



High-Tech Matriculation – How to Promote it in Schools and the Education System

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“High-tech matriculation” is a new name given to the set of matriculation examinations built on a combination of five units of mathematics, English, physics and/or computer science. In the longitudinal study conducted by the Aaron Institute, this composition of matriculations was found to be the best predictor of future employment in Israeli high-tech’s R&D units. This study served as the basis for the work of a government committee whose recommendations turned into a government decision, policy, targets, resources, and incentives.

The high-tech matriculation index in Israel (the proportion of “high-tech” examinees among all 12th grade graduates) increased from approximately 6% of education system graduates in 2012 to about 12% in 2022, this, as a result of the increase in the number of those studying five units of mathematics. In 2023, however, the beginning of a declining trend can be seen, which is continuing into 2024 as well. The government target is to reach 15% of graduates during the next five years, which constitutes about 20,000 of 12th grade graduates annually. At present, the government is preparing to implement the target and dedicate significant budget to it.

In the endeavor of preparing the education system and the Trump Foundation for this topic, we turned to Ofer Rimon, the former deputy executive director of “Tikshuv” – Technology and Information Systems at the Ministry of Education, who established and managed the Ministry’s excellence program for middle schools (Scientific Technological Program - Amat). We asked Rimon to study the issue in depth and to recommend how schools in Israel can encourage both male and female students to sign up for the high-tech matriculation study track.

To this end, Rimon identified ten schools which had shown the most significant increase in the high-tech matriculation index in recent years. Schools from different areas, sectors, and backgrounds were selected in order to identify similar and different aspects of school preparation. School principals, subject coordinators, as well as Ministry of Education policymakers were interviewed. They were asked how the school prepared itself to promote excellence from the perspectives of pedagogy, getting organized, and increasing student demand.

Main findings

1. In recent years, the Ministry of Education has ‘taken its foot off the gas pedal’ regarding all matters related to strengthening excellence in mathematics and English. According to the State Comptroller’s report, the Ministry’s special programs for these issues were, in practice, unofficially discontinued. The priority previously given dissipated and the resources shrank. Without the Ministry of Education’s determined leadership and announcement of the policy as a flagship program, it will not be possible to reach the targets.
2. The concept of high-tech matriculation is not known in the schools and in practice, the options available to students in choosing a track in high school still do not include this type of “package.” Schools that were successful in advancing in this area were those that promoted “excellence” in subject areas which are the basis for excellence (mathematics and English at the five-unit levels) and complementary subjects (physics and computer science).

3. With a six-year vision, these schools prepared three-year programs for both middle school and high school, establishing specific targets and indicators. They opened more than one five-unit class in each subject area, reduced the number of students per class, created diverse learning levels and encouraged students to move their level up. The more the demand rose, the more classes these schools opened to meet the demand.
4. A central element of management in the schools which succeeded was the commitment to collecting, analyzing and using data. The schools closely monitored each student's progress and difficulties starting in seventh grade and up to 12th grade. An individualized study program was created for each student with ambitious goals and a system of ongoing feedback and support from the school staff.
5. To raise demand among students and their parents, the "high-tech matriculation" package should be branded as a prestigious track that is a steppingstone to serving in the IDF's technology units and as a pathway into the Israeli high-tech industry. Schools should construct the entry routes to high-tech beginning in middle school and at every station along the way in order to allow as many children as possible to fulfill the Israeli dream.
6. The Israeli high-tech industry should be much more deeply involved in school excellence programs and in recruiting teaching personnel from among former high-tech workers. It is very important for high-tech companies and military technology units to adopt the program. These entities play a significant role in shaping children's perceptions of the future and in demonstrating the knowledge and skills required.