

**CURRICULUM AND LEARNING MATERIALS IN MIDDLE SCHOOL**

A meeting with teachers and experts to discuss whether middle school curricula and learning materials enable achieving international standards of excellence.

*NOVEMBER 13, 2018, 9:30-10:30, DJANOGLY HALL, MISHKENOT SHA'ANANIM,*

The roadmap proposed by the foundation sets a goal for strengthening the basis of excellence in mathematics and science studies in middle school. In order to meet this goal, it will be necessary to help students strengthen their knowledge, develop skills, and begin to specialize. This is a comprehensive effort with teachers at the center and which is intended to raise the bar and calibrate efforts upwards. Alongside deep knowledge and excellent teaching abilities, teachers will need content for assignments that will advance the students to a high level of practical, integrative, and deep thinking. They will have to adapt the learning content and make it available at graduated levels of difficulty corresponding to their students' abilities and needs.

The foundation's theory of change makes the working assumption that the curricula in mathematics and science are such that teachers are able to support their students at the required levels of knowledge, skills and expertise. With respect to learning materials, however, the foundation points to the need for assignments at a high level of thinking, comprehension, and implementation, those that rely on wide knowledge and on a good mastery of skills. It also incorporates the need for professional development frameworks where teachers will consolidate a shared instructional system and will examine the opportunities for learning held by the learning materials.

The heart of this effort lies in challenging learning material at an increasing level of difficulty that will help teachers generate significant momentum of upward learning among their students. In science studies, materials are needed that rely on solid mathematical foundation and enhanced mathematical skills. In mathematics, there is a need for tasks at advance levels of literacy. All this is required to reach high level of comprehension, thinking and implementation, in which students utilize their acquired knowledge and skills intelligently and creatively in order to contend with a new and complex situation.

**QUESTIONS FOR DISCUSSION**

1. Is our working assumption correct – that is, do the mathematics and science curricula include the knowledge, skills and expertise components students require in order to achieve success that will be expressed on national and internal tests?
2. Do the existing learning materials meet the needs above, or is there indeed a need to develop new materials? If there are good materials available but extensive and in-depth use has not been made of them in schools, what is the reason? What kind of professional development do teachers need so that they can make optimal use of teaching materials in the classroom?
3. Has the foundation correctly specified the attributes necessary for materials that will help teachers raise the bar? Are graduated, practical and integrative assignments which rely on deep mathematical knowledge needed? What else is needed?

As **background** to the discussion, we recommend reading the following:

- A. [Working paper for consultation with partners – Choosing Excellence in Middle School Mathematics and Science Studies – Philanthropic Roadmap 2019-2024](#) (with an emphasis on paragraphs “Need” and “Opportunity”, p. 3-4, and on Program 2 – “Ambitious Teaching”, p. 9-10) ([B&W printable version](#))
- B. [How to Smooth the Transition from Middle School to High School in Mathematics and the Sciences](#) – Hadas Brody Schroeder
- C. [How the Sciences are Studied in Countries Around the World – Rachel Mamlok-Naaman and Ron Blonder](#)
- D. [Curricula and Materials in Middle Schools: Insights from a US Study Tour, 2018](#)
- E. [The Structure of Mathematics Education in Middle Schools around the World – Michal Leibel, Hagar Lerman, Liat Atzmon and Dana Shulga-Raz](#)

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