

Using games to develop conceptual understanding in order to analyse problem meanings and devise problem solutions

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Student difficulties with problem solving are well known. They are often unable to link the problem situation to the implicit mathematical meaning or to a familiar process, use inappropriate operations while data may simply be used in the order in which it is presented rather than that which is implicit in the problem meaning. Lack of a well-developed plan of attack often leads students to focus on the surface level of problems, locate and manipulate numbers with little or no thought to their relevance, try a succession of different operations if the first ones attempted do not yield a (likely) result and read problems quickly and cursorily to locate numbers to be used. This workshop will develop a framework and present a range of games that will provide authentic settings for the analysis of problem meanings and initiate discussions about the solution process.

Teacher-student cooperation.

Josephine Buskes

Research proves that students perform better if they feel a strong connection to their teachers and classmates. How can we establish that strong connection? Our team of teachers got trained to use different teaching styles to challenge students. A group of eight students participated in this training. Students and teachers can learn from each other and help each other. We will watch a small discussion with some of these students talking about challenging ways to study maths and what role teachers and students can play in this process. Afterwards we will discuss this theme ourselves starting with a few provocative statements. There are some 30 countries present, which means that there is a lot of expertise at hand. Together we can exchange ideas about good practice so that we will end up with some solid ideas to take back home to try out.

Pure and applied mathematics –what is the driving force in curriculum in different countries – and what about the interaction between pure and applied mathematics?

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Abstract

For several decades, a lot of advocates among researchers in mathematics education as well as among teachers have argued that mathematics in school should concentrate on what may be defined as useful mathematics in daily life instead of a curriculum based on a simplified content of pure mathematics. Based on analyses of the so-called item-by-country interactions for the cognitive items in mathematics in TIMSS 1995 and PISA 2003 the influence of daily life mathematics in different groups of countries is discussed. The main purpose is not to discuss the level of achievement between different countries, but to analyse data from international comparative studies to get an impression of what seem to be the driving forces for mathematics in school in different countries, especially focusing on the role of applied mathematics in contradiction to pure mathematics.

Based on the analyses, different profiles consisting of groups of countries will be pointed out and discussed. It makes sense to talk about a Nordic profile, an English speaking profile, A German speaking profile, A Central European profile, an East Asian profile, and an East European profile in mathematics education. Questions to be discussed are: What are the characteristics for these profiles? What reflections can be made according to daily life mathematics and pure mathematics? What seems to be the driving curriculum force in different groups of countries? What about the interaction between pure and applied mathematics? Level of achievement in different

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countries will not play a major role in the discussions, but will nevertheless give important background information for reflection about the role of daily life mathematics and pure mathematics in school.