

# **Bilingual and Estonian-speaking children studying in the same classes: relation of academic achievement to the pupil's mental ability and classroom learning environment**

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## **Summary**

The objective of this study was to analyse the development of Estonian-speaking and bilingual children in Estonian schools. The author studied whether the children realise their baseline mental ability and develop accordingly in mathematics and Estonian. Additionally, it was described, which learning environments support or degrade pupils' development and realisation of their mental potential.

Samples of 25 classrooms of mixed Estonian and bilingual children were included in the study. Pupils' general mental ability was measured in the third grade. This data was matched with attained levels of mathematics and understanding of Estonian in the fifth grade. The classroom's learning environment was described through the average IQ and its variability as well as teacher's general efficacy of teaching skills and practices applied. To interpret the collected information, both group (regression and dispersion analysis) and individual level (configural frequency analysis) statistical methods were used.

The results showed that by the time of leaving the classroom-based teaching system and moving to the subject teaching system (in the fifth grade), the level of mathematics achievement in bilingual children was similar to the achievement of Estonian-speaking pupils studying in the same learning environment. In understanding of the Estonian language, the bilingual children remained at a lower level throughout all three years of the study. It is important to note that the achievement gap was not universal to all bilingual children but was prevalent in particular with bilingual pupils with average mental abilities. This group of bilingual

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pupils is under threat of degraded development and should be more thoroughly monitored by their teachers.

The second objective of this study was to find out how bilingual and Estonian-speaking pupils with different mental potential develop in certain learning environments. It was investigated whether previously noted patterns of children's IQ and academic achievement will surface only in certain classroom environments.

It was found that bilingual pupils with average mental abilities have development problems in homogeneous classrooms with children of below average IQ. Additionally, there was an alarming tendency that both bilingual and Estonian-speaking pupils with above average mental potential did not realise their potential in mentally heterogeneous classrooms. In classrooms of moderately variable but above average mental abilities, and homogeneous classrooms with average mental abilities, positive effects on academic achievement appeared both in pupils with average and above average mental potential, especially concerning Estonian-speaking pupils. With bilingual pupils, the positive effect of the learning environment appeared in pupils with a lower mental potential who studied in classrooms with a homogeneously low mental average potential.

The results of this study reveal that differences in development in various learning environments may be linked to the arsenal of teacher's knowledge and practices applied to a certain classroom. For example, in heterogeneous classrooms many teachers (and school systems) are not able to offer support to all mentally varied groups of children learning in the same classroom. Usually, children with average and above average mental potential are the ones who suffer and do not realise their potential.

The results of this study point to the need to apply different teaching practices or even school systems in different classrooms. This is an area where school can support teachers from the organisational side, by flexibly integrating assisting specialists into lessons, dividing classrooms into different groups and supporting group work, etc. On the other hand, it is important that the educational and coaching system for teachers includes an understanding of the need to give teachers exact and specific knowledge, skills and practices to support their work in the variety of classrooms they are likely to encounter.

*Keywords:* longitudinal exploratory study, bilingual children, pupils' general mental ability, average IQ of the class and variance, teachers' general efficacy, academic achievement