



# How School Principals Lead to Excellence in Mathematics and Science Studies

Zion Regev



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The Trump Foundation has identified teachers and their quality of instruction as the main engine for expanding the circle of excellence in mathematics and science studies in secondary schools. Therefore, in recent years, it dedicated the bulk of its resources to assist in increasing quality instruction, which focuses on the learning of every student in the classroom, incorporates deep subject-knowledge, and adopts a clinical approach and practical skills. Hundreds of programs have been deployed in the field and two years ago, the foundation gathered the best of the “wisdom of practice” from among these programs and put it in writing in the form of a [“Compass for Quality Teaching.”](#)

The Compass for Quality Teaching includes three spheres of the teacher's work: student-facing, classroom-facing, and within the professional community of teachers. Since then, the compass has become a tool and a framework for discussion (alongside others) in professional workshops and meetings of teachers and educators. With that, important feedback was heard indicating the compass lacks a “fourth sphere” which is – the school-based support system led by school principals. Many schools across the country have recently taken a leading role in promoting excellence and have significantly expanded the number of five-unit mathematics graduates.

In light of this important feedback, the foundation wanted to conduct in-depth interviews with school principals, mathematics department heads, pedagogic coordinators, and organizations running intervention programs in order to learn about the kinds of difficulties and challenges which confront them and the components required for success. With their assistance, the Foundation will now attempt to define a school “fourth sphere” for the Compass of Quality Teaching.

Ten schools which had a significant uptick in the number of five-unit mathematics graduates were selected for participation in the study. Schools chosen were geographically distributed, of different sizes, and of varying levels on the social index. Urban schools and schools belonging to networks were chosen, as were those run by veteran and relatively new principals.

## Main findings

1. Principals feel that their role is controversial. Some believe that they are a “necessary evil” that may interfere or, on the other hand, may facilitate. Others claim their role is necessary in order to ensure that the shift to the emphasis on five-units will spread through the school and will be maintained over time.
2. Principals reported that they were surprised they were the last to be included in the turn towards promoting five-units of mathematics. The Ministry of Education, the local authorities and the education networks set targets and led the shift from above; the public’s and the parent’s level of expectations rose as a result of a media campaign; and, the teachers were prepared because they developed capabilities and changed their teaching approach.
3. Principals that connected to the new emphasis were those that found a way to integrate the national targets with their own educational vision. They used the term as a holistic value, translated the national vision to goals, relied on data about students in making decisions, and supported the students and teachers along the road.
4. The principals reported that their initial concern regarded the implications for students not studying in five-unit classes. This concern was replaced by another regarding the emotional implications for the five-unit students who were experiencing failure or those who were exerting too much effort, which then leads to burnout.
5. Despite the concerns, the principals did not report including the homeroom teachers in the process, while the school counselors were included but only in response to events and crises, and only in ninth grade, ahead of choosing a major. As a result, the principals described a gap between the desirable and the actual from the perspective of the school’s preparedness to provide emotional support.
6. Principals emphasized their role inside the school: to create motivation, to lead a shared instructional system, and to instill regularity. Teachers and department heads, however, view the principal’s role as creating an external interface, to protect them against pressures, and to obtain the resources they need for their work.

7. The principals point to their responsibility in building the teaching staff, to locating and absorbing new teachers, and to creating professional development opportunities for the existing teachers. The principals point to the school's mathematics department head as a key figure in driving the improvement in teaching quality.
8. The principals see importance in the teachers' teamwork and in taking joint responsibility for the school's students. However, they do not discern the clinical characteristics of the teacher community and do not see adaptation of a personalized learning plan for each student as an actual possibility.
9. The principals indicated that the continuum between middle and high school was a necessary though weak link. They therefore built joint work routines for middle school teachers and high school teachers. There are schools, particularly small ones, where the principal appointed a joint department head for a subject, and in others, encouraged teachers to teach in both high school and middle school.
10. Diagnosing each student's status is a central management tool for principals and a means of creating dialogue with teachers. In the past, it was used to identify students with difficulties, while today it is also used to identify students with the potential to move up to five-units.

With reference to parents, in socioeconomically "strong" schools the principals deal with restraining the parents and easing their pressure on the teachers and the students. In contrast, in "weak" schools, the principals are busy trying organize and enlist the parents to become interested and supportive.