

HOW TO CATEGORIZE STUDENTS' UNDERSTANDING OF THE FUNCTION

CONCEPT

Dr. Hatice Akkoç

Marmara University, Atatürk's Faculty of Education, TURKEY

Abstract

This study investigates the method of categorizing students' understanding of a concept, namely the function concept in the context of high school mathematics. Various researchers investigate the function concept from various theoretical perspectives; concept definition and concept image (Vinner, 1992), multiple representations of functions (Confrey, 1994; Kaput, 1992; Leinhardt et al., 1990), action – process conceptions (Breidenbach et al., 1992; Dubinsky & Harel, 1992), vertical and horizontal growth of the function concept (Beineke et al., 1992; DeMarois & Tall, 1999). This study takes the notion of core concept of function by Thompson (1994) as a departure point of the theoretical framework. Thompson (1994) suggests that the core concept of function can not be represented by what is commonly called the multiple representations of function (graphs, equations, tables etc.). This study investigates Turkish students' understanding of the core concept of function. Questionnaires were administered to 114 students in grade 11 in two schools in Turkey and 9 students were chosen from that sample by a theoretical sampling method. These 9 students were interviewed using semi – structured interviews. They were asked to identify various graphs, expressions, sets of ordered pairs and set correspondences as functions and explain the reasons behind their answers. Students' responses were analysed using a grid. This analysis revealed four categories of students' responses. In this paper, I will focus on the analysis of the interview data and the categories of students' responses emerged from this analysis.