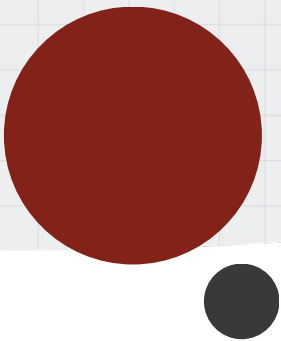




TRUMP FAMILY
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קרן טראמפ

PISA and the Israeli Mathematics Curriculum

Abstract based on a study by Orit Zaslavsky, Gila Ron and Iris Zodik



The [PISA conceptual framework](#) presents a worldview according to which the knowledge and skills learned in school are meant to be used by the students to cope well with the reality around them. In the field of mathematics, this conception is expressed in the ability to formulate arguments, to reach sound conclusions, and to contend with non-routine problems that require profound and reasoned mathematical thinking.

This conception impacts the mathematics curriculum of countries around the world. Their curricula integrate significant content with modeling and mathematical reasoning from diverse real-life contexts into the core of teaching and learning, alongside knowledge, technique, and abstract thinking. In Israel, too, there is an ongoing professional discourse on this issue and at the present point in time, the applied approach has begun to be included as one of the components in the curriculum.

In consequence, the foundation turned to expert researchers, to analyze the PISA conceptual framework and to figure out how it intersects with the Israeli mathematics curriculum.

Main insights

1. Traditionally, the prevailing notion in Israel is that abstract and pure mathematics must be learned in schools with the assumption that when students would need to use mathematics for various purposes, they will know how to do so. The PISA assessment proved that the ability to use mathematics does not develop on its own, not even among outstanding students.
2. Therefore, if one wishes to take applied mathematics seriously, it must be incorporated into the curriculum and the testing. It would not suffice to offer anecdotal tasks as enrichment or on a limited scope, rather for these skills to sink in a critical mass of content would be required, introduced in an ongoing and in-depth manner.
3. Since in Israel the curriculum emphasizes procedural fluency, it would be recommended to integrate applied mathematics at an advanced stage. After students have acquired mathematical knowledge and tools, it would then be possible and desirable to incorporate applications which have diverse real life contexts.
4. Incorporation of applied mathematics must be executed at all learning levels. The PISA 5-6 excellence levels include high cognitive requirements, and teachers have a tendency to simplify the tasks for their students and to over-guide them. They do it intentionally, but also due to teaching time constrains.
5. Therefore, the teaching of applied mathematics requires a unique student-centered approach, starting from a difficult task, and giving students sufficient time to think it through. This is a very different approach from the one that is typically used in order to instill knowledge and technique, which focuses on content and performance
6. To do so, teachers need dedicated professional development. They must develop awareness of the importance of using mathematics by means of modeling and reasoning in real-life contexts. They must build deep professional skills in teaching applied tasks and reach a high level of expertise that will enable them to adapt tasks on their own.