



# The Mental Skills Needed by Middle School and High School Students Studying in Science and Technology Excellence Tracks

Roni Gez-Langerman and Noa Albelda, Sagol School of Education Program, Reichman University

Development of mental skills is gaining increasing importance in various excellence tracks. Schools, too, understand that in order to expand choice, perseverance, and success in excellence tracks - in normal times, and all the more so following the Corona pandemic and the war - students need to acquire mental skills, and both teachers and students need to be instilled with a belief in their capability, willingness to invest, and commitment to making an effort.

We sought to examine which mental skills are essential for success in excellence tracks in middle schools and high schools, whether there are differences in the needs of students from the center and the periphery, Jews and Arabs, boys and girls, and whether there have been changes following the Corona pandemic, the ongoing war, and the artificial intelligence revolution. In addition, we wished to examine how programs to impart mental skills can be implemented in schools.

To answer these questions, we turned to the Sagol School of Education Program to conduct a research study that includes a comprehensive literature review and in-depth interviews with principals, teachers, and students.

## Main findings

1. Excellence students especially need the following skills: self-awareness and emotional regulation, ability to pay attention and concentrate, critical and creative thinking, interpersonal communication and teamwork, time management and organizational abilities, coping with pressure and emotional resilience, a growth mindset, and independent learning skills.
2. Excellence students from all sectors experience difficulties similar to those of other students in their ability to pay attention, concentrate, and express themselves, apparently as a result of extensive exposure to social networks. In contrast to their peers and typical adolescent characteristics, excellence students are intentional and calculated, have a clear picture of the future, and often function in a more “robotic” and less emotional manner than their peers.
3. While in excellence classes in the center of the country, the students have high cognitive abilities, in the periphery, the classes are heterogeneous. Alongside high-ability students, there are students, and their parents, motivated by a desire to improve and excel, even though they may not necessarily have high cognitive abilities.
4. Education teams report differences between boys and girls in excellence classes. While boys tend to show high thinking skills and stand out, girls demonstrate perseverance and determination but express themselves less.
5. The pressure caused by the Corona pandemic and the Swords of Iron War affects students’ social and emotional abilities, and can lead to a decline in academic achievements.
6. The use of artificial intelligence, like other activities in the digital space, creates a sense of isolation and reduces social interactions and thus, there is growing importance in imparting interpersonal and social competencies.
7. Some mathematics and science teachers are interested in receiving training in mental fields but are concerned they will not succeed in applying the tools due to the pressure to cover the study material. According to them, the advisory team should provide a solution, but they recognize that

this is only a partial solution, and it is necessary to integrate mental instruction into the lessons. In parallel, most teachers of language-intensive subjects in excellence classes, along with homeroom teachers, expressed enthusiastic support, willingness, and motivation to learn the content related to mental skills and to transmit it to the students.

8. Programs in social-emotional learning must be organically integrated into regular lessons and expressed in the pedagogy of the subject-area teachers, and not only as separate supplemental programs. Additionally, teacher training programs should impart both theoretical-research knowledge, as well as practical tools.
9. It is important to create individual support systems for the excellence students that will include mentoring programs with teachers, graduates, or industry experts.

