

# MEANING OF GOOD MATHEMATICS TEACHING FROM UNIVERSITY STUDENTS' POINT OF VIEW

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## Abstract

Good mathematics teaching at university might have different meaning for students from different disciplines who should pass mathematics courses at university because of their different disciplinary cultures. This study tries to categorize attitudes towards good mathematics teaching at university from students' point of view. Data of this study gathered by interview with 30 university students in three disciplinary cultures: mathematics, engineering and humanities in Iran. Data analysis showed that although each disciplinary culture has a different attitude about good mathematics teaching, we can find a common meaning of that.

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## Introduction

What is good mathematics teaching? Wilson, Cooney and Stinson (2005) compared definitions of good mathematics teaching emanated from Dewey (1916), Polya (1965), Davis and Hersh (1981), Schifter (1998) and NCTM documents (1989, 2000) and reported a considerable convergence between them. They explained that all the mentioned definitions emphasized mathematics teaching as a process that promotes analysis, thinking, and problem solving.

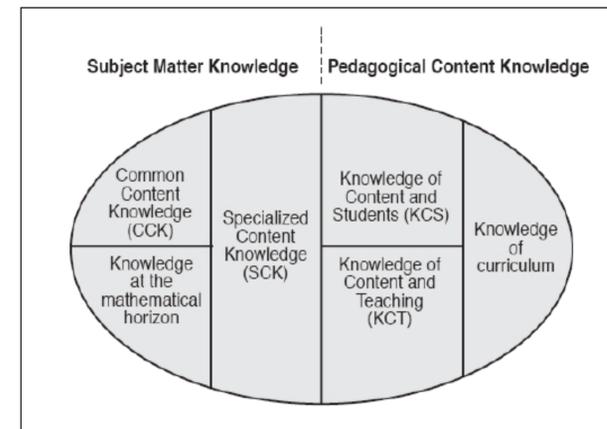
There are relatively few studies which have sought the views of students about good teaching especially in higher education.

Mathematics is being taught as a course at university to both mathematics students who are expected to be experts in this field and to non-mathematics students who might use mathematics in their specialized disciplines.

Neumann (2000) believed there is a relationship between disciplinary culture and university teaching. He emphasized that due to the strong influence of disciplines on academics' beliefs, teaching and students' learning, disciplines need to be subjected to greater systematic study, especially regarding their effect on the quality of teaching and learning in higher education.

Therefore, we would discuss that how students from different disciplinary culture would understand good mathematics teaching.

## Theoretical Background



Hill, Ball and Schilling (2008)

The MKT model has provided a useful foundation in mathematics education at lower grade. Speer and King (2009) and Speer and colleagues (2015) analyzed SMK and PCK in mathematics teaching at higher levels. They found out that the nature of SMK (especially CCK and SCK) and PCK for university teachers are different from that of school teachers.

Khakbaz (2016) conceptualized PCK from university mathematics teachers' perception. She indicated a model consisting of four themes:

1. Mathematics syntactic knowledge,
2. Knowledge about mathematics curriculum planning,
3. Knowledge about students' mathematics learning
4. Knowledge about creating an influential mathematics teaching–learning environment.

## Methodology

This study is a qualitative study which is done in Iran. Data gathered by interviews with 10 bachelor students in three disciplinary cultures: mathematics students, non-mathematics students in engineering and humanities disciplines about meaning good mathematics teaching. Data analyzed through coding and making themes.

## Conclusion

Data analysis revealed similarities between themes related to knowledge about mathematics curriculum planning, students' mathematical learning and creating an influential mathematics teaching-learning environment.

The difference between different disciplinary cultures was related to syntactic knowledge. Mathematics students believe that good mathematics teaching might happen when the teacher draws mathematics as a coherent body of knowledge and could explain main idea behind a mathematical concept well.

Non-mathematics students believe that a good mathematics teacher could explain the applications of mathematical concepts well.

Engineering students interpret good mathematics teaching when they have opportunity to see the application of mathematics in their specialized field. Humanities students explain good mathematics teaching as a way to see the application of mathematics in everyday human life.