THE EDDIE & JULES
TRUMP FAMILY FOUNDATION
קרן טראמפ

Insights of Teachers Preparing to Teach Applied Mathematics Tasks

Abstract based on a study by Racheli Davies

Advisory Council | The Trump Foundation

November 2020

When mathematics teachers first encountered the applied mathematical tasks, their typical reaction was dismissive, saying that the level of mathematics is low, that these are easy questions and that this is not appropriate for mathematics courses. When they were invited to solve such tasks on their own, many came up against difficulties, which caused them to respond with rejection, saying that they do not have spare time for this, that it is not part of the curriculum and that if they struggle to solve the task, how are they expected to teach it to students?

Nevertheless, during the previous year, several hundred teachers took part in dedicated professional development courses, encouraged by the foundation, in which applied mathematical tasks were studied in-depth. The participating teachers are now ready to integrate these tasks as part of their teaching in ninth grade mathematics excellence-classes. Racheli Davies interviewed 11 of these teachers in order to learn about their evolving professional perception towards teaching applied mathematics.

Main Insights

1. In the interviews, the teachers emphasized that the applied tasks pose an intellectual challenge both to them and to their students. The tasks require high-levels of thinking and application, as well as systematic comprehension. They are 'refreshing' and innovative, 'completely different from the known and familiar' and they arouse curiosity and excitement. The teachers assumed that such tasks could open up opportunities for bringing content with relevant meaning into the classroom.

2. The tasks are dense with information, and the teachers noted that they require good proficiency in language, concentration on reading and distinguishing between important and unimportant data. They said that students need to extract relevant information from a 'sea of words', and added that they must become familiar with the contextual area. The teachers stressed that resolving the tasks demands the use and mastery of technological tools, such as simulations, databases and spreadsheets.

3. In preparing to teach the applied tasks, the teachers mentioned three teaching methods they plan to employ: 1) self-learning – enabling students to cope with the tasks on their own, while teachers only ask guiding questions; 2) group learning – enabling students to discern diverse ways of thinking in discussion with their peers; 3) expansion of thinking –encouraging students to think about possible additional applications of the mathematical model.

4. The teachers concluded that they need much more preparatory time for teaching the applied tasks, and that students need to spend more time solving them. They emphasized the importance of professional support they require throughout the school year and requested that the development of learning materials include more detailed and rich background on the scientific context (scientific of each task.