

Uncovering Challenges in Learning Mathematics: Student Voices from Gurukul Schools

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Abstract

This qualitative study explores the challenges faced by students in Gurukul schools of western Nepal in learning mathematics from their own perspectives. Despite mathematics being a foundational and essential subject for academic and career development, students encounter significant difficulties due to limited time for practice, the perceived low relevance of mathematics to their future careers, and the dominance of traditional, teacher-centered pedagogical methods. Participants highlighted the burden of numerous subjects and ritual duties in Gurukul schools that constrain time allocation for mathematics, contributing to anxiety and poor performance. Additionally, students reported a disconnect between mathematics learning and their life goals, leading to low motivation and engagement. The persistence of conventional teaching practices, characterized by rote learning and a lack of interactive materials, further hinders conceptual understanding and cognitive development. These findings underscore the need for time management strategies, contextualized teaching approaches, and pedagogy reform to improve mathematics learning and student outcomes in Gurukul schools. This study benefits educators, policymakers, and stakeholders by revealing students' voices and recommending holistic solutions encompassing pedagogy, parental, and societal support.

Keywords: Perception, conventional teaching, gurukul, learning challenges

Introduction

Mathematics is a unique and important subject in the school curriculum (Kunwar, 2020). Khanal et al. (2021) also mentioned that, among subjects like social studies, science, creative arts, health, and physical education, math is one of the most essential at the basic and secondary levels. It helps students connect learning to real-life problems. The same study pointed out that math at the secondary level helps build creative thinking and lays the foundation for future success. Pokharel (2023) added that math supports the development of logical, creative, constructive, and imaginative abilities in learners. Math plays a key role in both education and career development. A strong math background often influences career choices and opportunities. It also requires advanced thinking skills, especially when working with abstract symbols and complex ideas (Ashcraft, 2007).

Even though math is such an important subject, many students find it hard to understand (Mazana et al., 2020). An ancient text, the *Vedanga Jyotish*, even describes math as “like the crest of the peacock or the jewel on a snake’s head” meaning it is the most important part of all knowledge. This shows that math is seen as the foundation of many other subjects. As far as the mathematics subject is concerned, It is considered as a cumbersome subject in Nepali academia (Kunwar, 2020a). The study by Ardi et al. (2019) identified that students tend to experience heightened cognitive

anxiety, particularly when confronted with complex mathematical problems that pose significant challenges. Further, this study also noted that kids' cognitive development and external factors of learning also pose mathematical problems. Students' anxiety on Mathematics accelerated due to various factors. The next study (Pokharel, 2023) revealed that the enrolment of students in mathematics classes in university education declined due to the difficult nature of mathematics. This demonstrated that mathematics possesses challenges not only in the secondary and basic levels, but also a challenging subject at the University.

Connected to the standardized exams' result of secondary level, it witnessed that 37.94 percent of students scored 'E Grade in Mathematics in 2078. In addition to this, 32.05 percent of students failed mathematics in 2079. The data presented a significant fall by 5.89 percentage, however, it considers a difficult subject with some learning challenges. Further, the result of SEE in 2080 also exemplified a significant failed percentage of mathematics was 38.27 (SEE, 2024). Through this screening, it illustrated there exist complexities of learning mathematics in the secondary level in Nepal.

This study aims to explore the challenges of mathematics learning from the insights of students of Gurukul schools. Moreover, this study is also inclined to answer the questions of what are the major hurdles of learning mathematics from the voices and experiences of students who are learning in the Gurukul schools of western Nepal. Similarly, this study also attempts to answer the question of why students are afraid while learning mathematics. This research is relevant in the academic institutions particularly in the Gurukul schools of Nepal because it unlocks the various problems of students from their own perspectives while dealing Mathematics, and along with this, it also offers solutions of these problems which are related to pedagogy, parental and societal domain, and students engagement in the classroom. Therefore, Gurukul schools, teachers, students and parents of concerned sectors have been immensely benefitted through this research.

Societal Factors

Students face many challenges in learning mathematics due to social, family, and economic reasons. According to Pokhrel (2023), many students struggle with math because they have to help with household chores or work outside, miss school often, and come from families with low income. Acharya (2017) also pointed out that many parents are not aware of the importance of math and that poverty adds to the problem. Similarly, Shrestha et al. (2021) mentioned that poor economic backgrounds make it hard for students to learn math in school. Rameli and Kosnin (2016) added that students don't do well in math when parents can't support them financially.

Many students in public schools come from poor communities, which leads to them missing school or working as laborers, as stated by Panthi and Belbase (2017a). This lack of regular attendance due to financial problems makes it harder for them to learn math in Nepal. Also, students in countries where math is taught in English rather than their first language struggle to understand

both basic and advanced math ideas (Pateman & Lim, 2012). This shows that language barriers also make it difficult to grasp math concepts.

Mathematics Anxiety

Students often find it hard to learn mathematics because they have a poor understanding of what math is really about. Those who struggle with math usually show little interest in learning it and often have negative thoughts about the subject (Kunwar, 2021). Pokhrel (2024) found that many students feel anxious when solving math problems and have a negative attitude towards learning math. The study also showed that this anxiety is caused by several factors, including poor performance, the way teachers behave, teaching methods, common myths about math, the home environment, and low self-confidence. When students score low in math, their confidence drops. On top of that, common beliefs like math being too hard, boring, abstract, or focused only on memorizing formulas also make students less confident.

Math fear or "math phobia" develops because students are afraid of failing and feel anxious about the subject, leading to more negative thoughts (Kunwar, 2020). Learning math involves brain functions that are affected by emotions such as fear, stress, worry, or dislike when students do math activities in class (Passolunghi et al., 2016). How students see math has a big impact on how well they do. According to Mutodi and Ngirande (2014), many people in society think being good at math means being smart, which can make students feel less confident and more negative toward the subject. Lamichhane and Belbase (2017) also found that students often view math as confusing, difficult, and abstract. These ideas usually come from society, teachers, classmates, and family. As a result, wrong beliefs and rumors about math create fear and anxiety, making it harder for students to learn.

Acceptance of Traditional Pedagogy

One major reason students struggle with learning math is because of poor teaching methods. In Nepal, math classes mostly follow the "banking model," where teachers do all the talking and students just listen without actively participating (Lamsal, 2024). Similarly, teachers often use the same teaching style for all students, without considering the different needs, backgrounds, or learning styles in the classroom. They usually rely on old-fashioned, Western-style methods that don't match the local context (Luitel & Taylor, 2010).

These traditional teaching methods don't work well because many teachers lack the right training and understanding of how to teach in ways that meet students' needs (Panthi & Belbase, 2017b). Leonard et al. (2010) said that teaching should include culturally relevant and fair approaches, especially for students from minority backgrounds who may not benefit from the standard methods. Without this, students often find math hard and fail to understand important ideas.

However, the study also noted that using better teaching methods requires proper training and strong commitment from teachers. Supporting this idea, research by Kshetree et al. (2021) showed that students who were taught using modern, guided teaching methods performed much better than

those taught with traditional methods. This proves that old teaching styles don't meet students' learning needs and make it harder for them to understand math concepts clearly.

Gender's Influence on Mathematics Learning

Some studies suggest that gender may play a role in how students learn and achieve in mathematics, though the results are mixed. Orhun (2007) found that female students tend to be more active and hands-on in their learning, preferring to learn math by doing. Geist and King (2008) noted that while boys and girls have different ways of approaching math, these differences don't affect their actual ability to learn.

However, Lu et al. (2023) found that gender does have an impact on math achievement, with boys performing better than girls. On the other hand, Rahman and Ahmar (2017) reported no clear link between gender and math performance, although they agreed that boys and girls use different learning styles when studying math.

Hurdles of Learners in Learning Mathematics

Different researchers define learning in different ways, and there's no single agreement on what learning really is or how it happens. This makes learning a fascinating topic for experts like linguists, psychologists, anthropologists, philosophers, and brain scientists to explore (Phillips & Soltis, 2015). According to behaviourism, learning is seen as a change in behavior based on what can be observed, and it doesn't focus on what happens in the mind. It's simply about picking up new behaviors (Pritchard, 2009). In contrast, constructivist learning suggests that students build their understanding based on their experiences and interactions with the world around them (Pritchard, 2009). Social constructivism adds that language plays a big role in shaping how we think and learn.

Lewis & Wray (2005) explained that learning is a process that happens in social settings, involves thinking about one's own thinking, and includes interaction with others. Steffe & Nesher (2009) also noted that modern views of learning focus on how students' thinking is influenced by their culture and social environment. Learning involves discovering, creating, transforming, and extending meaning, with the teacher mainly helping by creating the right environment. It is something the student actively does, not something that just happens to them (Pedersen & Digby, 2013). Schunk (2012) added that learning includes gaining and changing knowledge, skills, strategies, attitudes, and behaviors whether mentally, physically, socially, or through language.

Older learning theories are still useful, and new ones build on them rather than replace them (Shuell, 1986). Learning difficulties refer to a wide range of challenges students face. For example, dyslexia and dyscalculia are specific problems that make learning, especially in math, harder (Chinn, 2018). This same study found that problems in learning math can be caused by anxiety, memory issues, cognitive style, difficulty with symbols, and understanding math vocabulary all of which are connected. Listening to students' own views helps us see what actually happens in classrooms. These insights reveal their inner thoughts, feelings, and experiences, both in and out of school (Dahl, 1995).

Finally, how students view learning is shaped by their past experiences with learning, teaching methods, and strategies used by teachers (Prosser, 2004).

Research Methodology

This research employed qualitative research design and methodology used here was exploratory. Moreover, this research incorporated purposive sampling where six students from the Gurukul schools were selected on the basis of academic performance. The sample sites where I visited to collect my data were Rupandehi, Dang and Kaplivastu districts of western Nepal. Regarding tools of data collection, I used semi-structured interview to accumulate my data. This accumulation process was entirely confidential where the name and data of the participants were kept pseudonyms.

Findings and Discussion

This chapter has included the interpretation of data and its findings in relation to the research questions.

Scarcity of Time to Practice Mathematics

The first theme that I have retrieved from the coding was problem in time management which further caused challenges in learning mathematics. For this one of the participants said: In our Gurukul school, we have extra subjects as compared to private ones. So time management and other activities affect mathematics study. Among all other subjects, mathematics is harder to study. Amrit Bagale

He explored that numerous subjects in Gurukul school in comparison to other schools have affected their learning process of Mathematics. Furthermore, spending much time in ritual activities which are aligned with their subjects does not let them practise mathematics. In the light of current study, Savat et.al, (2010) revealed that time management and investment in time supported to learn mathematics and also increased the achievement in Mathematics. Similarly, in the same vein, time management and its investment increased the interest in learners to study mathematics which simplified mathematics learning process (Rambe & Siregar, 2022). Students' poor performance is also the consequence of insufficient practices of mathematics; hence, mathematics achievement is not upto the level of satisfaction (Suan, 2014). Another study (Mundia & Metussin, 2019) highlighted the value of time management in learning mathematics; however students learning mathematics at Gurukul don't have sufficient time to study mathematics. Hence, as a less practice, most of the students in this level feel it as a difficult subject. This statement of the participant also explored that Mathematics itself is not a complex subject to learn, rather inefficiency in management of time problematizes them from the acquisition of mathematics learning. Similarly in the same issue, next participant shared the experience in this way:

Since we are living in an ashram, there is a major problem of time management. We have a certain timetable to follow and there is a division of work between students. After completing the work and homework there is less time for practicing mathematics.

The statement of this participant revealed the similar thing in a different way. Connecting to the same issue, he also experienced the hectic schedule in reference to following the timetable. In the light of current study, Ikpi Eyong et al., (2020) foregrounded the management of time in learning mathematics is absolutely necessary to simplify mathematics calculation, and it also increases the positive attitude of mathematics acceptance. The next study also valued the importance of practice of assignment on mathematics also amplified cognitive and comprehension ability of learners (Azina & Halimah, 2012). Time management has also increased the mathematics achievement level of the learners if they allocate time for study, and this regular practice has visualized mathematics as a comfortable discipline for them (Pathuddin et al., 2025). The above-mentioned chunk illustrated that priority of spiritual actions in ashram overlooks the other academic activities. Moreover, students' autonomy has been confined. Thus, this confinement makes the environment problematic in management of time. Loss of freedom has obviously brought a serious issue in their learning system. Similarly, rigidity in schedule could not support them to allocate proportionate time for Mathematics. This expression reflected that the conventional system of Gurukul schools to mobilize students more or less has influenced the learning system of Mathematics. According to them, Mathematics needs practice and it is a practice-based discipline. Therefore, dearth of time has become a key factor to lessen the effort among the students towards their subject.

Connecting to the same issue, he further explained:

As I said, time management is a major problem in our school. We have more subjects to recite. Also, the interruption between classes affect the result of student. (Yogesh Joshi)

This statement of this participant also disclosed that numerous subjects don't help them learn Mathematics. The method of learning other subjects is recitation, repetition and memorization. Continuity of these conventional practices still exist in Gurukul schools; however, mathematics cannot be learnt the way they have been taught. Recitation needs more time, it is a time-consuming process. Hence, this is a big issue for them.

On the same backdrop, the next participant said:

If I say Maths is difficult, it will be my fault. Time management is difficult for me but if we provide 1 hour to mathematics then math is an easier subject compared to other sanskrit subjects. So I think time management and practice is a must for making a subject easy to learn. (Prashant Neupane)

He also mentioned that lack of time has disturbed the Mathematics learning. According to him, even getting one hour time could be harder because of other subjects. In the similar context, Mafugu (2025) also found that lack of practice because of not having enough time due to household activities also cause mathematics a difficult genre. Therefore, time for mathematics practice needs to be allocated for better understanding and sustainable uses. The subjects that they have dealt with today in their academic classroom are more difficult than Mathematics because the effort that they have put every day for other subjects is extensive. Their experiences have demonstrated that just

practice and time arrangement are the two indispensable factors to ease the learning process of Mathematics. Moreover, the problems they have experienced are less time for practice. Likewise, same participant explored his experience in regard to the same theme:

Mathematics is an easier subject on its own if we practice timely. Due to lack of time management and proper practice, we face difficulty in learning the subject as a result we find it harder. The teacher constantly telling students how hard this subject is, creates a negative impression in the students mind. (Prashant Neupane)

His reflection also claimed that it is an exaggeration of perceiving mathematics as a difficult discipline. Furthermore, improper practice has led the path of difficulty in the acquisition process of Mathematics. When there are no constant efforts and practices to receive its knowledge, it could be a hard subject otherwise it is not as hard as other subjects. In the same realm, poor management of time has resulted in deterioration of mathematics performance, therefore time allocation contributes in making result so satisfactory (Sharma Chapai & Joshi, 2025). The next significant thing that I conceptualized here is teachers' perception in reference to Mathematics subjects. Constant coaching of Mathematics being a complicated subject to students has also created hindrances in learning mathematics. This has influenced the psychological aspect of students, as a result of this psychological pressure, students learn nominal knowledge of mathematics. What it reflects is teachers' role in indoctrination has problematized in dealing Mathematics in the classroom.

Learning is not a physical process rather it reconciles with the psychological process. Unless students are psychologically sound, it won't support them to encompass the mathematical procedure for learning. Here, the motivation and encouragement play a significant role in assisting them for further inquiry in this discipline. Instead of them, teachers' discouragement was experienced by the students. As a result of rebuke, students' confidence and assurance have been weakened in classroom settings.

Similarly, the next participant shared his experience for this dimension in such a way:

We have a lot of subjects to study and a tight routine to follow. So proper time management is not possible. There are other subjects which are more important than math carrying a more economic value so I have to give more time to them. So on a daily basis I have separated about 15 mins for mathematics practice. (Raj Bhattarai)

He reported that subjects are more and they have a very rigid schedule to imbibe. The emphasis given to other subjects in comparison to mathematics is high because of monetary value. The perception to perceive mathematics from the economic angle is quite feeble as it has no value in terms of earning money in their professional life. Moving ahead, he explained implicitly that professional life needs no support from this subject. That's why they neither allocate time for study nor do they emphasize this subject for learning. The power of correlation in terms of economic value with their futuristic needs also brought problems in learning mathematics. Similarly, the allocation of fifteen minutes of time for practice is only for completing the assignment not for conceptualizing the

concept of Mathematics. The first reason is it is not in the list of priorities and the second reason is they really don't have sufficient time for their studies.

In conclusion, participants have a very hectic schedule in schools as they have some rigid duties to be done in time. Because of it, they don't have time to operationalize Mathematics. Excessive number of books also keep the students under pressure to deal; therefore, they find a big problem in distribution of time proportionately to all the subjects. Besides academic time, they are obligated to carry out a significant number of responsibilities within the convention and outside the convention as well. Thus, this intervention also breached the momentum of learning among the efforts and practices of mathematics.

Inconsequential Position of Mathematics

Mathematics, however, an important subject in the domain of academia, suffers from the existential crisis from the perspective of students in Gurukul Schools. This perception has resulted in the poor performance of students and their unsatisfactory results. When it does not come in the list of priority, there is no effort to bring the effective result of mathematics. During the interview process, some of the students shared their experiences considering the less importance and less utility in the future. Considering the utility of the future, they regard it less useful.

Connecting to the same issue, one of the participant expressed:

According to me, it isn't a difficult subject. It's just that I don't find it very interesting and useful. I have decided to be □□□□□□ (Kathavachak) so math doesn't come under my priority. As a result it takes less time than other subjects. Due to less practice, decent marks are not obtained. (Sagar Aryal)

He explored the clear position of Mathematics and the reason why he is not interested in Mathematics learning. In terms of difficulty, it is not as others think, but the plan that he weaves to be in the future does not need to accumulate the knowledge of mathematics. It reflected that mathematics utility in the coming future for Gurukul students is questioned. The primary objective of this statement is to be a Kathavachak; however, mathematics does not influence him for his career. Therefore, the practice students do is less and poor marks in Mathematics is a consequence of less practice and poor desire to learn it. In terms of hierarchy, mathematics comes at the end of the list of books. No matter what position it has occupied in the academic world has no effect in their world.

This expression also reflected that learning it has no relation with their objective of life. Although the curriculum has been kept as a primary subject to them, students perceive it through futuristic purposes.

In this regard, the next participant shared the learning experience:

Astrology has three aspects i.e sidhanta, samhita ,hora jyotish to be studied. In our school only one part i.e Falit jyotish is studied. Falit jyotis doesn't require any complicated

mathematics content except for some basic division, multiplication, addition and subtraction.

(Raju Bhattarai)

He also expressed very nominal uses of mathematics in the practical aspect of life. Different branches of astrology do not need very complicated mathematics. Therefore, students less prioritize it. Besides the basic skills of mathematics, there is not much use of it in their student life. When the matter is not going to be used in their professional life; they consider it a very useless subject. Hence, students are not found to be very active or proactive for it. In conclusion, learning complexity comes from the very thought of learners who carry such an assumption they have acquired from the transmission culture of their academy.

Acceptance of Traditional Pedagogy

Even in the age of twenty-first century, teachers prefer a teacher-centered method in dissemination of their knowledge to their students. Such practices leave little positive effects in the acquisition process of learning. In the course of interviewing, some of the participants expressed that teaching practices of teachers are very traditional because of the way they used to be taught by their teachers, and in the same way students have been taught in this era. From their perceptions, they want teachers to use cutting-edge approaches existing in the sector of mathematics teaching and learning. On the same backdrop, one of the participants said:

They don't bring such materials in the classroom but sometimes they bring papers and notes related to the chapter. The teacher should ask questions to the student and should make the class interactive. Similarly, they should provide various facts by correlating it with various topics.

This statement of the participant clearly revealed that students need an immediate change in the teaching method of mathematics teaching. From the above-mentioned expression, it is explicitly revealed that teachers are still reluctant in the use of teaching-learning materials while teaching. In the same vein, Marchis (2011) found that there is always a positive relationship between the teachers' attitudes of mathematics and students' growth in learning mathematics. Teaching methods are inevitable to amplify the understanding level of mathematics among the students, and they also arouse the interest among them for study. The use of methods mostly rely on the situations and contexts where each student receives equal opportunity to be a part of learning (Ayebale et al., 2020). However, research (Bottoms and Carpenter, 2003) revealed even schools failed to guide and support students to meet the requirements of mathematics learning in higher classes; therefore, they performed less than expected. The rapport between students and teachers is equally important to bridge the gap of hierarchy and hegemony which further supports learners to incorporate learning strategies and methods as disseminated by teacher (Shin et al., 2009). Students develop their skills and wisdom in reference to that subject if they get the opportunity to use materials inside the classroom. Realias, handouts, posters, chart-paper, different tools used in Mathematics can be the best equipment for dealing mathematics issues in the classroom. However, teachers, according this participant, use no

materials. The next thing that can be observed from the statement is the importance of group work, pair or peer work, collaborative learning, and a co-figurative classroom in the moment of learning. These methods facilitate the learning process and germinate readiness or curiosity of the students in the phenomena discussed in the class.

Post-figurative classes have a dominant position in the academic culture of Nepal. Transformation of post-figurative to co-figurative is the utmost need of academic culture of Nepal; nevertheless it continues even today dominating the interest and curiosities of students. In the similar context, teachers whoever teaching mathematics have acquainted with traditional approaches and there is no connection with the modern methods and practices of teaching mathematics have also caused mathematics as a complex subject (Raj Acharya, 2017). In the light of current context, another research also claimed that teachers had insufficient knowledge about the innovative pedagogy and trainings related to new approaches of mathematics that further caused problems in teaching mathematics effectively (Tiwari, 2023). Collaborative or interactive learning develops the feeling of cooperative learning not competitive learning too. As a result of cooperative learning, students gain the immense opportunity to express their views and concepts with their partners. Under this classroom environment, the role of teachers gets changed as the role of supplementary becomes complementary. Connecting to the same issue, one of the participants said:

Conclusion

This research has concluded that the problems that the students of Gurukul students face particularly revolve around the periphery of the above-mentioned themes. These findings have demonstrated that students experience the problems in learning mathematics due to the lack of time. As the students of Gurukul, they have a lot of duties and responsibilities to discharge either at home and convent centers. Therefore, the scarcity of time and less practice of mathematics, they experience the problems in accepting mathematics as an ordinary subject like others. Moreover, the second reason is about the position of mathematics in their lives. According to the participants, the scope of mathematics are not aligned with the career building of their life. They forecast that there is less use of mathematics in their life, therefore negligence towards mathematics keeps them under problem. Hence, they experience mathematics as a challenging discipline. Furthermore, the practice of traditional methods of teaching mathematics also creates problems in the acquisition of mathematics. Therefore, it has affected the cognitive development of students.

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