

STUDENTS AS TEACHERS, TEACHERS AS RESEARCHERS

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In this poster, we present a mathematics classroom project under the umbrella of IMST_, an Austrian nation-wide initiative (2000-2004), which has been presented at PME 26 (Vol. 1, 353; see also Krainer et al. 2002). In this project, the teachers and 12th grade students worked out a number of workstations, which the senior students later used to teach (mostly linear) functions to their 9th grade peers. These younger students worked on worksheets dealing with specific aspects of functions (e.g. finding a regularity in a table, predicting further pairs; answering a number of questions on pie charts taken from news-clippings).

The project's outcome is regarded from two different perspectives. On the one hand, we reflect on how the project affected students' mathematical knowledge. The conclusions are based on a detailed case study by the first author; the study was designed in close collaboration with the teachers. Data stem from a total of three periods which were devoted to students either working on a number of workstations (9th grade), or instructing and explaining how to solve the tasks (12th grade). All three periods were videotaped with one camera rotating through the workstations. Before and after the joint unit, four students of each class were interviewed about what they expected or experienced, and about their understanding of mathematical functions. Additionally, their mathematic teachers were interviewed about what they consider important in learning functions. Overall, this project proved to be quite successful for the 9th grade students to (re-)introduce functions (after their initial encounter in 8th grade). Students were highly motivated and teachers reported a noticeable difference in students' performance in their subsequent regular classroom teaching. In the interviews, the students were more at ease in interpreting graphs. However, the project was less successful for the 12th grade students, who were seeing the task as too trivial for their needs, and who produced mostly procedural explanations of functions. There was no noticeable change in 12th grade students' understanding of functions. Detailed examples of conceptions of functions before and after for a 9th and a 12th grader will be presented on the poster, as well as additional aspects and effects.

On the other hand, we discuss teachers' systematic self-reflection on the project, among others based on their report on the project (which can be found at the IMST_ webpage: <http://imst.uni-klu.ac.at>). Thus, the focus is here on the professional growth of teachers within the context of an initiative in which teachers are supported in investigating their own teaching, sharing their experiences with colleagues and disseminating their knowledge.

Reference

Krainer, K., Dörfler, W., Jungwirth, H., Kühnelt, H., Rauch F. & Stern, T. (Eds.) (2002). *Lernen im Aufbruch: Mathematik und Naturwissenschaften. Pilotprojekt IMST_*. Innsbruck, Wien, München & Bozen: Studienverlag