

Description for the General Public

An increase in interest in pupils' math achievements level at various stages of education has recently been observed in the public debate, particularly in the perspective of individual and economic benefits resulting from the high level of mathematical skills. Early childhood education plays a critical role in learning mathematics, because it is more difficult for children who experience problems with mathematics at early stages of education to lessen the gap later on, while children without such difficulties develop their skills flawlessly in the course of their mathematical education. This correlation stems from the specificity of the particular field of science, which is mathematics. Understanding the more advanced sections of mathematics requires mastery of the elementary ones. Determining the factors that differentiate children's math achievements is a particularly important area of research, in both theory and practice.

Math anxiety is one of the causes of mathematical difficulties. It is a specific type of anxiety fulfilling the criteria for phobia, although this kind of anxiety cannot be reduced to the general level of trait anxiety. The components of math anxiety include anxiety associated with learning mathematics, being tested in mathematics, anxiety caused by contact with mathematics and using it in everyday activities. This strong and negative emotional state leads to math avoidance through various strategies: pupils will avoid situations in which they have to perform mathematical calculations or will fast-solve them in order to reduce the amount of time spent on learning mathematics, as well as avoid math profile classes or studying subjects that require mathematical knowledge. Math anxiety is considered a basic emotional factor explaining the level of pupils' math achievements that has far-reaching individual and social consequences. Despite this, there is no clear answer to the question about the factors relating with this kind of anxiety.

Initially, it was thought that math anxiety was caused by the increasing difficulty level of mathematical tasks, which made those problems more difficult to solve. It appears that this explanation is not sufficient with regard to how math anxiety develops in children. It has recently been observed that math anxiety appears among pupils as early as in the early school age, i.e. among those who should not have any negative experiences associated with learning mathematics. It is also not known how math anxiety of schoolchildren relates to their math achievements or what role is played by cognitive and environmental factors in the development of math anxiety. The aim of this longitudinal study is to identify the factors that relate to the development of math anxiety among children in early school age and to determine its relationship with math performance of pupils in grades 1-2.

This study, combining the areas of interest of psychologists, educators, and math teachers, will contribute to the development of knowledge about factors explaining the level of pupils' math achievements and in the future will be of practical application in the field of educational practice.