

## Abstract

Teacher educators have been using videotaped lessons as a tool for mathematics teachers' professional development since the 1960s. Although these uses may differ considerably in their objectives, they all share the common assumption that watching and discussing videotaped lessons, or episodes taken from lessons, can improve teachers' practices and their knowledge for teaching.

This assumption is recently being examined by a growing number of studies worldwide, in an attempt to understand how the design and implementation of specific programs influence their outcomes.

This work describes a study carried out as part of a specific program, the VIDEO-LM Project (Viewing, Investigating and Discussing Environments of Learning Mathematics), developed and implemented at the Weizmann Institute of Science. The project team designed a framework for analyzing videotaped mathematics lessons as a basis for guided peer discussions, in which teachers focus on different aspects of mathematics teaching. The goal of these video-based discussions is to enhance the teachers' reflective skills and their mathematical knowledge, with the implicit expectation that the teachers' decision-making processes thus become more conscious and sound.

The study followed a group of mathematics teachers that participated in monthly VIDEO-LM workshops throughout the 2013-2014 academic years. It examines the contribution of these workshops to the development and crystallization of the participants' Mathematical Knowledge for Teaching (MKT).

Data were collected through questionnaires, interviews and video-documentation of two workshop sessions. One session focused on a 7<sup>th</sup> grade mathematics lesson on the associative and the commutative laws. In the other session the teachers discussed a lesson on concavity of functions, given in an 11<sup>th</sup> grade high track calculus class.

The analysis of the data revealed that rich insights on mathematical, meta-mathematical and pedagogical ideas were developed by the participating teachers. The analysis also suggests that three main factors synergistically supported the emergence of these insights and contributed to the crystallization of the participants' MKT: the videotaped lessons as an object for exploration; the VIDEO-LM framework of analysis as a guide for these explorations; and the nature of the peer-discussions as a setting in which the participants' experiences were shaped.