



“Challenges in Learning Mathematics”

Mr. Sham B. Garud

Mr. Vijay B. Patare

Department of Mathematics,

Department of Mathematics,

Nutan Mahavidyalaya Sailu,

Nutan Mahavidyalaya Sailu,

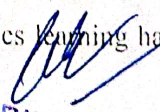
Dist: Parbhani (M.S.) 431503, India Dist: Parbhani (M.S.) – 431503, India

ABSTRACT

Students' mathematics performance is one among the most concerns in mathematics education. Nevertheless, many students perceive mathematics together of the difficult core subjects to be learned. This negative thinking is often thanks to many factors that hinder their mathematics learning. To urge a far better picture of the hindering elements in students' learning, this study was therefore conducted to explore the challenges, obstacles and difficulties experienced by students within the process of mathematics learning. A qualitative research using case study design was employed. a complete of fifty secondary school students comprise of form four and form two students were selected through stratified sampling technique to finish an open ended questionnaire. The respondents were required to offer their response on the challenges they encounter in learning mathematics. Content analysis was administered by identifying the themes because the major sources of challenges, obstacles and difficulties. The frequency and percentage for the identified sources of challenges, obstacles and difficulties were then calculated. The results of this study have great implications for practitioners and also researchers in assisting students to affect their challenges, obstacles and difficulties in daily school life specifically in learning mathematics.

INTRODUCTION:

Mathematics has always been given special attention in class because the nature of the topic is said to several other fields and disciplines. Moreover, students' mathematics achievement has often been the main target and is seen as a critical global issue in many countries. Besides being perceived as a troublesome subject, problems in mathematics learning have also been


 PRINCIPAL
 Nutan Mahavidyalaya
 SELU, Dist. Parbhani



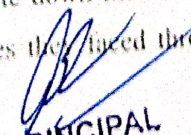
struggle with the shortage of regulation skills among students in learning Mathematics. Self-regulation may be a broad construct which covers before, during and after phases learning. Self-regulation in learning is said to be the 21st century of learning competency (Wolters, 2010) thus students who aren't regulated will face difficulty to beat the obstructions or challenges they face while learning.

The rapid changes in the education system and delivery method provide a huge impact to students. This example requires students to find out effectively and during a more self-directed manner (Winters, Greene & Costich, 2008). To realize this, students got to be trained on the way to enhance their skills to settle on the foremost appropriate learning strategy (Azevedo & Cornley, 2004). Failure of doing so will affect students' motivation to find out and eventually might diminish their interest to find out. Motivation may be a vital element within the learning process because it is an inducer and propeller for one to try to a task successfully. Therefore, motivation is important for a private to successfully face challenges in academic setting. Moreover, motivation are going to be employed by students because the attribution or determinant to their behavior in learning and performance. Behaviours that are associated with academic motivation like the will to try to difficult tasks and stay longer in difficult situations are going to be the determinant for students' ability in facing daily school life challenges (Masaali, 2007).

Based on the above mentioned statements, the present study was conducted to explore the daily challenges faced by students within the process of learning mathematics. This challenges can also be obstruction and difficulties experienced by students. this is often significant thanks to the character of advancement of current mathematics education, delivery system and also the weather that have potentials to hinder students' mathematics learning progress as discussed above.

METHODOLOGY:

This study involved 25 Form 2 students (age=13 years old) and 25 Form 4 students (age=16 years old) who were selected by using stratified sampling technique. The respondents were required to supply their response on the challenges they faced in learning mathematics. Within the context of this study, the challenges also ask the obstacles and difficulties they experienced within the daily mathematics learning process inside or outside the classroom. The respondents got 40 minutes to write down their answers to at least one general open-ended question regarding the challenges they faced throughout their mathematics learning


PRINCIPAL
Nutan Mahavidyalaya
SELU, Dist. Parbhani

process. Discussion wasn't allowed among students to make sure the independency of the students' response.

The responses were classified by using content analysis. The content analysis was first conducted by generating initial code for all the responses. Then, potential themes and sub themes were identified. Reviewing the themes and sub themes were then administered to see whether or not they align with the coded extracts. Lastly, the themes and sub themes were refined until specific and final themes and sub themes were confirmed.

RESULTS:

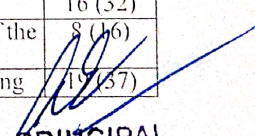
After finalising the categorization, the results of content analysis indicated that the responses might be classified into five main themes and thirteen sub themes:

1. Self-factors (negative perception, low self-regulation),
2. Teachers (behaviours, practices, characteristics)
3. Parents (lack of cognitive, emotional and financial support)
4. Friends (negative attitudes, behaviours, lack of support)
5. Other factors (nature of Mathematics and assessment pressure). The general frequency and percentage for every of the challenges were then calculated.

One of the themes identified was about self-factors because the source of challenges in learning mathematics. There have been 13 main categories of challenges mentioned by the scholars for this factor. These categories might be classified into two sub themes which are negative perception (seven categories) and low self-regulation (six categories) (Table 1). Negative perception is mentioned negative self-interpretation towards stimulus that associated with mathematics supported students' prior knowledge. Meanwhile, self-regulation is referred as students' learning process that has the thinking, controlling, monitoring and evaluating elements.

Table 1: Descriptive analysis on the challenges experienced by the students for the themes related to self-factors

Theme	Sub Themes	Categories	No. (%)
Self-Factors	Negative Perception	1-Feeling sleepy while learning Math	6 (12)
		2-Feeling bored while learning Math	7 (14)
		3-No/lack of interest (nature)	16 (32)
		4-Lack of focus (do something else when the teacher teaches in front of the class)	8 (16)
		5-Lazy to do Mathematics revision/task/exercise/seek help when facing	19 (37)


 PRINCIPAL
 Nutan Mahavidyalaya
 SELU, Dist. Parbhani



	difficulty	
Low Self-Regulation	6-Perceived Mathematics as too difficult	8 (16)
	7-Perceived Mathematics as confusing	5 (10)
	1-Difficulty in doing Mathematics exercise (without full help from others)	1 (2)
	2-Poor time management	8 (16)
	3-Lack of motivation	7 (14)
	4-Easily forget	6 (12)
	5-Always careless when doing Mathematics exercises	8 (16)
	6-Do not know/understand the way of answering question	9 (18)

Out of the 13 categories for the themes of self-factors, the foremost frequent category of challenges stated was lazy to try to revise Mathematics, tasks, exercises or seeking help when facing difficulty (f=19, 37%). No or lack of interest was also mentioned tons by the scholars (f=16, 32%). Besides, the third highest frequent category was students don't know or understand the way of answering certain Mathematics questions (f=9, 18%).

Teacher was another source of challenges stated by students. A complete of 15 categories of challenges associated with teachers which were classified into three sub themes. Three categories falls into teacher behaviours sub themes while ten and two categories were grouped into teacher teaching practices and teacher characteristics sub themes respectively (Table 2). Teacher behaviours are the behaviours that shown by teacher to the scholars including negative actions and negative talks while teacher teaching practices associated with teacher's regular behaviours during the teaching process that would affect students' learning. Lastly, teacher characteristics are teacher personality and physical appearance.

Table 2. Descriptive analysis on the challenges experienced by the students for the themes related to teacher

Theme	Sub Themes	Categories	No. (%)	
Teacher	Teacher Behaviors	1-Scold their students when students failed in evaluation (test, exam)	11 (22)	
		2-Do not bother those who are not good in Math	1 (2)	
		3-Teachers do not enter the class	5 (10)	
	Teacher Teaching Practices	1-Teach too fast		20 (40)
			2-Give too much homework	24 (48)
		3-Teacher limits the number of questions that students can ask whenever the students face difficulties in Math		2 (4)
			4-Do not explain difficult questions	6 (12)
		5-Teaching materials are not attractive	12 (24)	
		6-Language barrier	1 (2)	
		7-Teach in a boring way	13 (26)	
		8-Teachers/school have high expectations on students (Grade A, uphold teaches/school standard)	17 (34)	
		9-Students do not understand the technique of teaching	2 (4)	



Teacher Characteristics	10-Fail to make students understand (do not give explanation even while teachers explain difficult questions but they fail to notice that there are students who still cannot understand)	18 (16)
	1-Too serious while teaching and do not show any sense of humor (fun)	8 (16)
	2-Very fierce (always scold students)	9 (18)

The highest frequency among the 15 categories was about the burden felt by students by having too many homework or mathematical tasks given by their teachers (f=24, 48%). The second major categories experienced by the respondents were associated with the pace of teachers' delivery. They stated that their teacher taught in no time. As a consequence, they are doing not have ample time to repeat all the notes and also unable to digest the knowledge given (f=20, 40%). Even worse, some students complaint that their teachers did not make them understand some lesson (f=18, 36%) thanks to the shortage of explanation given. additionally, even the teacher has explained the difficult question but they did not notice that there are students who still cannot know it.

The next source of challenges is from parents or family. There have been six categories mentioned within the responses. Four categories were grouped into lack of cognitive support sub themes while the opposite two categories were sub themed into lack of emotional support and lack of monetary support respectively (Table 3). Cognitive support is assistance within the sort of ability construction and self-development. Besides, emotional support is assistance within the sort of feeling and affective. Lastly, support includes the help within the sort of materials and study sources.

Table 3. Descriptive analysis on the challenges experienced by the students for the themes related to parent/family

Theme	Sub Themes	Categories	No. (%)
Parent/Family	Lack of Cognitive Support/Cognitive Pressure	1-Not good/expert in Mathematics (when cannot answer question, ask theirchild to ask others siblings or ask their child to understand on their own)	12 (24)
		2-Have a high expectation (Grade A, protect family honor; force theirchild to understand/become expert in Mathematics; scold their child when failed in evaluation (test, exam))	27 (54)
		3-Tend to compare their child Mathematics ability with others	12 (24)
		4-Force to do Mathematics exercise	10 (20)
	Lack of Emotional Support/Emotional Pressure	1-Not a good listener (child expression/feeling towards Mathematics; perceived their child as not giving attention during the Mathematics Class whenever their child cannot answer Mathematics exercises; pay more attention to the TV when	6 (12)



	their child ask for a help	
Lack of Financial Support	1-Does not give their child money to buy reference book	1 (4)

The high expectation from the oldsters was the very best frequent category reported ($f=27$, 54%), this suggests that oldsters put an excessive amount of emphasis on their children's performance in Mathematics, aside from too much emphasis on Mathematics performance, lack of ability in mathematics and inadequacy to help their children in mathematics is another frequent category of challenge faced by students ($f=12$, 24%). Moreover, another difficulty faced by the scholars was that their parents tend to match their Mathematics ability with others which might make them feel stressful ($f=12$, 24%).

Friends were also identified because the sources of challenges in students' learning mathematics process, a complete of 12 categories of challenges were mentioned by the scholars were associated with friends. These 12 categories were then classified into three sub themes which were negative attitude towards Mathematics itself (three categories), negative behaviours or influences (seven categories) and also lack of support (two categories) (Table 4). Negative attitude is referred as friends negative interpretation towards stimulus associated with mathematics supported their prior knowledge. Meanwhile, negative behaviours or influences are the behaviours showed by friends including negative actions and negative talks. Lastly, lack of support is said to friends' behaviours that make competitive situation within the aspects of self-ability and performance.

Table 4. Descriptive analysis on the challenges experienced by the students for the themes related to friends

Theme	Sub Themes	Categories	No. (%)
Friends	Negative Attitudes	1-Being surrounded by friends who dislike/hate Math	14 (28)
		2-Being surrounded by friends who feel Mathematics is a boring subject	7 (14)
		3-Being surrounded by friends who feel Mathematics is a tough subject	11 (22)
	Negative Behaviors/ Influences	1-Being surrounded by friends who do not give attention in Mathematics class	5 (10)
		2-My friends are arrogant and do not want to share knowledge	6 (12)
		3-Friends like to make noise (especially, male students, disturb when teacher teaches/do the discussion)	21 (42)
		4-Being teased by those who are good in Math	1 (2)
		5-Complaint the ways of their Mathematics teacher's teaching	1 (2)
		6-Hold a negative perception towards those who are good in Math	2 (4)

PRINCIPAL
Nutan Mahavidyalaya
SELU, Dist. Parbhwa



Factor of Support/Pressure	Influence as per the Mathematics exercises	No. (%)
	1-Friend also someone do not understand some Mathematics topics (they could not explain Mathematics lesson well)	9 (42)
	2-Being surrounded by friends who are good in Mathematics, competitive pressure.	10 (45)
	3-Not friend, during their in Math, because have well-organized	

Most students had difficulty to focus within the Mathematics class because they were surrounded by friends who liked to form noises and disturbed them during the training process or discussion session (f=21, 42%). Meanwhile, being surrounded by friends who are good in Mathematics (f=16, 32%) and also who dislike Mathematics (f=14, 28%) were the second and third highest frequent challenge faced by students. This suggests that students who were motivated to find out Mathematics felt pressured when most of their friends dislike or hate Mathematics. Meanwhile, those that had friends who are good in Mathematics felt the competitive pressure as they are doing not want to be perceived as incompetent.

For the last sources of challenges (others factor), there have been seven categories of challenges stated by the scholars. These challenges include the character of Mathematics (five categories) and also the assessment pressure (two categories) (Table 5). Nature of Mathematics includes the mathematics knowledge and skills which mentioned the knowledge, concepts and skills that require being acquired so as for college kids to find out and solve mathematics problems. Besides, assessment pressure is that the pressure felt by the scholars towards the character of evaluation regarding the requirements to organize themselves in answering test or examination questions.

Table 5. Descriptive analysis on the challenges experienced by the students for the themes related to other factors

Theme	Sub Themes	Categories	No. (%)
Others	Nature of Math	1-Too many formulas to be memorized	21 (42)
		2-Perceived Mathematics as difficult (too much concepts)	18 (36)
		3-Too many calculations, working steps, numbers	16 (32)
		4-Too much high order thinking skill challenging questions	12 (24)
		5-Too many topics to be covered	12 (24)
	Assessment Pressure	1-Examination pressure (being scolded, find difficult, cannot achieve target, worry if cannot answer Mathematics exam well)	22 (44)
		2-School based assessment pressure (dislike, cannot cope with new system, PT3)	3 (10)

The results indicated that learning mathematics was perceived as difficult by students as many formulas got to be memorized (f=21, 42%) also as too many concepts involved so

PRINCIPAL
Nutan Mahavidyalaya
SELU, Dist. Parbhani



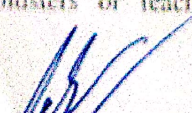
...mathematical problem sets, what's more, there have been 22 (100%) of the respondents experienced examination pressure because they think that they have to use some of their skills learned to excel within the evaluation.

DISCUSSION:

Negative attitude towards mathematics seems to be a source of challenges in learning mathematics. This finding is aligned with the study conducted by Gomez-Cabrón (2008) which found that the emergence of negative attitudes and behaviours towards mathematics are the factor that contributes to the failure in mathematics. When students have negative perception towards mathematics like perceiving mathematics as being too difficult and really confusing to find out, they're going to quickly lose their interests and motivation to find out the course. As a result, they can't perform well in solving mathematics problems. Additionally, low self-regulation skills in handling the challenges mentioned by the scholars during this study is parallel with the findings of the many researches which reported that a lot of students faced difficulties in regulating their learning (Perry, Phillips & Dowler, 2004; Waino, 2005). Additionally, regulating learning is higher order thinking skills which is extremely important to be acquired during the transition from grade school to secondary school and high school life (Annevirta & Vauras, 2006). Research indicates that students from negative perceptions towards their ability in regulating their learning during the transition process (Corpus, McClintic- Gilbert & Hayenga, 2009).

In the aspect of teacher, the most factors indicated by students as their challenges and obstructions in learning mathematics are teacher behaviours, practices and characteristics. For instance, students feel worried when their teachers teach too fast and have unpleasant characteristics. As a consequence, students are afraid to invite assistance once they are experiencing problems to know certain lessons. Things become worse when students cannot complete the homework given by the teachers.

The findings of this study also indicated that oldsters, relations, friends and teachers are the social source of challenges in learning mathematics. Kober (1991) noted that those people have an enormous potential in affecting student's development, progress and performance. The importance of mastering the knowledge and skills of mathematics like the essential ability to use Mathematics knowledge within the real working environment (Siti Hamad & Rohani, 2010) often led parents to force their children to master mathematics. There's little question that oldsters or teachers set certain expectations on students' mathematics


PRINCIPAL
Nutan Mahavidyalaya
SELU, Di...



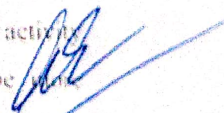
achievement with the aim to motivate and encourage students to offer their best efforts within the learning process. However, it should be noticed that too high expectations will cause fear and avoidance from mathematics which indicated that the expectation contributes to negative self-esteem of scholars (Arem, 2003). This is often parallel to the students' response within the current study which mentioned that parents' tendency to match their mathematics ability with others just make them feel annoyed and lowered their self-confidence.

Being surrounded by peers who have negative attitudes (disliking mathematics) and behaviours (noisy, unwilling to try to mathematics exercise) towards mathematics are the common situations experienced by students in their daily mathematics classroom. When this happens, students will feel discouraged to remain with mathematical tasks or activities and fewer motivated to compete with others. This phenomenon should be handled well by the scholars in order that they're ready to protect themselves from being influenced by these negative influences. This is often important because peer attitude is one among the many determinants of students' attitude towards mathematics (Arem, 2003). Positive influence will cause good consequences and the other way around.

CONCLUSION:

Pressure seems to be the common challenge faced by the scholars in their daily learning process for the mathematics subject. Specifically, the pressure may come from teacher, school or relations who place very high expectations for college kids to excel in mathematics. Additionally, competitive pressure from peers and friends also contributes to students' anxiety in learning mathematics. Therefore, all parties including students got to have an honest mechanism to regulate and minimize the pressure. An excessive amount of emphasis on the importance of getting excellent leads to examination potentially makes the scholars to experience worry. However, it should be done to some extent by using the fear appeal elements. The utilization of fear appeal elements on student evaluation is believed can motivate the scholars to find out harder especially for fewer hardworking students. This will be done when teachers or parents executing it alongside the reason on the importance of evaluation for the students' future education and career prospect (Putwain & Roberts, (2009).

With reference to delivery, mathematics teachers should consider alternative methods of delivery which may boost students' motivation to continue studying mathematics. Teachers got to confirm that their students see the worth of every mathematical task or activity assigned to them. When the scholars appreciate the tasks, they're going to be


PRINCIPAL
Nutan Mahavidyalaya
SELU, Dist. Parbhani

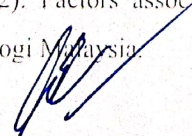


persistence and can be more willing to remain longer in completing the mathematics activities (Martin, 2001) because they noticed the importance of mathematics in their life.

In addition, this is often also an efficient way in answering questions from students regarding the aim of learning particular topics in mathematics which they feel aren't useful for his or her future. Meanwhile, parents should put more emphasis on encouraging and motivating their children instead of setting very high expectations. Besides, teachers got to remember of their students' individual ability in learning mathematics. They need to provide supportive learning environment to permit students to find out comfortably. Finally, the scholars must be trained to develop a positive attitude and perception towards mathematics. This is often vital because their actions are influenced by their thinking. Last, all the challenges, obstacles and difficulties in learning mathematics should be addressed properly in order that students can endure within the daily mathematics learning progress.

REFERENCES:

1. Annevirta, T., & Vauras, M. (2006). Developmental changes of metacognitive skill in elementary school children. *The Journal of Experimental Education*, 74, 197-225.
2. Arem, C. (2003). *Conquering Maths Anxiety* (2nd ed.). USA: Brooks/Cole
3. Azevedo, R., & Cromley, J. G. (2004). Does training on self-regulated learning facilitate students' learning with hypermedia. *Journal of Educational Psychology*, 96(3), 523-535.
4. Corpus, J. H., McClintic-Gilbert, M. S., & Hayenga, A. O. (2009). Within-year changes in children's intrinsic and extrinsic motivational orientations: Contextual predictors and academic outcomes. *Contemporary Educational Psychology*, 34, 154-166.
5. Gomez Chacon, I. M. (2000). Emotional literacy education mathematics policy: Attitudes, emotions and beliefs. *One*, 13, 7-22.
6. Ho, K. K., & Hyun S. Y. (2011). Development and validation of a mathematics anxiety scale for students. *Asia Pacific Education Review*, 12, 509-521
7. Kober (1991). *Involve Parents As Partners*. Internet, Pathways Home Page.
8. Martin, A. J. (2001). The student motivation scale: A tool for measuring and enhancing motivation. *Australian Journal of guidance and Counselling*, 11, 1-20.
9. Marzita, P. (2002). *Factors associated with mathematics anxiety*. Kuala Lumpur: Universiti Teknologi Malaysia.


PRINCIPAL
Nutan Mahavidyalaya
SELU, Dist. Parbhani



10. Masaali, S. (2007). Relationship between reading study and academic achievement among students in IU. Isfahan: Khorasgan Slamic.Azad University. Persian: Dissertation.
11. Perry, N., Phillips, L., & Dowler, J. (2004). Examining Features of Tasks and Their Potential to Promote Self-Regulated learning. Teachers College Record, 106, 1854-1878.
12. PISA Program for International Student Assessment. (2009). Science competencies for tomorrow's world. Paris: Author.
13. Putwain, D. W., & Roberts, C. M. (2009). The development and validation of the teachers use of fear appeals questionnaire. British Journal of Educational Psychology, 79, 643-661.
14. Siti Hamad Mohamed & Rohani Ahmad Tarmizi (2010). Anxiety in mathematics learning among secondary school learners: a comparative study between Tanzania and Malaysia. Journal of Procedia Social and Behavioral Sciences, 8, 498-504.
15. Winne, P. H. (2005). A perspective on state-of-the-art research on self-regulated learning. Instructional Science, 33, 559-565.
16. Winters, F. I., Greene, J. A., & Costich, C. M. (2008). Self-regulation of learning within computer- based learning environments: A critical analysis. Educational Psychology Review, 20(4), 429- 444.
17. Wolters, C. A. (2010). Self-regulated learning and the 21st century competencies. Department of Educational Psychology, University of Houston Retrieved December 14,2010,from.http://www.hewlett.org/uploads/Self_Regulated_Learning_21st_Century_Competencies.pdf

PRINCIPAL
Nutan Mahavidyalaya
SELU, Dist. Parbhani