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Mathematics as a subject: Understanding math anxiety in comparison with other subjects in Sirohi, Rajasthan

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Abstract- This Research investigates students' perspectives on mathematics compared to other subjects, focusing on the plurality and underlying factors of math anxiety in the context of primary and secondary education in Sirohi, Rajasthan. Acknowledge the crucial role of mathematics in the STEM field and the documented phenomenon of math anxiety. This qualitative study aims to understand how students perceive mathematics in terms of interest, difficulty, and anxiety levels when compared with other subjects. Drawings from the National Curriculum Framework 2023 (NCF2023), Which Identifies societal views and teaching methods as key factors contributing to math anxiety. This research used semi-structured interviews with over 30 primary and secondary school students (grades 5th - 10th, aged 11 to 16) from rural Hindi-medium government schools and English-medium government schools in Sirohi. The collected data was analyzed using thematic analysis. Key findings reveal significant influence by conceptual clarity, effective teaching methods, utilizing familiar examples, and parental support. Furthermore, challenges in teaching approaches subject-specific difficulty (notably areas like algebra, Trigonometry, Sanskrit vocabulary, and Social Science concepts) and subject-related anxiety were reported for mathematics and subjects like Social Science and Sanskrit. Notably, societal expectations position mathematics as the key to success and employment, along with parental influence, and most importantly, it shapes students' attitudes and choices towards mathematics. These insights inform the development of more effective teaching strategies and curriculum design to reduce subject-related anxieties and promote a more positive attitude towards all subjects, including mathematics, within the context of primary and secondary education in Sirohi, Rajasthan.

Keywords— This study explores students' perspectives on mathematics in comparison to other subjects, focusing on math anxiety among primary and secondary school students in Sirohi, Rajasthan. Key themes include conceptual clarity, teaching methods, societal expectations, and parental influence as major factors shaping students' interest, perceived difficulty, and anxiety levels. The findings highlight challenges in subjects like algebra, trigonometry, Sanskrit, and social science, emphasizing the need for improved pedagogical practices and curriculum design to reduce anxiety and foster positive learning attitudes.

I. INTRODUCTION

In the Indian education system, mathematics is a compulsory subject for study up to grade 10th. However, a general notion associated with mathematics is "math anxiety" or a fear of mathematics. Research over the years indicated that many individuals hold a negative perception or attitude towards mathematics. These negative attitudes are influenced by various factors, including the subject's nature, the teacher's experience and skills, societal expectations, the learning environment, and learners' understanding.

The National Curriculum Framework (NCF2023) also acknowledges the fear of mathematics, identifying the nature of the subject and its pedagogy, alongside societal perception as a primary contribution to this. While the NCF 2023 addresses anxieties related to mathematics and language. It prompts the question of whether other subjects

similarly cause anxiety in learners. Notably, some research suggests a low correlation between math anxiety and general academic anxiety. Since mathematics is considered "The heart of science and its related courses," and an essential foundation for STEM Careers, understanding the student perspective towards it compared to other subjects is crucial. This research investigates how students view mathematics compared to other subjects, specifically focusing on their attitudes, Interest level, perceived difficulties, and emotional responses.

The study aims to provide a nuanced understanding of students' perspectives on mathematics compared to other subjects. Particularly those less quantitatively focused, such as language and social studies. It explores how students compare mathematics across various dimensions, including interest, perceived difficulty, importance, personal beliefs about the subject, and emotional engagement with these other subjects. The rationale for this research is grounded in the existing body of literature on mathematics anxiety and attitude towards mathematics. Furthermore, this study seeks to identify the underlying factors contributing to similarities and differences in these attitudes and perceptions. Our interest and experience with different subjects also motivated this inquiry. Due to time constraints, the specific focus of this research includes exploring what aspect of mathematics learners find most and least enjoyable, how they perceive the difficulty of mathematics as compared to other subjects, and in what ways societal expectations and beliefs influence their attitudes towards different subjects.

This study employs a qualitative approach to address these research questions, utilizing semi-structured interviews as the primary data collection method. The participants group for this research comprises primary and secondary school students (grades 5th to 10th) from rural government schools and government English schools in the district of Rajasthan This qualitative methodology allows for the gathering of rich in-depth insights into students' feelings, attitudes, perceptions and personal experience related to mathematics and other subjects. The collected data will be analyzed using thematic analysis. A method for identifying recurring patterns and themes within qualitative data to systematically compare how mathematics differs from other subjects regarding student learners' emotional and cognitive experiences. This research aims to contribute to a more informed and contextually relevant understanding of mathematics education within the socio-cultural and educational landscape. The study also considers the local context of Sirohi, Rajasthan, where societal and cultural factors influence student perception. Including the socio-economic and linguistic background of the students.

II. REVIEW OF LITERATURE

When we talk about the students' perspective or attitude towards mathematics, we can find different research and literature that tries to define it. Kibrislioglu (2016) defines that students' attitudes towards mathematics can be liking or disliking the subject, can be a tendency to avoid or engage in mathematical activities, and can be a belief that it is useful or useless. If we look at the different research studies we can find that students often have mixed feelings towards mathematics. There are many factors that work in developing students' perspectives toward mathematics. The research that has been done to understand the student's perspective about mathematics, talks about different factors such as teacher factor, student's performance, societal expectations and beliefs, learning environment, and students' own beliefs. Here students' beliefs refers to their own ideas about their abilities, their past experiences in learning, and how they connect math with other subjects (Aguilar, 2021). In a research study, low-performing students were surveyed about their perspective towards math. The result showed that they struggle with self-confidence, motivation, and interest in math, and often feel anxious about the subject. During the interview with students, it was found that despite their negative feelings, they also recognize the value and importance of math but they find themselves unable to do it (Kunwar, 2021).

(Ashcraft, 2002) also stated in his study that a person with math anxiety shows low competencies and

achievement in different types of related activities. After that a research done by Aguilar (2021) stated that it doesn't mean that students who are performing well in math, find it interesting to pursue or like mathematics. There can be other reasons that continuously engage students to pursue mathematics, it can be societal influences or situational interest (different from individual interest). Other than this there are different factors that affect students' perspective or attitude of pursuing mathematics such as motivation, classroom engagement, and teacher's role (Roche, Gervasoni, and Kalogeropoulos, 2021). Among these factors the role of teacher is a cornerstone because teachers play an important role in developing positive and negative attitudes of students about mathematics. There is research on elementary school children. Out of 45 children 67% of students have a negative perspective about mathematics and one of the major reasons is the teacher factor (Mariamah, Ratnah, Katimah, Rahman, and Haris, 2021). So It would not be wrong to say that teachers play an initial role in shaping the student's attitudes and beliefs about mathematics (Aguilar, 2021). mainly these researches are talking about how teachers' sensitivity towards students, the methods and strategies, and the pace of teaching all these things play an important role in shaping the student's attitude. Another research on higher education students also stated that the teacher factor is one of the major factors that make mathematics difficult for them (Lagoban, 2020). As above mentioned there is not a single factor that affects students' perspective towards a particular subject but other factors also affect it. For example, in a research by Aguilar (2021) on high school students to know the reasons for not liking math, stated that only seven percent of students have concerns with teachers for not liking mathematics. So we can understand that the intensity of different factors is varied in different situations. But the question here is how the above-discussed factors affect the student's perspective towards other subjects. In other words, are performance and teacher factors only responsible for creating positive and negative perspectives of children towards mathematics or are they responsible for creating similar perspectives towards other subjects also because Langoban (2020) in her research mentioned that ' it is not mathematics subject that students hate but the teacher who delivers the instruction.' In terms of anxiety, one research by observing the heart rate of participants shows that during performing math-task there was a noticeable change in the heart rate which could hardly be seen in other verbal tasks (Ashcrats, 2002). There is research which states that anxiety towards other subjects also exists, for intense learning and using a foreign language learners show a feeling of anxiety (Dowker Sarkar, and Looi, 2016). The studies reviewed here give lots of empirical evidence for math anxiety. There are also studies indicating that such fear exists in other subjects. Hence, there is a need for more research and study that can directly compare students' attitudes towards mathematics and other subjects. So this might not only be helpful for teachers as well as curriculum developers to develop different strategies for learning mathematics based on learners' experiences but it will also help them to understand why they prefer subjects other than mathematics for higher education. Ashcraft (2002) in his research also mentioned that when the students have to choose electives, they prefer more to choose other subjects as compared to mathematics.

III. METHODOLOGY

Research Design:

In this study, we wanted to understand the subjective experiences. If students have anxiety or interest related to a particular subject then what are their experiences and understanding related to that subject that promote anxiety or interest? So as per our objectives, qualitative research is well suited for exploring subjective experiences like anxiety or interest and other things. It allowed us to understand and gather in-depth insights into students' feelings, attitudes or perceptions, and personal experiences. With that it also allowed us to gather related data through the decided tools in a more flexible way so we can delve into how students perceive the difficulty, anxiety, or interest related to different subjects. Other than this it provided options for purposeful sampling in which I can choose the participants who may have the key knowledge or information related to research. According to the reading, 'Research Methods in Education' qualitative

research also provides us a holistic view of the environment and contextual factors such as classroom setting, teaching methods, and teachers' behavior that influence students' perception.

Participants:

The participants in this study constituted 13 students (6 males and 7 females) from government upper primary and secondary schools. As mentioned above, these schools were government Hindi and English medium schools. The selection of schools were guided by members of Azim Premji Foundation, Sirohi. Most of the schools were selected from the rural areas, namely village Udd, Goyali. All schools have co-education. Most of the participants come from lower socio-economic backgrounds where the source for livelihood are farming, animal husbandry, skilled and unskilled workers. In terms of challenges faced in selecting participants on the ground, in some cases, teachers were referring students for interviews, and through conversations with other students, I came to know that the students being referred were those who performed well. But I have adopted different strategies to select students for the interview.

Sampling:

For our research, we did purposeful sampling because it allowed us to select participants who can provide rich, relevant, and diverse insight for our research topic. As we went to Sirohi, Rajasthan, we had government Hindi and English medium schools for our research so our target group was the students from upper primary and secondary schools (Grades 6th-10th). In which we included students of different genders and socio-economic backgrounds. As per the pre-scheduled plan we collected data for our study in one week. As I mentioned above, our target group for the research will be the students of upper primary and secondary school because these are the grades where they are introduced to the different new concepts which are more abstract in nature (NCERT, n.d.).

Methods:

We used semi-structured interviews as an instrument to collect data because as we know semi-structured interviews have a predefined set of questions but it also allowed us the flexibility to explore the research topic in depth. For instance, during the interview with children to know their perception or attitude towards mathematics and other subjects, we were getting some other information or factors other than what we were expected to collect according to our sub-questions. In this situation semi-structured interview allowed us to explore students' perceptions into unexpected areas by providing flexibility to probe and prompt where we were able to ask the interviewee to extend, elaborate, exemplify, clarify, or qualify their response which has increased the richness, and comprehensiveness of the interview. Along with this prompts also helped us to clarify questions if they seemed not to have understood (Cohen at al., 2002). In this method we primarily used open-ended questions that encouraged the children to share detailed answers, thoughts, and feelings.

During the analysis, we felt that this only tool for data collection is restricting us to make decisions about some of the factors. As we had limited time for data collection so it might not be possible to collect data with a mixed method approach but in other cases if we could use classroom observation and parents focus group interview then it may also legitimize our study.

Data Types and Sources:

For our research we are using primary as well as secondary data. In which we collected primary data directly from participants through a qualitative method (Semi-structured interview) that allowed us to form an in-depth exploration of students' experiences and perceptions. The sources were interviews with students from upper primary and secondary grades. On the other hand we used secondary data in which we used different literature on Mathematics anxiety and students' perception about mathematics. The source of this data were academic generals, previous research studies.

Procedures and Ethics:

The research clearance was taken from the relevant authorities, including Institutional Review Board (IRB) at Azim Premji University, Bangalore. To conduct our research in different assigned schools, we got permission from these school administrations

with the help of the people of the Azim Premji Foundation. As per school level guardian, permission was taken by the principal or school incharge. School level authority and participants were informed about the purpose and nature of the research in both modes: verbal and written. We obtained consent from parents/guardians/teachers with a consent form. In which we will outline the purpose of the study, procedures, time, potential risk, and assurances of confidentiality. With that will also take verbal or written assent from the students with the same outline mentioned above. We also got permission from students with the help of an assent form.

We ensured their voluntary participation so we also assure them that they can withdraw from the study at any point of time if they feel comfortable or have any issue that will be affecting their physical and mental well-being. We also ensured that the data will be securely stored and protected from unauthorized access in each and every situation, especially when we are dealing with children/students. We also ensured that the interview that we will conduct with students, should be in a neutral, and private setting without the presence of teachers so it will not affect their grades and standing in school. But in some cases we have challenges related to this ethical concern because in some cases teachers interrupt the interviews with their presence. It affected the students' responses. Also in some cases school authorities were concerned to sign the consent form for that we pentencely explained the objectives of this study.

Data Analysis:

For the analysis section of the research, we focused on several structured approaches to ensure a comprehensive understanding of students' attitudes toward mathematics and their comparison with other subjects. The steps that we followed in the analysis are:

- **Data Transcription:** The first approach of our analysis was transcribing the interviews conducted with students. We ensured accuracy by capturing the exact language used by the participant, along with non-verbal cues such as tone or pause, which perhaps indicate heightened anxiety or discomfort.
- **Coding and Categorization:** After the transcription, we employed open coding to label key concepts emerging from the data. The concepts perhaps include categories such as "anxiety" "Interest" "Difficulty" and "Teacher influence" "Societal exception" Such coding allows for related themes, such as anxiety/interest connected to the teacher's method of teaching or societal exception to be linked together and much more. This process will help to reveal patterns in students' responses and also help us to draw clear comparisons between mathematics and other subjects.
- **Hypothesis Testing:** The aim of testing the working hypothesis is to identify where students express specific anxieties or positive attitudes toward math and compare them with attitudes toward other subjects. Here our goal is to determine whether there is only math, a subject that stands for emotional impact (interest or anxiety), or if other subjects also have these emotional impacts.
- **ontextual Analysis:** In the local context of Sirohi Rajasthan it becomes important to understand how societal and cultural factors influence students' perceptions. Here we analyzed whether local societal exceptions regarding mathematics differ from those for other subjects, and how they shape student anxiety or interest. Additionally will investigate how school environments, socio-economic backgrounds, and language mediums influence students' views, ensuring the research takes into account the unique context of the region.
- **Thematic analysis:** Using thematic analysis we explored recurring themes such as "Factors That Make Mathematics and Other Subject Interesting or Easy for Students" "Societal Exception and Belief about Mathematics" "Subject Related Challenges and Anxiety" These allow us to systematically compare how math

differs from other subjects in terms of their emotional and cognitive experience.

Thematic analysis:

According to Braun and Clark (2006), Thematic analysis is a process or method to understand participants' thoughts, experiences and more by analysing patterns and emerging themes. So our thematic analysis was brought out by Barun and Clarke's six-phase framework. For our qualitative research we used thematics analysis to analyze our data. In this process we first transcribed the recorded interviews then generated initial codes. By carefully observing the codes we try to group them in a way where different codes presenting or aligning with similar meaning then generate the themes for them and after getting the themes we again went back to transcribe data and codes for just ensuring if themes fit well or not. We have generated three themes here under which there are several sub-themes to provide more clarity about the specific experiences of the participants.

IV. FACTORS THAT MAKE MATHEMATICS AND OTHER SUBJECT INTERESTING OR EASY FOR STUDENTS

When we talk about the interest in something, it shows a type of engagement. Interest is a special kind of motivation and engagement (Ainley, 2012). So if a learner has interest in a particular domain it helps the learner to be connected and stay engaged in that domain/task. As we know that there is different research has been done to understand the factors that make mathematics boring and become a subject related to anxiety for example (Ashcraft, 2002; Dowker, Sarkar, and Looi, 2016). But if we work to address the problems aligned with these factors we can change the learners' experience to pursue mathematics as a subject. There are different research are available that tried to find out what factors make mathematics interesting for learners for example Roche, Gervasoni, and Kalogeropoulos (2022) said that students engage in mathematics and find it interesting to learn when enjoy it, understand its value, and see how it is useful in their current and future life. There are five sub-themes that will help us in understanding in some ways, what are some factors that can make mathematics interesting or easy for learners.

Conceptual Clarity:

If we talk about conceptual understanding in mathematics, it refers to understanding of different mathematical ideas and procedures including the knowledge of basic arithmetic facts, the ability to identify and apply different principles, and compare and contrast related concepts (Morehouse, 2007). Aziz, Akhtar, and Safa (2019) suggested in his study that even there is a weak correlation between conceptual clarity and attitude towards mathematics but if students have a clear understanding of different concepts they are more likely to adopt a positive attitude toward mathematics. Most likely we also find this pattern in our study where most of the participants describe one of the reasons for liking mathematics is having a clear understanding of different concepts. During the interview one 10th grade student stated that:

"I don't have math anxiety during the exam because The way my tuition teacher teaches me, I am able to understand different concepts and also be able to solve related problems easily." (Personal communication, 2nd December 2024)

One other girl of 6th grade also replies:

"My first reason for liking mathematics is that I do not have much to remember. If I understand a concept, I can do it by myself." (Personal communication, 4th December 2024) So here it appears that conceptual clarity plays a significant role in shaping learners' perspectives toward a subject. It is not only for mathematics but for other subjects also. During the interviews most of the students like Hindi and the reason they mentioned was familiarity with the content and concepts. Some of the responses are as follow:

On asking the question about the simplest subject for him, he replied:

"Hindi, Because it is our mother tongue and we use it in our daily life from childhood so we can understand it easily. Hindi grammar is also

interesting because we can easily understand. Different ideas." (Personal communication, 4th December 2024)

Similarly, Science was also in the list of favorite subjects for some students and one of the reasons was the conceptual clarity and familiarity with content. One student of 9th grade replied on asking about his favorite subject:

"I like Science most because I am able to understand science very well and there are different phenomena that are connected to our daily life." (Personal communication, 3rd December 2024)

As our sample size was small so we are not able to identify to what extent conceptual understanding plays a role in shaping the learner's perspective towards a subject but there other research has been done to understand the role of conceptual understanding in shaping learners perspective. If I am referring to those ones for example (Aziz, Akhtar, and Safa, 2019), We can say that conceptual understanding can be one of the major factors to shape learners' interest towards a subject. So It would not be wrong to say that fostering conceptual clarity not only in mathematics education but other subjects also enhances students' understanding, leading to improved attitudes and sustained interest in the subject.

Teaching Methods and Instructional Style:

It is said that if you understand something then it is easy for you otherwise it is difficult. If we consider the constructive approach of learning we understand that children are able to construct their knowledge by interacting with their surroundings (Dewey, 1938) but here a teacher also plays an important role as a facilitator. Learning is happening or not is also dependent on how teachers are creating learning opportunities for learners. NPE (2020) also emphasizes the teacher's central role in implementing all the recommendations on ground level. So understanding learners and adopting teaching methods and instructional style is also a factor that plays an impressive role in shaping students' perspective towards mathematics. There are different things that have come out that helped students feel more engaged in learning mathematics. One of these is when a teacher uses different methods of teaching to cater different learning needs, they understand mathematics well and also enjoy learning it (Bobis et al., 2011). In our study we also find this is an important factor because most of the students who like mathematics consider teaching method and instructional style as one of the important factors. One of the 6th grade students respond:

"I really like our mathematics teacher's teaching method. When any student asks a question, he will try to make us understand it fully. Maybe the terminology he uses or how he explains makes more difference. He comes to our level and makes us understand the concept" (Personal communication, 2nd December 2024)

One 10th grade student replied:

"I really like our mathematics teacher's teaching method, because he uses different familiar examples such as a ball, why? Because we know what a ball is. So for me it is simple because teachers teach each and everything properly so there is no confusion." (Personal communication, 3rd December 2024)

To know one students' perception who don't like mathematics about what makes mathematics interesting. One asking question:

"Interviewer: What activities do you feel can make mathematics interesting and enthusiastic?
Respondent: If there are hands-on activities involved, we will feel interested in that activity." (Personal communication, 2nd December 2024)

As mathematics is abstract in nature, so it become very important that how a teacher is teaching teaching different mathematical concepts by using different supported material and adopt different teaching methods and style so it can cater diverse needs of the learners because we know that every individual is different from each other so only single teaching method or instructional style can't ensure individual learning. Adoption of different teaching and learning methods are not only necessary for mathematics but other subjects also demand the

same. Because during the study other than mathematics there were other subjects that were also liked/enjoyed by the learners and one of the major factors was the teaching styles of the particular teacher. One of the 10th grade students who like Science response on some question such as:

"I: Which is your favorite subject?
S: Sir science because I only understand science well. Other than science teachers, no one teaches well.
I: Why are you able to understand it well compared to other subjects?
S: Sir because madam teaches us in a good way. In math only asks us to solve the questions and he doesn't do anything in class.
I: But do you also have to learn different things in science then how do you do ?
S: I am able to learn science easily because madam teaches us in a manner that helps us to learn.
I: For example?
S: She uses the board to demonstrate different things, using different examples that help us to understand it." (Personal communication, 5th December 2024)

One students how like science responded:
"I feel Hindi is very easy for me because sir teaches us in a manner that helps us to understand both Hindi literature and Grammar.

Like while reading a chapter he used to explain where Noun, Adjective, and Adverb came in the story that helps us to understand Hindi grammar also" (Personal communication, 3rd December 2024)

If we look at our research and other research that has been done on it for example (Roche, Gervasoni, and Kalogeropoulos, 2022), then it would not be wrong to say that if a child finds a subject interesting, then one of the reasons for it is the different teaching methods of the teacher. It becomes very important for a teacher to know to adopt appropriate teaching style on the basis of the needs of their students. One factor that was common among the teaching styles mentioned by the students for their interest in different subjects, was the use of familiar examples by the teacher to explain the topic. So it becomes very important for the teacher to understand students' context and use related examples to teach them so learners can feel connected and find it easy to understand. Different theories on teacher professional development also suggest the same for instance (Hammond, 2006).

Role of Early Learning Experiences and Parental support:

Understand this sub-theme we are trying to understand how early years children's learning experiences in mathematics affect their learning attitude towards it in later years. NEP (2020) also understands the importance of early year students' preparation because it has been considered that early learners are very crucial for a child's development because child's 85% brain development happens by the age of 6. Different researches have been done to understand it. For example, a research has been done by using 6 longitudinal data sets which stated that children's early math skills/numeracy skills are strong predictors of their later academic achievement in mathematics (Duncan et al., 2007). During our research one other factor for liking or easily pursuing mathematics, was early years mathematics learning experiences. One of the 7th grade students stated:

"when I was in grade 1, then teacher taught us very well from that point, math became my favorite subject" (Personal communication, 4th December 2024)

Apart from this, the support learners get at home strongly affect how students learn mathematics (Martin et al., 2012). This support can be, parents or siblings support in understanding different mathematical concepts or doing homework. A study done by Leone and Richards (1989) has shown that students enjoy doing mathematics homework and perform better in math when they get help from family members. Some students in our studies bring this point that they find mathematics easy because there is someone at home who helps them in understanding different concepts. One of the 6th grade students responded:

"I ask for my father's help in understanding some concepts so Whatever concept is not clear in school,

it is done at home. My father also likes to do Mathematics. I have an elder brother who helps me in solving my doubts at home" (Personal communication, 2nd December 2024)

Another 10th grade student who didn't understand math in school but still likes mathematics because of his father's help. He teaches him at home.

"I: How do you feel in Mathematics period?
S: I don't feel so good because Sir isn't able to explain different ideas in mathematics very well.
I: Then how do you understand?
S: I myself solved the questions that I understood.
I: Do you take tuition ?
S: No sir, My father helped me to understand mathematics." (Personal communication, 3rd December 2024)

So these responses not only provide an understanding about the importance of early learning experiences and support that students get at home but also supporting the pre-existing research that claims, family support is also an important factor in making a subject easy to pursue. If we analyze this factor more, we can understand it from another perspective that family members become more easily accessible as well as the fear factor also becomes less effective.

Mathematics as a Requirement for Career and Employment:

When students are more interested in math and other school subjects, they usually do better and learn more in school. Due to this focus they try to focus more, try harder, stay with the task longer and use different good ways of learning (Leyva et al., 2022). In this sub-theme we will look at the triggered situational interest where students are influenced by different career options that mathematics offer or the career options that need math proficiency. In some cases the career options are chosen by students themselves but in other cases these are more influenced by family, relatives, and society members. This is also a reason for pursuing mathematics education for them, here I can't say to the learners how much they are enjoying mathematics learning but yes to be consistent they find different support such as family support or take help of tuition and all. There are some students whose one of the reasons for liking math and pursuing it in higher grade is career aspirations. On asking why they like math and what to pursue it in higher grades students responded:

"Many people in my relationship say with math you can get a good job.
He gave an example of his cousin who recently got a job in Adani company with high pay." (Personal communication, 2nd December 2024)

Another student respond:

"I: from where do you know that math will be useful in future?
S: Sir my tuition teacher told me and my father told me that you took science in higher grade not take any other subject.
I: Did you ask the question why I should take math.
S: They said in future if you don't get a government job you can also work in the private sector.
I: But people who studied in other subjects can also get?
S: Yes but in math there are many jobs." (Personal communication, 6th December 2024)

So it seems that one of the reasons for students liking math is the different career aspirations associated with math and because of those career aspirations they want to continue math. But here we are not able to understand clearly whether their liking for math is only because of career aspirations or they really like studying math. For some participants, studying math was the first priority and other things like career aspirations and social influence came later.

Emotional and Psychological Engagement with Mathematics:

During this study we also came up with this sub-theme which was talking about how emotional and psychological engagement of students influence how they perceive and interact with mathematics. One study by Boaler (2016), provides some findings which stated that when students are encouraged to

approach mathematics with a growth mindset then they perceive difficult problems as an opportunity to learn rather than threats to self-esteem. So during our study we find that one of the reasons for liking mathematics is enjoyment of mathematics for problem solving, liking mental challenges in reasoning types questions, enjoyment of learning activities in mathematics and all. Here we also understand that this enjoyment often comes from the intrinsic satisfaction of finding the correct solution after trial and error. On asking one student about why he like math he responded:

"I: Why do you like mathematics?
S: Because I have to use our mind and sometimes we don't understand questions. It looks like a challenge but as we know how to solve it, it also provides happiness." (Personal communication, 5th December 2024)

One another student replied:
"I: Which is your favorite subject?
S: Mathematics.
I: Why is it your favorite subject?
S: Because I like to solve different types of problems in math.
I: Did you like to solve all types of problems or is there any specific set of problems that you like most or least." (Personal communication, 3rd December 2024)

So it seems here that students' emotional and psychological engagement through enjoying challenges, getting positive experiences play an important role in making the subject more interesting and accessible. So if an individual enjoys doing something he/she puts their enough efforts in doing it. Here we can understand that if we are making a subject interesting and engaging it can affect the students' perception positively.

V. SUBJECT RELATED CHALLENGES AND ANXIETY

During our study we were not only focusing on mathematics but we were also looking at the favorite subject and least favorite subject for the learners and what are some reasons that make that subject interesting/easy/ difficult. In the first theme we have looked at the factors, comes up from our study, which can play a significant role in making a subject interesting. In this part we will look at what are some challenges students face not only related to mathematics but in other subjects also and how it affects the students' attitude towards that subject. There are different researches available on challenges faced by students in learning mathematics such as (Aguilar, 2021), (Tawfeeq Al-kassab, 2023) but when I was search for the studies that has been done to understand challenges related to different subjects, I was not able to find only few works. So it would not be wrong to say that there has not been much research that also worked to understand the challenges related to subjects other than mathematics. On the basis of the finding we grouped some findings under this theme and to understand it more specifically, we categorized them into sub-themes that are as follow:

Issues in Teaching Approaches:
We are aware of the fact that teachers play an important role in making a subject easy or difficult for students. It depends on both teachers' competencies and performing skills (Hammond, 2006). So in the successful transmission of a lesson, both factors play an important role i.e. what content knowledge a teacher has about the subject that he/she teaches and what pedagogy skills he/she possesses. As in our study we only collected data from students through semi-structured interviews so we were able to observe the classroom teaching skills so can't make a claim about the content knowledge of the teachers. But on the basis of these interviews we are able to understand the pedagogical skills of the teacher to some extent as mentioned by students.

If we talk about mathematics, it becomes very important for teachers to have adequate knowledge and skills related to teaching mathematics because of the nature of the subject. In our study one of the major concerns of the students who don't like mathematics or struggling with learning mathematics, is whatever teacher teaches in class, they don't understand it. This is not only the problem

of only these students but also there are different researches that have been conducted to understand students' challenges in pursuing mathematics. One of the challenges is teaching approaches and instructional methods used by teachers. According to one quantitative study with 113 participants by Tawfeeq Al-kassab (2023), 74% of participants agreed that mathematics teachers are not able to deliver their lessons effectively with that there are 77% participants who think that their teacher are not able to use appropriate mathematical language so their students able to understand it properly. Similar trends we also find in our study where most of their students' concerns are related to teachers' teaching techniques. One of the 7th grade girls liked to pursue mathematics till 5th grade due to her teacher's teaching techniques but now due to classroom teaching she didn't understand it and this is decreasing her interest in mathematics slowly. According to her:

" I don't like math and math class that much because I know I have to solve heavy questions and sir only asks to solve questions and he doesn't do anything in class even not explain properly." (Personal communication, 4th December 2024)

This shows that there is a lack of teaching efforts which create a barrier for conceptual understanding among students. Emphasis on solving different types of questions can develop procedural knowledge but without conceptual understanding we can't expect students to get broad objectives of mathematical learning . Other than this when we tried to understand the factors for not liking other subjects as well, the similar concern i.e. teaching approach comes as one to the factor of not liking or understanding a subject. On discussing the reasons with 6th grade students for not liking science, she responded.

"Sir only ask to write question and answer that is very hard for us and not understand the different concepts" (Personal communication, 2nd December 2024)

Another 10th grade student who likes science and also very aware that to understand different daily life phenomena learning science is necessary. Due to lack of hands-on science experiments he felt difficulties in understanding those concepts which became a reason for anxiety during the exam time because he felt less prepared. Other than this we found that many students don't like social science and one main reason for not liking social science in our response we found the teacher's teaching approach. Some of the responses are as follows:

"The Social-science teacher teaches very fast. Due to this I am not able to understand anything in it. Due to this example time I have some fear in the Social science exam." (Personal communication, 3rd December 2024)

So here a fast-paced teaching style becomes a barrier for a learner to understand the social-study. So if we look at all of these reasons given by the students under these sub-themes, It seems that teaching methods and instructional approaches can also be one reason for negative attitudes towards a particular subject. One thing that we understood here is that why different policies and theories emphasising to equip teachers with appropriate teaching and learning style because here at extent it came out that teacher teaching teaching methods and instructional approaches is not helping students to understand that subject and that becoming a reason of disliking that subject/making decision for not pursuing as an electives in higher study or becoming a reason for subject related anxiety that will discuss further. So here we can understand how appropriation teaching approaches can play an important role in forming the students attitude towards a particular subject because in the above theme we also came out with a finding where students responding one of the reasons for liking mathematics is their teachers teaching of a particular subject. In our discussion one thing came out that can support our understanding. Some participants were preferring Cross-Subject Teaching, which means they were asking for a teacher to teach a subject whose teacher's teaching is not understandable. For example one student said that if my science teacher will teach math, we all will be able to better understand it. So as per our study or supporting pre-existing studies we can say that to

some extent teaching factors play an important role in shaping students attitude towards particular subjects.

Specific Math Difficulties:

In our study we also wanted to understand if a student likes a particular subject and finds it easy then they pursue it easily or if they have any type of subject related difficulties. For example, one of us liked science in higher secondary level but not chemistry because he doesn't know the concept of forming chemical equations and doesn't want to memorize without knowing the concepts of those many types of equations. In his study on math anxiety, Ashcraft (2002) finds that learners who have high math anxiety don't have a general weakness in math skills, they can perform equally to their peers in whole numbers arithmetic problems as compared to more advanced topics such as fractions, percentages, algebra and so on. So in our study we also find these trends not only for mathematics but for other subjects also. Where students enjoy a particular subject but have different types of difficulties in a particular part of it or due to negative experience in a particular area of that subject they don't like that subject. If we look for mathematics we got the following responses:

One student responded:

"I like mathematics but I have difficulties in algebra because I got confused with what to do with x or y, I also have difficulties in trigonometry in because I don't understand about the sin, cos (trigonometric ratios)" (Personal communication, 5th December 2024)

Another 10th grade student who likes mathematics but feels difficulties related to mathematics symbols but not explained what type of symbol creates difficulties for him. Another response we got from a 6th grade student who has a problem in understanding word problems and this problem we can consider more related to teaching problems. But the reason to bring this concern here is that during different teacher capacity building on mathematics, most of the teachers have the same concern that their students are not able to make meaning of different types of word problems in mathematics. The reason that we understood here is that these students don't have the opportunity to develop the skills of mathematical representation because in our (according to the learners) many teachers were more emphasizing on development of procedural knowledge rather than conceptual understanding. Due to this some students have difficulties and it seems that it becomes a reason for negative perception or attitude towards mathematics.

If we look at other subjects such as Sanskrit. Most of the students don't like sanskrit and one of the major reasons is subject related difficulties. Some responses are as follow:

"I don't like Sanskrit because I have to remember different words in it and also not able to understand where I have to use it. I am also not able to understand questions and answers in Sanskrit." (Personal communication, 3rd December 2024)

Another student responded:

"I don't like Sanskrit. Sometimes I understand but most of the time I cannot understand. In the first unit test, I got only 2 marks in Sanskrit. In Sanskrit I don't understand the meanings of different words, that's why I don't understand it." (Personal communication, 4th December 2024)

In this situation one thing was a problem related to the subject because if we look at the Sanskrit as a subject, students don't get opportunities for its applications as well as related terminology. One thing that also can be understood here is that teaching strategies also matters here but other than one response it was visible. Apart from this we also find similar concerns in SST where students are having difficulties in understanding different vocabulary in SST so they like to read and learn history and civics but they don't like geography. In science, students also have difficulties in understanding chemistry such as understanding chemical formulas, learning elements and their properties and in biology. So we are not having lots of data to claim this but it seems these are some challenges that also affect students' perception towards the different subjects.

Subject-related anxiety

As a central focus of our research, we examined math-related anxiety and discovered that students also experience anxiety in other subjects, not just mathematics. To understand student perceptions and positive and negative attitudes towards subjects we spoke with them to gain insights into their experiences and feelings surrounding these subjects. While interviewing, some students highlighted that they don't understand what is taught in math. The teacher only stood in front, reading from the textbooks and writing on the board, while we were expected to copy everything down.

Whenever we asked questions, we were often scolded by the teacher. Additionally, one student mentioned while discussing, "Due to COVID-19, we did not attend school full-time. As a result, many foundational concepts were unclear, leading to further challenges." Here, We need to understand how certain teaching approaches and foundational concepts affect students' academic performance and conceptual understanding. Though we did not observe teachers' classes, some research based on such challenges focuses on how the subject is taught in the classroom, which also affects student performance. In the context of education, common issues underpinning mathematics learning difficulties are students' lack of conceptual understanding and poor mathematics skills (Salehudin, Hassan, & Hamid, 2015.). As a result, students tend to be scared, and worried and feel less interested in learning mathematics in depth (Nachiappan, 2016; Yahya & Amir, 2018). Also, key issues could be in the teaching approach when mathematics instruction is overly procedural, focuses on rote learning, or delivers on size fits all manner.

It is often seen to cater to the diverse needs of learners. More things affect student performance such as students often feeling overwhelmed by academic pressure, which leads them to memorize information to avoid failing their subjects, specifically in math. This stress can cause anxiety. During our discussion with the students, we realized that they have certain fears about teachers and mathematics to their fear of punishment, students were unable to ask questions and struggled with mathematics, leading to negative feelings towards the subject.,. Another challenge we discovered in our conversation with the students was that... students have more anxiety in social studies than in mathematics. One student stated that due to teaching the fast way because of not able to understand and not perform in the exam.

"I: If you have to compare the fear level among SST and Math, In which subject do you feel more anxiety?

S: Sir in SST.

I: Why Is it so?

S: Because in class I don't understand it and when I try to read with the help of a textbook. I was able to understand only a few things.

I: What do you feel about how that teacher should teach?

S: If he can teach slowly, explain the topic, and ask important questions then it will be better." (Personal communication, 3rd December 2024) we not only found mathematics but students also have anxiety in other subjects as well. They have anxiety related to SST and Sanskrit and one of the important points they raise is that they feel it during exam time because of the fear of passing. Some of the reasons for these feelings are mentioned above i.e. lack of conceptual understanding, nature of subject, and teaching methods and instructional approaches.

We heard from another student during the interview who expressed similar feelings about the subject. We found that while interviewing with students in different schools. Students not only have anxiety in mathematics but there are other subjects too that create anxiety among students. But in many places, we found that a teaching approach and conceptual understanding lead to this anxiety. Based on our study and other studies that have been done, It seems that these types of feelings (subject-related anxiety) can also affect the students' perception towards the particular subject.

VI. SOCIETAL EXCEPTION AND BELIEF ABOUT MATHEMATICS

Societal Exceptions and Beliefs about Mathematics refer to collective ideas, values and perceptions imposed by families, communities, and broader society. The student narratives consistently reflect the belief that mathematics has a significant social role. It is often regarded not just as a subject in the curriculum but also as a metric of intelligence, a gateway to success, and a pathway to financial security. Many studies have found the predictive power of parent expectations on student achievement (Benner & Mistry, 2007; Froiland & Davison, 2016; Thompson et al., 1988). Indeed, parent expectations have been found to have the most considerable effect on academic achievement among parental involvement variables (Jeynes, 2012). This belief is deeply embedded in the social fabric and reinforced through parental expectations, school culture, and societal messaging. This theme captures how these collective beliefs influence student academic choice, self, perception, and response to mathematics.

Mathematics as a path to success and employment

In interviews conducted with students, it was evident that many associate mathematics with enhanced employment opportunities and high-paying careers. Recurrent phrases such as "Math as a Key to High-Paying Jobs and Definition of a Good Job" and "Math as a Path to Better Employment Opportunities" emerged frequently. These perceptions were not solely derived from the students' personal experiences but were shaped by continuous reinforcement from parents and community members. Students believed that proficiency in mathematics resulted in societal respect, rendering it a non-negotiable subject, irrespective of their interests or aptitudes.

"Many people in my relationship say you can get a good job with math."

"He gave an example of his cousin who recently got a job in Adani company with high pay." (Personal communication, 2nd December 2024)

In this context, it seems that math is viewed not as a pursuit of knowledge or intellectual engagement but as a means to an end, and that end is job security. This understanding of math getting job security shows how students see the subject - something that they must do, not necessarily something they enjoy, it reflects how social and family expectations influence their interest.

Parental and Family Influence on Mathematics Learning

When we talk about parental influence on mathematics learning Research suggests a student's home environment may influence their attitude toward mathematics (Sheldon & Epstein, 2005), and parental involvement can increase student achievement(Areepattamannil et al., 2015; Jacobbe, Ross, & Hensberry,2012; Kliman, 2006; Lopez & Donovan, 2009). Such perceptions align with Kaplan & Adams (2023), who found that the expectations of parents and teachers deeply influence students' academic motivation in mathematics, sometimes even outweighing students' own beliefs about their abilities. When students perceive intense external pressure to succeed in math, it can boost performance in the short term but often leads to reduced autonomy and heightened anxiety. Family played a critical role in shaping student subject preference in several interviews, Students mentioned that events directed by parents frequently influenced career decisions. In our study, it also seems that parent expectations have the most significant effect on how students think about subjects. And this shaped student preference.

One student stated that.

"My father told me I must be good at math to get a good job. So even if I find it hard, I try more because he wants me to do well." (Personal communication, 4th December 2024)

Here we can see that because of parental influence, students are trying to boost their performance but reduce autonomy. Here, we are not able to understand if students really like mathematics or just preserve it because of parental influence. While discussing with other participants, we found a similar

response that shows how parents influence their mathematics learning.

VII. CONCLUSION

This research was an attempt to understand how students perceive mathematics in comparison to other subjects, with a specific focus on anxiety, difficulty, and interest. Through this exploration, it becomes evident that students' experiences with mathematics are deeply shaped by a combination of different factors - their relationship with the subject, the way it is taught, the societal value attached to it, and their everyday classroom experience. The study highlighted how mathematics is not simply a subject that students dislike or fear, but one that evokes a wide range of responses depending on their exposure, understanding, and support systems.

Across both Hindi and English-medium government schools, students consistently associated mathematics with pressure, exceptions, and fear of failure. This pressure did not arise in isolation but was often linked with how the subject was introduced and reinforced over time. Many students struggled to connect abstract mathematics concepts to their everyday realities, and this disconnection contributed significantly to their anxiety. The Presence or absence of conceptual clarity, especially from early classes, emerged as a crucial factor in shaping their continued relationship with mathematics.

The role of the teaching method was another key finding. Students pointed out that the way subjects are taught impacts how they feel about them. Repetition, lack of explanation or rushing through concepts without ensuring understanding contributed to a negative perception of mathematics. On the other hand, subjects that involved storytelling, real-life examples, or classroom interaction, such as English and EVS, were often seen as more enjoyable. This reinforces the idea that classroom practices have a strong influence on whether students feel comfortable and confident with the subject.

At the same time, the research brought out that mathematics was not the only subject that created anxiety; subjects like Social Science and Sanskrit also evoked a sense of burden and disinterest, especially due to rote learning, complex vocabulary or content overload. However, mathematics stood apart in the way it was tied to performance success and intelligence, both by society and students themselves. This association further intensified the pressure many students felt.

Student voices throughout this research made it clear that their experiences are not shaped only by the subject content but also by social and emotional elements. Many students expressed a desire to understand mathematics and to perform well, but often lacked the necessary support or space to do so. They believed that when taught patiently, with relevant examples and a time process, they could find the subject more accessible and less intimidating; in this way, students were not resisting the subject itself rather, they were searching for ways to engage with it meaningfully.

This research concludes that understanding student experience with mathematics cannot be separated from the teaching practices, social beliefs, and classroom dynamics that influence them. The findings suggest a need to listen more closely to how students view their subjects and to consider their perspective as central to spain more inclusive and supportive learning environments

Abbreviations:

NCERT: National Council of Educational Research and Training
NCF: National Curriculum Framework
NEP: National Education Policy

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