

## **Together or separate: different, contradicting or complementary approaches?**

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The various approaches to teaching mathematics in middle schools derive from different objectives, worldviews, learning theories, school structure, and – no less importantly – from the needs and priorities of the education system. Therefore, decisions and proposals pertaining to the organization of the learning group, work methods, emphases, and materials should be structured and examined according to and subject to these criteria.

About twenty years ago, the Ministry of Education decided to do away with ability groupings in mathematics. As an alternative, the ministry recommended teaching mathematics in a heterogeneous classroom, at least during the early stages of middle school. This decision created the need for changes to support math teachers – the development of new programs of study, methods of instruction, ways of organizing the classroom, and suitable means of evaluation, control and feedback.

Based on this recommendation, the “Together and Separate” program was developed. This program was designed to address the disparities among the pupils within the framework of the heterogeneous classroom.

Approximately ten years ago, some math teachers and education policymakers began to doubt whether teaching mathematics in a heterogeneous classroom in middle school, in the established format and with the schools’ available resources, indeed serves the intended objectives. Consequently, the Division for Secondary Education in the Ministry of Education decided to re-examine this organizational and instructional format. During this reexamination process two "extreme" populations were identified as groups whose needs were not met by the existing system – one includes the most talented math pupils, who have the ability and motivation to invest in enrichment studies in mathematics that are designed to develop mathematical thinking above and beyond what can be expected from a regular middle school population. The second population includes the pupils who have difficulty learning mathematics and struggle to attain minimal achievements in this subject. Yet despite these difficulties, most of these pupils could undoubtedly meet the demands of middle school and high school at

a matriculation level of (at least) three units if they receive appropriate didactic attention. In the absence of such attention, they will fail math at the middle school stage and will not be able to take advantage of their abilities and achieve what would enable them to succeed in tenth grade.

Therefore, the Division for Secondary Education initiated the “Realization of Potential and Excellence in Mathematics” program. The program was designed to provide a solution for pupils at these two extremes outside the framework of the heterogeneous classroom. One of the pillars of the program is the way of organizing the pupils: the “Realization of Potential” pupils study in a separate group; the “Excellence” pupils study in a separate group; and the rest of the pupils in the class study in a moderately heterogeneous group.

The two programs – “Together and Separate” and “Realization of Potential and Excellence” – were developed and launched by the Unit for Research in Mathematics Education at the Hebrew University of Jerusalem in almost consecutive periods, by the same team.

Clearly, there seem to be significant differences in how the two programs view the learning group and its role in the development of the individual learner. Nonetheless, all of the quantitative, qualitative, formal and informal indexes point to the success of both programs. The question arises: how could this be possible? Is it possible to run any program in the education system, any program and its opposite, and attain – in all of these programs – verified achievements in the critical indexes?

In order to provide an answer, even if only a partial one, for this challenging question, the two programs are presented and compared in this review. This comparison finds that in critical aspects the two programs are more similar than dissimilar, and thus it is not surprising that both are considered to be a success story. As to the question of the educational worldview – this will remain open to the reader’s judgment and worldview.