

The Impact of Teacher's Practices and Content of Mathematics on Student's Anxiety in Secondary and Intermediate Classes

Sanaa Shehayeb* and Mohammad Anouti

Faculty of Pedagogy, Lebanese International University, Lebanon

*Corresponding author: Dr. Sanaa Shehayeb, Faculty of Pedagogy, Lebanese International University, Lebanon, Tel: 9613738473; E-mail: sanaa.shehayeb@liu.edu.lb

Rec Date: August 28, 2018; Acc Date: October 24, 2018; Pub Date: October 29, 2018

Copyright: © 2018 Shehayeb S, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Abstract

The objectives of this research were to determine if the content of mathematics as a whole (not distinct math themes as in Algebra, 2D geometry, 3D geometry, trigonometry, complex numbers, probability, etc) is a factor contributing to student's anxiety; and to examine the extent of teacher's practices, through cognitive and social interactions, on student's math anxiety. Student's gender was not a factor tackled by the study thus gender specific differences in classes and levels towards math anxiety were not tested. In addition, the study did not compare the impact of math anxiety on students in middle schools to that of students in the secondary level. The study utilized a two-phase design labelled as a sequential explanatory design "descriptive quantitative data collection followed by a qualitative design through structured interviews to further understand and interpret the data collected from the quantitative findings". The instrument employed for data collection was a 5 Point-Likert scale survey questionnaire of standardized items developed by the universities of Georgia, Southampton, New Hampshire and Windsor Scholarship, and the Theo Wubbels and Jack Levy's Student Questionnaire of Teacher Interaction. The statistics used for the data collected concerning the study were descriptive inferential statistics (the mean, the standard deviation, the mode and the median), and the Pearson's Chi-Square test. Through the study results, the researcher concluded that math content as a whole is a factor that contributes to student's math anxiety in the intermediate and secondary levels which indicates that the current curriculum is built on knowledge and not proper understanding of the subject material and that the content of mathematics in diverse classes is stuffed to the limit that it causes students daily anxiety thus their math specific deficits cannot be properly dealt from one class to another, and that teacher's practices represent a main reason that influences student's math anxiety; and even-though, some of these practices derived from weak to moderate to strong association with student's anxiety, the researcher deduced that items concerning teacher's practices in lower levels should be seriously treated for it causes students math anxiety that may probably keep up with them in later stages.

Keywords: Math anxiety; Timed exams; Grade level; Content; Teacher's practices; Cognitive; Social interaction

issue of math anxiety is significant for every student, parent, teacher, educator and school principal.

Introduction

Personal anxiety has always been a critical disease that negatively affects one's social life and academic performance on the routine, reactive and reflective levels [1-7]. Through studies, literature has recognized the negative impact of anxiety on student's academic performance; though it is important to differ between personal anxiety and math anxiety as the latter is associated with people who feel tension, apprehension, discomfort, disturbance and fear of problems and situations that involve mathematics [8] and which can be validated as a preposterous dread of the subject material that might be created through cognitive applications and social interaction inside and outside the classrooms [9]. Many factors such as student's gender, the designated curriculum, the implemented curriculum, grade level, core content, sequence of the chapters, timed exams, past experiences, teacher's practices through cognitive and social interactions, and math specific deficits like short memory and misplacement of numbers can contribute to student's math anxiety [10] thus, in order for students to experience a successful math development in diverse classes and with minimum anxiety, teacher's social and cognitive practices should be properly addressed and core content should be deeply revised since the

Research questions

- What is the effect of math content on student's math anxiety in the intermediate and secondary level?
- To what extent do teacher's practices cause student's math anxiety in the intermediate and secondary levels?

Research hypotheses

H₀1: There is no significant relation between math content and student's math anxiety in the intermediate and secondary levels.

H₁1: There is a significant relation between math content and student's math anxiety in the intermediate and secondary levels.

H₀2: There is no significant relation between teacher's practices and student's math anxiety in the intermediate and secondary levels.

H₁2: There is a significant relation between teacher's practices and student's math anxiety in the intermediate and secondary levels.

Limitations of the study

The researcher had to deal with three limitations when implementing the study. First, the limited number of schools available

which caused reducing scoping. Second, changing some words and verbs in the questionnaire survey to fit students in the selected private and public schools on all levels. Third, the limited time given for some students in some of the selected schools to properly complete the survey which forced the researcher to distribute the surveys again later on to the same students in order to adequately complete them.

Delimitations of the study

Teachers, coordinators, deputies, head-deputies and principals played a major role in facilitating the implementation of the study in three private and two public schools by making sure that the surveys were distributed to students in classes according to the researcher demands which resulted in a strong impact on the study's validity.

Research Methodology

Worries are mental and emotional feelings which represent a normal state of mind, however when these worries start to be translated through a body language, as in a speedy heart beating and cold feet, it becomes either a stress or an anxiety [11]. Both stress and anxiety are defined as a personal abnormal psychological state of mind, however with stress you know the upcoming threat (as in a deadline) and you know that you can control the elements surrounding it and even master them, while in anxiety you also know the upcoming threat but you feel helpless about controlling it or coping with it [12]. On the other hand, math anxiety, which is independent from personal anxiety and exclusive to mathematics [8], has always been an interesting topic for researchers for many years as many studies have pointed out on the different factors contributing to student's math anxiety in the intermediate and secondary levels, even-though some of them have yet to be truly tested, and on its negative effect on student's academic performance, though no studies have actually distinguished the impact of low, moderate and high levels of anxiety on student's mathematics performance.

Math anxiety surfaces during student's educational pathway in all classes and every level and may be created in early stages because of many factors such as teacher's practices and core content. Math anxiety was first detected in 1957 and was thought to be a case of anxiety but later on it was labeled as "math phobia" or "numbers anxiety" for its existence as a real phenomenon distinct from general anxiety [13] and which interferes with manipulating numbers and solving problems in everyday life and academic situations [14] causing many students changing classes to avoid math as much as possible and limited choices for their future careers resulting in many countries unable to deliver enough graduated in the sciences, technology, engineering and mathematics fields (STEM).

Math anxiety symptoms are associated with the affective, cognitive and behavioral domains through crash or shortage of memory because of activities in the amygdala and the left ventromedial prefrontal cortex regions which spread negative feelings during math tasks and block the amount of resources that individuals can use to complete the tasks by affecting their working memory abilities, causing speedy heart beat, avoidance, a sense of inferiority and nausea, and may be provoked in any situation involving mathematics [15-19]. Moreover, according to Yang, MATH is a word of four letters that scares many people and makes them feel uncomfortable in its presence [20] as it is known as a rigid material whose content becomes more abstract as students advance in classes thus its nature might be an essential reason for student's anxiety so suitable teaching approaches, methods, strategies

and techniques are needed to approach it to students to enforce their understanding of the core content of the subject material rules and theories, to enhance their learning environment, to increase their self-confidence and self-efficacy concerning daily and future math tasks, to reduce their anxiety and to improve their attitude towards math [21] hence, math teacher's practices through cognitive and social aspects like their quality of teaching as in poorly explaining or teaching too fast, material knowledge, skills, experience, interaction and professional development [22-24] may prevent students from a proper math experience and may help creating a long lasting math anxiety [25].

Although the current Lebanese curriculum was designed almost two decades ago as a subject-centered curriculum (also called an assessment curriculum), teacher's practices play a significant role in students proper acceptance and understanding of mathematics so it is most important to investigate the impact of content of mathematics and the extent of the social and cognitive aspects of teacher's practices on student's math anxiety in the intermediate and secondary levels.

Subject selection

Students aged from 14 till 18 in the intermediate and secondary levels in public and private schools were targeted because they should be able to accept and use math symbols, and deal with abstract concepts, geometric perspectives and operational calculus, and because math teachers are the ones who should aid their students in their scholar math education.

Research design

This study is classified as sequential explanatory design "descriptive quantitative followed by qualitative data collection" as it analyzed the data collected from the survey questionnaires and further interpreted the findings through interviews with math coordinators, with the intention of studying the impact of content of mathematics and the extent of teacher's practices on student's math anxiety in the intermediate and secondary levels.

Research instruments

The research study was conducted through the usage of a 5 Point-Likert scale survey questionnaire of standardized items adapted from the universities of Georgia [1], Southampton, New Hampshire [4] and Windsor [2], and from Theo Wubbels and Jack Levy's Student Questionnaire of Teacher Interaction, [5] where each response was given a numerical value as follows: 1=Strongly disagree, 2=Disagree, 3=Undecided, 4=Agree and 5=Strongly agree, and where students math anxiety was tested using 5 items, content of mathematics was tested using 8 items and finally teachers practices was tested using 22 items.

Validity and reliability test

Regarding the validity of the survey questionnaire, a copy was first given to two math coordinators in the fields of intermediate and secondary levels of education and one academic professor in the field of higher education after which copies of the survey were piloted as follows: one for a student in grade 9, two for students in grade 10, one for a student in grade eleven scientific, one for a student in grade 11 humanities/economics, one for a student in grade 12 economics and sociology and one for a student in grade 12 life/general sciences were

none of these students participated later on in the actual implementation of the study in schools. Piloting the survey helped modifying some ambiguous words and rephrasing some sentences for better understanding for most students. For items reliability, Cronbach's alpha was calculated through Statistical package for the Social Sciences (SPSS) version 23 where student's math anxiety had a high reliability coefficient of 0.748 (above 0.7), content of mathematics had a high reliability coefficient of 0.737 (above 0.7) and teachers practices had a very high reliability coefficient of 0.850 (above 0.7).

Data collection

After validating the survey questionnaire and piloting it for a better understanding, and after receiving results of the reliability test, a formal request was sent the coordinator of the math department of an educational association for a permission to enter the campuses of three of their schools; the request was later on sent to the COO of the association who granted the acceptance based on the recommendations of the same coordinator. Requests were also sent to the department responsible of public schools for the implementation of the study, after-which the acceptance was also granted. Students were chosen through random stratified sampling as follows: 3 low achievers, 4 moderate achievers and 3 high achievers from each class, and schools where selected through random cluster sampling. 80 students in grade 9 and 370 students in the secondary level were required to answer the items of the survey questionnaires, after-which the data were organized in preparation to be analyzed and interpreted.

Data analysis

The data collected was coded and then was analyzed by the Statistical package for the Social Sciences (SPSS) software version 23 and shown below (Tables 1-3).

Variables	Gender of the responder (Student)		
	Frequency	Percent	Valid Percent
Male	216	48%	48%
Female	234	52%	52%
Total	450	100%	100%

Table 1: Gender of respondents in terms of frequency and percentage.

Variables	Classes of Students		
	Frequency	Percent	Average Age
Grade 9	80	17.8	14
First Year Secondary	122	27.1	15
Second Year Secondary Humanities / Economics	48	10.7	16
Second Year Scientific	78	17.3	16
Third Year Secondary economics and Sociology	51	11.3	17
Third Year Secondary Life Sciences	48	10.7	17
Third Year Secondary General Sciences	13	2.9	17
Third Year Secondary Humanities	10	2.2	17
Total	450	100	

Table 2: Classes of the students in terms of frequency and percentage.

Class	Percent of Male Students	Percent of Female Students
Grade 9	48.80%	51.20%
First Year Secondary	42.60%	57.40%
Second Year Secondary Humanities/Economics	39.60%	60.40%
Second Year Scientific	67.90%	32.10%
Third Year Secondary economics and Sociology	29.40%	70.60%
Third Year Secondary Life Sciences	56.20%	43.80%
Third Year Secondary General Sciences	46.20%	53.80%
Third Year Secondary Humanities	50.00%	50.00%

Table 3: Distribution of male and female students in classes.

Table 4 displays student's responses to the survey questionnaire items for content of mathematics. The results display 8 items in addition to the mean, the standard deviation, the mode and the median of each item. The results show a relatively small standard deviation for each item which indicates that the sample is regular and that the values are relatively concentrated around the mean. The first item shows that 50% of students think that math content is easy for them while 50% think the opposite. The second item has a mode of 4 showing that most students think they can succeed in math classes and

a median of 4 which signifies that 50% of students strongly agree that they can succeed in it. The third item has a mode of 5 signifying that most students strongly agree that math content was easier in previous years and median of 4 showing that 50% of students strongly agree about it. The fourth item has a mode of 2 showing that most students disagree about being able to keep up with math content in class all the time and a median of 2 signifying that 50% of students strongly disagree with this item. The fifth item has a mode of 2 showing that most students forget what they learned in math classes and a median

of 2 signifying that 50% strongly disagree about remembering the content learned in the same day. The sixth item has a mode of 2 showing that most students are able to think clear while working mathematics. The seventh item has a median of 3 signifying that 50%

of students do not like the idea of being introduced to new math content as they advance in classes while 50% like it. The eighth item has a mode of 4 which indicates that math content causes stomach aches for most students.

Math Anxiety Items	Standard Deviation	Mode	Median
Math content has usually been easy for me to understand.	1.187	4	3
I believe that I can succeed in math class.	1.142	4	4
Math content was easier in previous years.	1.324	5	4
I am frequently lost and have trouble keeping up with the content given in my math classes.	1.297	2	2
Math is clear to me in class, but when I go home it's like I was never there.	1.393	2	2
My mind goes blank and I am unable to think clearly when working in mathematics.	1.632	2	2
I do not like being introduced to new mathematical content from one class to another.	1.274	4	3
Math content causes me stomach ache.	1.418	4	2

Table 4: Descriptive inferential statistics for math content.

Student's Math Anxiety Items	Pearson Chi-Square Alfa Value
Generally, I have felt secure about studying math	0.000003
I understand math now, but I worry that it's going to get really difficult soon	0.00019
I like to look through mathematics books	0.017
I can reject helping a child with his math homework, because I am afraid of facing a question which I cannot solve	0
When I open my math book and look at the pages, I fear what is written inside	0.000008
Total of Factors	0.000043

Table 5: Results of the Pearson's chi square test on the impact of math content on student's math anxiety.

A Chi-square test of independence was calculated to check possible association (if any) of each item of student's anxiety and the content of mathematics as a whole. There were significant associations between the first, second, third, fourth and fifth item of student's math anxiety and math content at the p-level<0.05. In addition, there was a

significant association between total factors of student's math anxiety and math content at the level of $p=0.000043<0.05$. Hence, the Chi-square test of independence results shown in Table 5 reveals that content of mathematics as a whole is a strong factor contributing to student's anxiety in the intermediate and secondary levels.

Teacher's Practices Items	Mean	Standard Deviation	Mode	Median
My math teacher is a good teacher.	4.03	1.199	5	4
My math teacher holds our attention in classrooms.	3.71	1.242	5	4
My math teacher realizes when we don't understand.	3.7	1.216	4	4
My math teacher spends the necessary amount of time helping us to understand math concepts	3.88	1.2	5	4
My math teacher is willing to explain things again.	4.06	1.016	4	4
My math teacher teaches us skills that help us understand more.	3.79	1.171	4	4
My math teacher uses creative teaching methods to reinforce my understanding of concepts.	3.39	1.255	4	4
My math teacher works on understanding and not just memorization.	3.98	1.111	4	4

If we have something to say to our math teacher, he listens.	3.92	1.061	4	4
My math teacher positive attitude reflects on our attitude towards math.	3.57	1.191	4	4
My math teacher is friendly.	4.02	1.059	5	4
My math teacher does not explain things clearly.	2.09	1.199	1	2
My math teacher gets angry unexpectedly.	2.4	1.256	2	2
My math teacher is strict and hard to connect with to the limit we cannot discuss anything in class concerning math or other things.	2	1.152	1	2
My math teacher thinks we don't know anything in math.	2.32	1.184	2	2
My math teacher puts us down.	1.96	1.155	1	2
During my math classes I am expected to sit quietly and listen.	3.54	1.144	4	4
My math teacher's attitude prevents me from understanding in class and asking about things I did not understand.	2.31	1.271	1	2
My math teacher's attitude causes me serious worries every day.	2.19	1.181	2	2
I can recall math teachers who made me feel dumb in class.	3.03	1.38	4	3
Many of my math teachers were not qualified to teach.	3.09	1.477	4	3
My math teacher is not patient with us	2.24	1.248	1	2

Table 6: Descriptive inferential statistics for teacher's practices.

Table 6 displays student's responses to the survey questionnaire items for teacher's practices. The results display 22 items as well as the mean, the standard deviation, the mode and the median of each item. The results show a relatively small standard deviation for each item which indicates that the sample is regular and that the values are relatively concentrated around the mean. The first item indicates that most students strongly agree of having a good math teacher. The second item shows that most students agree to the fact that their math teachers hold their attentions in classes. The third item shows that most students agree that their teachers realize when they don't understand. The fourth item shows that most students agree about

their math teachers spending the necessary amount of time to help them understand the concepts. The fifth item shows that most students agree that their math teachers are willing to explain things again. The sixth item shows that most students agree that their math teachers teach them some skills that help them understand more. The seventh item shows that students do not differ between typical teaching methods and creativity in teaching. The eighth item shows that most students agree that their math teachers work on understanding and not just memorizing. The ninth item shows that most students agree that their math teachers listen to them. The tenth item shows that math teacher's positive attitude reflects their student's attitude towards math.

Teacher's Practices	Pearson Chi-Square Alfa Value				
	Generally, I have felt secure about studying math	I understand math now, but I worry that it's going to get really difficult soon.	I like to look through mathematics books	I can reject helping a child with his math homework, because I am afraid of facing a question which I cannot solve	When I open my math book and look at the pages, I fear what is written inside
My math teacher is a good teacher	0.028	0.02	0.492	0.031	0.000343
My math teacher holds our attention in classrooms	0.023	0.025	0.169	0.082	0.000037
My math teacher realizes when we don't understand	0.517	0.101	0.117	0.008	0.003
My math teacher spends the necessary amount of time helping us to understand math concepts	0.021	0.0063	0.344	0.001	0.00001
My math teacher is willing to explain things again	0.254	0.619	0.372	0.000001	0.000351
My math teacher teaches us skills that help us understand more	0.003	0.624	0.292	0.000351	0.000048

My math teacher uses creative teaching methods to reinforce my understanding of concepts	0.077	0.125	0.055	0.000048	0.0139
My math teacher works on understanding and not just memorization	0.04	0.446	0.038	0.13	0.003
If we have something to say to our math teacher, he listens	0.511	0.57	0.007	0.003	0.0097
My math teacher positive attitude reflects on our attitude towards math	0.006	0.222	0.028	0.097	0.000009
My math teacher is friendly	0.169	0.003	0.121	0.000009	0.007
My math teacher does not explain things clearly	0.021	0.129	0.258	0.007	1E-07
My math teacher gets angry unexpectedly	0.021	0.183	0.115	0	0.00013
My math teacher is strict and hard to connect with to the limit we cannot discuss anything in class concerning math or other things	0.065	0.074	0.005	0.00013	0.000018
My math teacher thinks we don't know anything in math	0.041	0.061	0.036	0.000018	1E-07
My math teacher puts us down	0.025	0.065	0.15	0	0
During my math classes I am expected to sit quietly and listen	0.32	0.691	0.194	0	0.00611
My math teacher's attitude prevents me from understanding in class and asking about things I did not understand	0.414	0.029	0.048	0.00611	0.000015
My math teacher's attitude causes me serious worries everyday	0.049	0.362	0.453	0.000015	0
I can recall math teachers who made me feel dumb in class	0.009	0.0444	0.044	0	0.000001
Many of my math teachers were not qualified to teach.	0.0058	0.000132	0.0029	0.000001	0
My math teacher is not patient with us	0.853	0.284	0.162	0	0.000007
Total of Factors	-	-	-	-	0.033

Table 7: Results of the Pearson's Chi square test on the extent of teachers practices on student's anxiety.

The eleventh item shows that most students agree that their math teachers are friendly. The twelfth item shows that most students agree that their math teachers explain things clearly. The thirteenth item shows that most students agree that their math teachers do not get angry unexpectedly. The fourteenth item shows that most students disagree that their math teachers are strict and hard to connect with. The fifteenth item shows that most students disagree that their math teachers think that they don't know anything in math. The sixteenth item shows that math teachers do not put students down. The seventeenth item shows that students are supposed to sit quietly in classes and their teachers use classic teaching methods more than the interactive students-centered teaching methods. The eighteenth item shows that math teacher's attitudes don't prevent students from understanding in class and asking about things they did not understand. The nineteenth item shows that math teacher's attitudes

do not cause students daily serious worries. The twentieth item shows that most students recall having previous math teachers who made them feel dumb. The twenty-first item shows that most students consider their previous math teacher as not qualified to teaching the material (mathematics) properly. The twenty-second item shows that most students agree that their math teachers are patient with them.

A Chi-square test of independence was calculated to check possible association (if any) between each of student's math anxiety items and each of teacher's practices items for the extent of teacher's practices on student's anxiety. Results showed the third, fifth, seventeenth and twenty-second item of teacher's practices have a weak association with only two out of five items of student's math anxiety items; the sixth, eighth, ninth, eleventh, twelfth, thirteenth and nineteenth of teacher's practices had a moderated association with three out of five items of

student's math anxiety; the second, fourth, seventh, tenth, sixteenth and eighteenth items of teacher's practices had a strong association with four out of five items of students math anxiety; and that the first, fourteenth, fifteenth, twentieth and twenty-first items of teachers practices had association with all five items of students math anxiety at the p -level <0.05 . In addition, there was a significant association between total factors of student's math anxiety and teacher's practices at the level of $p=0.033<0.05$. Hence, the Chi-square test of independence results shown in Table 7 revealed that teacher's practices contribute to student's anxiety in the intermediate and secondary levels, however some practices had weak association with anxiety, and some had moderate association while others had strong association with it.

Results and Discussion

Results of the study confirmed the research hypotheses as they showed that content of mathematics as a whole causes many students math anxiety and that mathematics teacher's practices through knowledge and interaction contribute to the same anxiety on different levels as they vary from weak to moderate to strong association with student's anxiety in the intermediate and secondary levels.

The study findings concerning math content, as a whole, as a factor that contributes to student's anxiety are parallel with other researchers' findings and they directly point out at the excessive math content of the Lebanese curriculum and that the current curriculum is based on receiving information and knowledge on daily basis without actually having enough time to properly understand the content of a chapter and then move on to the next one. According to many researchers, diverse factors influence student's math anxiety. Cornell [26] indicated that the time affordable for students to completely understand mathematics is a direct factor that contributes to student's anxiety since they are presented to the core content but they are not able to properly understand it because the limited number of sessions and the time constrains are not usually suitable with the size of the content of the subject material [26]. In addition, Keow Ng [27] pointed out that mathematics has always been viewed as a rigid material by students, parents and even some math teachers, and that most students are unable to see its practicality because of the way the curriculum was designed so they won't be able to properly deal with it in their current or later stages [27]. Finally, Mbugua, Kibet, Muthaa and Nkonke [28] emphasized on the fact that the overload content of mathematics could be a major factor that contributes to student's anxiety and that it should be widely reviewed for it to be more appropriate and relevant to student's abilities and needs [28].

The study findings are similar to those of other researchers however teacher's practices items had either weak (2 items), moderate (3 items) or strong (4 or 5 items) association with student's anxiety in schools in Lebanon through cognitive and social aspects as follows: teachers explaining well and willing to explain again but not being patient with students and expecting them to sit quietly had weak association with student's anxiety; Teacher's skills, working on student's understanding and memorization, listening to them and being friendly, not explaining things clearly with bad attitude and getting angry all of a sudden had moderate association to student's anxiety; while teachers who put their students down, make them feel dumb (especially in lower classes) and not qualified to teach with a bad attitude that debilitates their understanding, and those who spend enough time for student's understanding, use creativity in teaching to enhance their understanding with a positive attitude had a strong association with

students anxiety. Hence, the extent of teacher's practices through social and cognitive aspects is a strong factor that contributes to student's math anxiety which indicates that a diploma alone is not enough for any successful teacher unless it is enforced with education courses for the teachers to know how to properly act with their students, teach them and enforce their learning for a suitable learning environment and a better academic performance. Many researchers have pointed out on the importance of teacher's practices on student's anxiety. Buckley [29] defined teachers as classrooms leaders and the ones responsible for students to properly understand their subject material through cognitive creativity and social interaction to avoid anxiety as minimum as possible [29]. In addition, Pietilä, Klein and Wu found out that students feel less anxious when their teachers work on growing their abilities for a better critical thinking through diverse assessment tools and frequent feedbacks about their performance and about what they need to do for improvements in homework, exams and class participation [30-32].

Conclusion

The following conclusions are taken into account based on the research study findings:

- Content of mathematics is a factor that contributes to student's anxiety which points out at the excessive math content that does not take into consideration student's proper understanding and which indicates that Lebanese curriculum is built as a subject-centered curriculum which focuses on the subject material, and prioritize it, and not the students who are taught just to pass the exams after-which they will forget everything concerning the core content.
- Teacher's practices, and especially those of lower levels teachers, can create a long-lasting student's anxiety that could carry on to career change and negative behavior towards the material in daily life and academic situations. It can be concluded that teachers should identify their teaching approaches, methods, strategies and techniques for student's successful learning environment in the intermediate and secondary levels and for sure in lower classes.

Recommendations

The Lebanese curriculum is best described as an assessment curriculum which mandates teachers to finish a specific amount of the subject material resulting in students many misconceptions, worries, stress and anxiety for not properly understanding the concepts, rules, theories and usage of equations of the core content. The excessive content on mathematics can even forbid some students to help others in academic situations or during daily life because of the anxiety, thus our curriculum becomes useless for them and may force them to take a different academic pathway just to avoid mathematics as much as possible. Educators and subject material specialists should first question themselves about what is math? Why do we have to teach it to our students and why they have to learn it? What are our learning objectives? What are our learning outcomes? What activities we need and how to apply them? What is our core content that suits the affordable learning sessions? How to design standardized books that fit different classes? What is the level of hardness we need in each class? What are the consequences of chapters? What connections we have to make with other materials for mathematics to become more relevant and practical for many students? What goals can we set our sight on? Answering these questions will probably take the Lebanese curriculum

into a whole new direction and may reduce student's anxiety towards the content of mathematics.

Teachers cannot understand their students and the whole learning environment without receiving proper education courses which consequently help, identify and modify their teaching approaches, methods, techniques and strategies; and for students to accept mathematics and be comfortable with it, teachers must concentrate on student-centered teaching proposition as much as possible. In addition, results of the study enforce the fourth stage of Erikson's psychosocial theory of personality development which states that when the feeling of inferiority is created for any individual at early stages it could probably cause major problems for him in future stages if it was not constantly and accurately dealt with; thus, schools principals should be aware of teachers who are not qualified to properly teach mathematics and those who make their students feel dumb especially in lower classes.

Students should be given the opportunity to discuss their feelings about the current content of mathematics, their teacher's social and cognitive interaction as well as their own math anxiety, past and present, verbally in groups discussions with other colleagues or teachers, or written through letters to school counsellors and/or teachers, parents by expressing their feelings towards their math problems and fear in order for others to properly understand their current situation to reduce it through instructional methods or anxiety management techniques.

References

1. May DK (2009) Mathematics self-efficacy and anxiety questionnaire. University of Georgia, USA.
2. Adeyemi A (2015) Investigating and overcoming mathematics anxiety in in-service elementary school teachers. University of Windsor, UK.
3. Carvalho D (2015) Senior-level math teacher's perceptions on student and teacher math anxiety in the classroom. Perceptions of math anxiety in the math classroom.
4. Smith K (2014) How teacher beliefs about mathematics affect student beliefs about mathematics. University of New Hampshire Scholars' Repository. Honors Theses and Capstones. Student Scholarship.
5. Wubbels T, Levy J (1993) Student questionnaire to teacher interaction. Bioscience.
6. Nuffield Foundation. (2017) What is math anxiety. Retrieved from Center for Neuroscience in Education. University of Cambridge, UK.
7. Szirmai Á (2011) Anxiety and related disorders. Intech.
8. Hill FC, Mammarella I, Devine A, Caviola S, Passolunghi MC, et al. (2016) Maths anxiety in primary and secondary school students: Gender differences, developmental changes and anxiety specificity. *Learning and Individual Differences* 48: 45-53.
9. Young C, Wu S, Menon V (2012) The neurodevelopmental basis of math anxiety. *Psychol Sci*. 23: 492-501.
10. Nisar S (2013) Mathematics anxiety factors and their influence on performance in mathematics in selected international schools in Bangkok. *Journal of Education and Vocational Research* 4: 77-85.
11. Winch G (2016) Ten crucial differences between worry and anxiety. *Psychology Today*.
12. Apóstolo JL, Figueiredo MH, Mendes AC, Rodrigues MA (2011) Depression, Anxiety and stress in primary health care users. *Revista Latino-Americana de Enfermagem*. 19: 348-353.
13. Shemp R (1986) Penguin: Harmondsworth. The psychology of learning Mathematics: 951-1012.
14. Rabalise A (1988) Identification of math anxiety subtypes. Unpublished MA thesis, West Virginia University.
15. Sheffield D, Hunt T (2006) How does anxiety influence maths performance and what can we do about it? *MSOR Connections* 6: 19-23.
16. SlideShare (2016) Responding to academically distressed students. Xavier University, Ohio, USA.
17. Marshall E, Mann V, Wilson D (2015) What is maths anxiety? University of Sheffield, Sheffield, UK.
18. Freeman E (2015) Conquering mathematics anxiety. Charter Oak State College, New Britain.
19. Smith M (2004) Math anxiety: Causes, effects, and preventative measures. Liberty University, USA.
20. Yang J (2014) Math anxiety: Can teachers help students reduce it? *American Educator* 38: 28-43.
21. Ramanujam R, Subramanian R, Mukherjee AA, Khan F, Athmaraman R (2006) Position paper national focus group on teaching of mathematics. National Council of Educational Research and Training, India.
22. Oxford R, Anderson N (1995) A crosscultural view of learning styles. *Language Teaching* 28: 201-215.
23. Curry School of Education (2015) Measuring and improving teacher-student interactions in PK-12 settings to enhance student's learning. Center for Advanced Study of Teaching and Learning Charlottesville, Virginia, USA.
24. Stanford GA (2014) The effects of teachers teaching styles and experience on elementary students mathematical achievement. Liberty University, USA.
25. McLeod D (1992) Research on affect in mathematics education: A reconceptualization. New York, Macmillan pp: 575-596.
26. Cornell C (1999) I hate math! I couldn't learn it, and I can't teach it! Retrieved from Childhood education. *Wilson Education Abstracts* 75: 225.
27. Keow Ng L (2012) Mathematics Anxiety in Secondary School Students. National Institute of Education, Singapore.
28. Mbugua Z, Kbet K, Muthaa G, Nkonke G (2012) Factors Contributing to student's poor performance in mathematics at Kenya Certificate of Secondary Education in Kenya: A case of Baringo County, Kenya. *Am Int J Contemp Res* 2: 87-91.
29. Buckley S (2013) Deconstructing maths anxiety: Helping students to develop a positive attitude towards learning maths. ACER Occasional Essays, Australia. pp: 1-3.
30. Pietilä A (2004) Fulfilling the criteria for a good mathematics teacher-The case of one student. *European Research In Mathematics Education*, Finland. pp: 1-10.
31. Klein D (2010) What makes for a good math teacher? Columbia University, USA.
32. Wu H (2010) The mathematics school teachers should know. Lisbon, Portugal.