WHAT IS NECESSARY TO CREATE AN EXEMPLARY MATHEMATICS PROGRAM?

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**Abstract**

The six principles for middle and high school students' mathematics education explained in this paper. I expressed my ideas related with the six principles about Turkish mathematics education. I classified my comments in equity, curriculum, teaching, learning, assessment and technology.

*Key Words:* the six principles, Turkish mathematics education, connecting the principles.

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**Introduction**

The purpose of this article was to express my ideas about *the six principles* for Turkish mathematics education. These six principles are equity, curriculum, teaching, learning, assessment and technology (NCTM, 2000). I compared today's mathematics education and how it was in the recent past in Turkey.

**The Six Principles In Turkish Mathematics Education**

**Equity**

This year MoNE curriculum was renewed. According to this novelty, there will be a standard mathematics education until $10^{th}$ grade from now on. However there will be a distinction for $11^{th}$ and $12^{th}$ grades. I think there is an inequity here. For example, while logic and proof methods are approved for high level $11^{th}$ grades, they are not approved for standard level $11^{th}$ grade. In addition there is no planned logic lesson for any other grades although logic is a core subject in mathematics. So if a student wants to learn about for example logic then he/she must attend high level $11^{th}$ grade otherwise he/she will have no chance to take these courses, is it? I observed something in my last school experience a few days ago. There was a student who is weaker in functions but he was very good at probability, the teacher and his friends said and he approved. If this student would attend standard level then he had not taken deeper probability courses. I think every student should have a chance to take any courses. Teachers or students cannot be sure in which courses students will be good at, except courses are being processed.

**Curriculum**

According to the new MoNE curriculum, from now on mathematics and geometry classes are united under the same roof: Mathematics. I think this is useful to tell students geometry is a part of mathematics such as algebra, calculus etc., not a different lesson. Thus students can build up a general look to mathematics education. In past years, for example area of a triangle was told

both in mathematics (in trigonometry classes) and geometry classes. It was good to show geometry and mathematics are the whole but some students bored and it was waste of time. Additionally this year new mathematics curriculum was updated according to other curriculums such as biology, physics etc. (Erbaş, 2013). In middle school mathematics curriculum some topics were moved to upper grades and some to lower grades according to responses of the school teachers, students, parents, academicians etc. (Çakıroğlu, 2013)

**Teaching**

One of the most important things is a positive classroom environment in teaching (Brahier, 2013, p. 32). I think it comes first among other teaching activities. In Turkey there are so many crowded classrooms in which almost 50 students. In such an environment students have major difficulties following lessons, teacher and his/her instructions exactly. It is also challenging for the teacher. Think this teacher tries to make a group work then it could become a chaotic environment easily. Managing the classroom, to be aware of each student is hard even the teacher fulfill his/her responsibilities as a teacher. Except this, psychological environment is very important. Each student should ask his/her questions and share his/her ideas without any fear. Unfortunately, sometimes processing the lesson with a few students is easier and the teacher does not care about others. But fortunately, there are also devoted teachers who try to give a holistic education to his/her students despite all the negativity. In Turkey there are some problems about Education Faculties. There must be a well-qualified education in any Faculty of Education.

**Learning**

In our country, assessment part usually comes before learning part. Every year almost two millions of high school students have university entrance exams and almost one million middle school students have high school entrance exam. I think this undermines learning generally since the focus is examinations. Nearly ten years, textbooks have been updating with more activity parts and much colour especially in middle schools' books. But there is a contradiction between textbooks' activities and multiple choice examinations. Because of these, factual knowledge and procedural proficiency keep more place than conceptual understanding in Turkish mathematics education. If we could synthesize these three in our lessons we would have rich mathematics classes (NCTM, 2000).

**Assessment**

University/high school entrance examinations are a big part of assessment in Turkey. General belief is that: Enter a good (!) high school/university, get a good job. It could be true but we should attach importance to classroom assessment to have a good understanding, learning and education. Presentations, projects, journal writings can be components of an assessment (Brahier, 2013, p. 35).  Such an assessment makes students more investigators, thinking, reasonable and productive and in my opinion Turkish mathematics education need this.

**Technology**

Nowadays, Fatih Project is a well-known technology project in Turkey. It aims at least one computer, projector, smart board, copy machine and printer for each classroom in Turkey in there years. It sounds well but I think there are more urgent conditions in our education system as I mentioned above. Except this, teachers could provide a rich opportunity for students thanks to technology and it is essential in mathematics classrooms (Brahier, 2013, p. 37).

**Conclusion**

The purpose of this article was to consider and have an idea about Turkish mathematics education. I made some comments about meaning of the six principles which National Council of Teachers of Mathematics states as features of high quality mathematics education (NCTM, 2000) and its reflections in Turkey. I learned these six principles affect each other closely and I should think all of them as a whole. Additionally I realized there are still lots of things to do for a much better Turkish mathematics education and I am also in charge of this.

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"A Bilkent student does not lie, cheat, or steal or tolerate those who do. On my honor, as a Bilkent student, I have neither given nor received unauthorized aid on this academic work."

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