

## **PROMOTING ACTIVE LEARNING VIA PROBLEM SOLVING FOR TEACHERS AND STUDENTS**

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A problem-solving activity in classroom (45-90 minutes): students are organized in random groups, they receive the problem and start working. Students activate their skills and start generating ideas of how to solve the problem. Meanwhile, the teacher interacts with students, answering questions with another question, giving them the responsibility to go ahead. In some cases, a simplified problem is given and then the original problem may be returned to, after the group has experienced success with the simplified version. If a group does not understand the problem, the teacher asks a question; if a group gets stuck, the teacher asks a question; if a group makes a mistake, the teacher asks a question. When a group solves the problem, then the teacher asks questions to members of the group until either it is apparent that one of them does not know how to solve the problem, then the teacher leaves. If the teacher is convinced that all members know how to solve the problem, then he/she gives an extension, a more sophisticated and challenging version of the problem. Once all groups have solved the problem (or simplified version), the entire class engages in a plenary discussion which occurs about 10–15 min before the end of the activity, where the teacher let some students present their solutions, starting from the simplest one, and promotes the discussion among students about strategies, concepts and relations among them.

Is there something new about this activity? No, there is much research regarding this kind of activities, but the point is: How to make it happen in real classrooms, with a significant number of real teachers?

In this lecture we present experiences of the *ARPA Initiative* in Chile, which is running a professional development program for mathematics teachers from preschool to postsecondary level. We discuss about the Chilean favorable conditions for this program, its organization, difficulties, obstacles, missteps and learnings. We also present some results on student learning, teacher change and monitor (multiplier) formation.