**

Students may have an interest in the TV program; also, they may read the *sports* news every day or play games and sports. The teacher should comment students' attitude of persistence and ask them questions relating to knowledge of their interests and hobby. The teacher has to hint to their students that if s/he wants to gain good results in mathematics exams, s/he will have to put her/his effort into it as the effort s/he puts into watching the TV program or playing games or being interested in her/his own business every day. The teacher should tell students why some of them are able to learn mathematics better. One of the possible causes is the mathematics teacher was not good enough, or the curriculum was not designed well. However, it is necessary to think about why other students could do well with the same teacher and curriculum. Therefore, students should find the reasons for themselves.

### **Encouraging and supervising learning habits**

A teacher has to encourage students to answer questions and present their thoughts *in front* of their classmates. Also, the teacher should lead students to feel that the teacher cares about their improvement to raise their expectations in learning mathematics. In addition, the teacher specifically should treat students face to face when marking their homework. When the teacher finds an error in students' homework, the teacher should let them analyze the reasons behind making mistake. After that, the teacher should teach them the correct way then, and the students correct it by themselves. Moreover, the teacher should often contact students' parents to address their truancy. Teacher should providing opportunities for students to showcase their abilities in the classroom.

### **Analyzing the attributions of success and failure after each exam**

During the study, the teacher has to communicate with students *regularly*, help them evaluate their learning, and find personal shortcomings in learning. It is necessary that students should cooperate with classmates to make a new plan to achieve success in their learning.

### **Conclusion**

Students' perception on learning mathematics greatly affects their motivation to engage in learning mathematics and the achievement. The positive perception of students encourages them for effective learning. However, negative perception may result in the ineffective learning. Continuous failure in mathematics develops negative perceptions and learning difficulties among students (Khanal, 2011). The more effective strategies for poor-performing students are personal confidence and guidance to find effective learning skills and a positive attitude. After letting the student focus on understanding and practice with various methods to achieve a willingness to think mathematically, learning habits can be improved.

Similarly, more communication with the teacher and helping the students analyse mathematics topics face to face are other important strategies. The teacher should also supervise students' learning process, push them to learn hard, and help them to find more personal reasons for their learning, not only relating to outside factors such as the mathematics teacher. It is necessary to have parents participate and help the student use some strategies to address poor performance in mathematics. For example, not only emphasizing attitude in learning mathematics basic knowledge and skills step by step, but also mastering these skills. It is difficult to give a general picture of changing performance in mathematics for all students with learning difficulties. In addition, different students have different situations and different thinking styles. So, they should be treated individually.

## References

- Center for Educational Research, Innovation and Development [CERID]. (1999). *Assessment of learning achievement of lower-secondary children*. Kathmandu: SEDP/MOES.
- Education Review Office (2019). *National assessment of student achievement 2018 (Mathematics and Nepali for Grade 5)*. Sanothimi, Bhaktapur: Author.
- Khanal, B. (2011). *Students' perception of teaching styles and use of learning strategies*. Unpublished M. Phil. Thesis. Kathmandu: Faculty of Education, T. U.
- Khanal, B. (2015). *Learning strategies of mathematics students*. Doctoral dissertation. Faculty of Education, Tribhuvan University, Kathmandu.
- Learning Difficulties (n.d.). Retrieved August 28, 2014, from <http://www.oxforddictionaries.com/definition/english/learning-difficulties>
- National Research Council. (2001). *Adding it up: Helping children learn mathematics*. In J. Kilpatrick, J. Swafford, & B. Findell (Eds.). Mathematics learning study committee, centre for education. Washington, DC: National Academy Press.
- Panthi, R. K., & Belbase, S. (2017). Teaching and learning issues in mathematics in the context of Nepal. *European Journal of Educational and Social Sciences*, 2(1), 1-27.
- Park, C. C. (2001). Learning style preferences of Armenian, African, Hispanic, Hmong, Korean, Mexico, and Anglo students in American secondary schools. *Learning Environments Research*, 4(2), 175-191.
- Qian, Z. (1996). *The characteristics and cause analysis of students with learning disabilities*. Shanghai: Shanghai Science and Technology Press.
- Slavin, R. (2003). *Educational psychology: Theory and practice* (7th ed). Boston, MA: Allyn and Bacon.