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## The communication styles used by teachers in numerical lessons

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### Abstract

The grounding of this study comes from a pilot study done on 450 high school students. The interesting result is that 60% of the students, scoring low in examination anxiety, low in trait anxiety, scored high in mathematics anxiety (science anxiety was also asked). The most frequently stated checklist items of those students were communication problems with teachers. Relying on this finding, the main purpose of this study is to decrease the math/science anxiety through fostering teachers' communication styles. Under this main purpose, this study intends to include focus group meetings of experts (academic staff from education faculty of Istanbul Aydin University, high school administrators, math and science teachers practicing in Turkey and Europe. This study will help to increase numeric performance of the students and guide teachers to practice their communication skills through a guidebook.

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### 1. Introduction

Most of the people experience problems with numerics in all levels of educational and ordinary life. Educational psychologists state that moderate level of anxiety is sufficient both to perform well and to motivate the learner (Turner & Meyer, 2004). Numerical anxiety is described as “feelings of tension and anxiety that interfere with the manipulation of numerical problems in a wide variety of ordinary life and academic situations” (Richardson & Suinn, 1972). Tobias & Weissbrod (1980) described the physiological anxiety reactions while solving a numerical problem as the panic, helplessness, paralysis and leastly mental disorganization

Anxiety against numerical lessons may also result from intellectual and personality factors (Hadfield&McNeil, 1994). The environmental factors are negative incidents experienced in the class due to intolerant and arrogant teachers, ineffective and inefficient teachers, teacher-oriented class management (Dossel, 1993; Tobias, 1990), negative perception and attitudes (Miller & Mitchel, 1994). In this study only environmental factors; especially teachers' beliefs and attitudes are considered.

Academic success is highly valued in school and also in society which defines student's self-worth. According to prototype modal, people use prototypes to make judgments about group members. Prototypical abstraction can be “she reminds me a typical math teacher-with big glasses (Brown & Gaertner, 2003).

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The common emotions experienced are feeling of helplessness, tension, or panic when asked to perform mathematics operations or problems. It has been described as an “I can’t syndrome,” a feeling of uncertainty, or a feeling of not being able to do well in mathematics or with numbers (Tobias, 1998).

Recent studies have shown that the communication skills can be better learned through workshops, training environment, effective learning environment like role play and direct application with samples rather than didactic education are transferred to the behaviours of trainer (Heaven et.al., 2006; Wilkinson et.al., 2008; Manee et.al., 2011; Jackson& Back, 2011). Constructivist view gives the teachers role of facilitator, In order to create success, the relationship between the teacher and the students are very important.

## 2. Method

The data of a previous study was collected through “Math Anxiety Rating Scale”, developed by Richardson and Suinn (1972) and adapted into Turkish by Erol (1989). State-trait Anxiety form developed by Öner and LeCompte and adapted into Turkish by Oner&Kaymak (1986). Examination Anxiety developed by Spielberger and adapted into Turkish by Bayraktar (1985). The results demonstrated that students with higher levels of mathematics anxiety do not have high levels of examination anxiety and trait anxiety.

The mostly scored items: can’t raise hand about unclear points or about the topics that wasn’t understood, having difficulty in listening the teacher, can’t solve the problem because of the excitement.

The results lead to conduct an interview with the teachers and the academicians. Turkey&Europe-online The interviews are done face to face and in semi-structured format. The questions in which participants deal with in focus groups are the communication styles, dealing with almost each students, teachers’ communication skills instruction methods.

## 3. Results and conclusion

In the previous study, there is significant difference between the math numerical anxiety and gender. The source of the difference is female students having more numerical anxiety compared to male students. Pajares & Urda’s (1996) study suggest that affective differences in maths between boys and girls begin to appear in high school. The teachers concluded that numerical lessons may still known to be described as a male domain.

Studies show us that the students who have negative attitudes towards mathematics and who have mathematics anxiety, though hard work, can not be successful compared to their classmates. In this study, only the teachers’ attitudes and beliefs were taken into consideration. When they get low grades, they experience chronic frustration which brings decreased confidence. In order to overcome numerical anxiety, the students’ improving their numerical skills and learning relaxation, may not be enough.

Mathematics can be regarded as a prerequisite for other numerical lessons and analytical thinking). First of all, the causes of mathematic anxiety should be recognized whether it stems from poor mathematic instruction, negative attitudes about math, negative mathematic experiences, parental attitude or low self-esteem. This study is limited to the views of the teachers and their aid to decrease the numerical anxiety level. Teachers should become more informed about the effects of mathematic anxiety by reading related literature and attending workshops and conferences on the topic. They should also encourage the student by creating a comfortable atmosphere with alternative assessments, presenting different styles of learning (Woodard, 2004).

An effective teacher needs some life skills like stress management, problem solving, self-consciousness, self regulation, class management, adaptation ability to the new situations, creativity, communication skills. Communications skills including listening skills, writing skills, body language, effective speaking are important for teachers to improve their career, to solve the problems in the class, school or in the society and it is the way of personal happiness. In addition, group works, active learning can increase the student engagement, analytic thinking, meaningful understanding and ability of sharing knowledge. The most of the curriculum and assessment tools about communication skills are not appropriate or insufficient for practical use of students and it should be flexible depending on the characteristics of applied environment like social structure of society where school is founded (Makoul & Schofield, 1999). In the other case, the beliefs of students are different, instead of communication skills, usage of skilled communication would give the many outcomes (Salmon&Young, 2011). In addition to

communication skills, in modern global world teachers should communicate with many different student groups with different backgrounds, culture and religious orientations even with the foreign teacher to achieve the some projects.

Teachers of numeric classes claim that the lesson is difficult and they are overloaded unlike other branches. Teachers may feel that they are inefficient. They may fail to recognize all the students do not have common base. For this reason they make the first exam very difficult in order for the students to see the lesson as unachievable. In contrast they should make first exam achievable for most the students.

The students may come to class unprepared. Considering National Council of Teaching of Mathematics' recommendations (1995) the teachers are the agents to be aware of the different learning styles' of students, to motivate the learner, to design new strategies for teaching and learning environment, to include different measurement and evaluation instruments, design activities and syllabus which contains practical use of numerics in daily life, to foster original thinking rather than memorizing. Exemplar models stress the importance of mental representation of actual experience with category members (Brown& Gaertner, 2003). For example, a student may say "she reminds me my 7<sup>th</sup> grade math teacher. She was always trying to motivate everyone in the class".

Mathematics learning involves both domain-specific knowledge and dispositions; such as beliefs, values and emotions about mathematics. Both the student and the teacher have proactive responsibilities to manage the anxiety (Perry, 2004).

It is set up on some assumptions that the most important ones including teachers' participation are believing in students' ability to learn and the ability to design their own learning experience (Allen, 2004).

Teachers' communication styles can also be a source of their own inefficacy. Pre-service teachers with the lowest degree of mathematics anxiety had the highest levels of mathematics teacher efficacy (Gresham, 2009).

Social modelling can be viewed as a good way to practice the way through which pre-service teachers go. If the pre-service teachers are introduced with task and learning content, it will be easier for them to follow for the first years of service. (Marion and Burden, 1997).Gresham (2009) criticized that teachers do not use manipulatives although they were needed in internships. Focus group meetings and interview results;

*When asked the former knowledge levels of key terms and concepts in numerical lessons and how they can be measured:*

Teachers answered as the students are assumed to have underlying regarding learning outcomes of those topics. Former knowledge can be tested through interviews, tests and oral exams. However each levels' former knowledge can be different from each other. The expert interviews focused more on the gap between students' knowledge is too much, then the students should be separated according to their levels. They can also be supported with extra homework.

The used resources in the lessons are not enough and effective. The used resources are internet (vitamin teachers' portal, effective school portal, Meb Press books, pdf docs and self-prepared notes. The resources can be diversified. Academic staff recommend that the homework can also be give using instructional technologies, social media. Opening student-friendly portals can also make numerical lessons more attractive.

Most of the teachers claimed that in the early years of their service a formal plan should be used. However, they insist on the years of experience should be taken into regard. According to them, 10 years of seniority does not require making plans.

Giving lectures to different grade levels improves teachers' creativity and update information. When the teachers only teach same grades then the other knowledge could be forgotten.

The teachers admitted that in the early years of their experience they did not what to do, how to behave, their tolerance level was very low.

With new experience and the seniority, there claimed that have been many things changed. The way they teach the examples, the spontaneity and most importantly the communication between the teachers and parents and between the teachers and students.

Academicians give importance to trainings and experienced teachers' being role-model for the new comers.

In the guidebook, the mental representations of the perceivers, as students, will be given place. Pre-service teachers with negative attitudes toward mathematics had the highest levels of mathematics anxiety. In relation to the interviews with pre-service teachers, Sloan(2010)'s study revealed a statistically significant difference between pre-math and post-math anxiety levels of elementary preservice teachers as a direct result of their participation in a

standards-based mathematics methods course. Children may internalize these attitudes and begin to believe what their teachers and parents believe (Geist, 2010).

Studies have shown that a mother's attitude and encouragement toward mathematics was a significantly more important factor to children having a positive attitude toward mathematics and was linked to positive achievement in mathematics (Cited in Geist, 2010; Scarpello, 2007).

Focus group interviews with the academicians also yielded that lecturing is mainly teacher focused which is advised to be changed to student-focused.

## References

- Allen, K (2004). Mathematics as thinking a response to "Democracy and school math". *Democracy & Education*, 19 (2).
- Brown, R. & Gaertner, S. (2003). (eds). *Blackwell Handbook of Social Psychology*. Blackwell Publishing
- Dossel, S. (1993). Maths anxiety. *Journal Of Australian Mathematics Teacher*, 49(1), 4-8.
- Gresham, G. (2009). An examination of mathematics teacher efficacy and mathematics anxiety in elementary pre-service teachers. *Journal of classroom Interaction*, 44 (2).
- Hadfield, O.D. & Keith, M.N. (1994). The relationship between myers brings personality type and math anxiety among preservice elementary teachers. *Journal of Instructional Psychology*, 21(4).
- Heaven, C., Clegg, J., & Maguire, P. (2005) Transfer of communication skills training from workshop to workplace: The impact of clinical supervision. *Patient Education and Counselling* 60 (2006) 313–325.
- Manee, F., Khouiee, S., & Zaree, H. (2011) The Effect of Three Life Skills Instruction on the General Health of College, *Freshmen J Mazand Univ Med Sci* 2011; 21(85): 127-137.
- Marion, W., & Burden, R. (1997). *Psychology for language teachers: A social constructivist approach*. Cambridge University Press.
- Miller, L. D. & Mitchell, C. E. (1994). Mathematics anxiety and alternative methods of evaluation. *Journal of Instructional Psychology*, 21(4), 353-358.
- Pajares, F. & Urdan, T. (1996). Exploratory factor analysis of mathematics anxiety scale. *Measurement & Evaluation in Counseling & Development*, 29 (1).
- Perry, A. (2004). Decreasing math anxiety in college students. *College Student Journal*, 38 (3), 321-324.
- Richardson, F. C.; & Suinn, R.M. (1972). The mathematics anxiety rating scale: psychometric data. *Journal of Counseling Psychology*, 19 (6), 551-554.
- Sloan, T.R. (2010). A Quantitative and qualitative study of math anxiety among preservice teachers. *The Educational Forum*, 74.
- Tobias, S., & Weissbrod, C. (1980). Anxiety and mathematics: an update. *Harvard Educational Review*, 50(1).
- Turner, J & Meyer, D (2004). A classroom perspective on the principle of moderate challenge in mathematics" *The Journal Of Educational Research*, 97(6); 311-318.
- Woodard, T (2004). The effects of math anxiety on post-secondary developmental students as related to achievement, gender, and age. *Inquiry*, 9 (1).
- Wilkinson, R Perry, K Blanchard (2008) Effectiveness of a three-day communication skills course in changing nurses' communication skills, *Palliative Medicine*, 22, 365-375.