Teaching Applied Mathematics: Feedback from Teachers

An abstract based on interviews by Nitzhia Peleg

In recent years, at the initiative of the Trump Foundation, academic organizations across the country have developed learning materials, which incorporate modelling and reasoning tasks into mathematics lessons in alignment with the international PISA assessment's 5-6 proficiency levels. 1,300 mathematics teachers participated in dedicated professional development (in-service education and communities of learning) and gained experience teaching the new tasks in their classrooms. The aim of this qualitative study was to obtain in-depth feedback from teachers regarding the teaching and learning experience, to learn about the opportunities and difficulties, and to recommend improvements.

Main insights

1. Many teachers expressed great enthusiasm concerning the link between mathematics and the real world to illustrate to students the importance and relevance of mathematics to life. They believe that this makes mathematics more sophisticated, more interesting, and more mysterious.

2. The teachers emphasized the centrality of the national curriculum and noted that they are committed to it and orient their effort toward it. As a result, they select tasks that correspond spirally with curriculum topics, as preparation for, or as an application of, a topic or mathematical concept that is defined in the curriculum.

3. The teachers brought up the insight that teaching applied mathematics requires a great deal of preparation and classroom time, and much use of technology. They recommend devoting the required resources to these aspects.

4. Teaching modelling and reasoning tasks characterized by uncertainty, multiple solutions, and transition between mathematics and real-world context arouses feelings of lack of confidence among the teachers. They note that normally, they are completely conversant with the material and stepping out of their comfort zone to unfamiliar material undermines their confidence.

5. The teachers noted that to teach applied mathematics well, they need close instructional coaching, discussion with colleagues in a community of learning, and technology training. They are interested in having the ability to choose the tasks and adapt them to their specific circumstances in the classroom.

6. The teachers report that their students enjoy learning applied mathematics very much. They succeed in connecting between topics, they upgrade their grasp of mathematics, understand things by themselves, they begin to use mathematical language, and express motivation that stems from understanding the relevance.

7. On the other hand, students are required to focus for longer periods. They express their difficulty with the linguistic layer of reading comprehension. The transition from passive learning to independent learning has sometimes led to them giving up