

FORMATIVE ASSESSMENT IN INQUIRY BASED ELEMENTARY MATHEMATICS

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The concept of inquiry-based mathematics education (IBME) includes a wide range of approaches to the teaching/learning that have the potential (a) to improve pupils' learning and increase their understanding of subject matter; (b) to motivate pupils to learn via their engagement in activities already known from scientific research in regular schoolwork. Specifically, the pupils are joined in the questioning, thinking, reasoning, finding relevant information, and data collection and interpretation. This practical research work involves observation and discussion of common problems and solutions, which are often based on real life.

Implementing IBME in school, the teacher faces challenges in dealing with compliance with curriculum requirements, classroom management issues in responding to the unexpected and uncertain, and conducting assessments.

The lecture will present feelings related to Czech teachers' and pupils' difficulties, opinions and needs associated with formative assessment in inquiry-based lessons. The research was part of a European project ASSIST-ME (Assess Inquiry in Science, Technology and Mathematics Education). Six teachers in primary mathematics worked with researchers on inquiry tasks and methods of peer assessment, and implemented them in their classes in a total of 8-12 hours of teaching over a period of two months. Teaching units were videotaped and transcribed, as were interviews with teachers and pupils before and after. Analysis of data was based on grounded theory approach.

Data showed that the main concern in implementing formative assessment in inquiry is that teachers lose their control of the instruction (the teacher designs and implements an effective learning environment, and the learner tries to cope with formulated problems). The teachers enter an unknown environment and have to react to pupils' unexpected or unclear contributions in class. When the formulation of learning goals and/or achievement criteria are too general or unclear the teacher or peer is not able to register the evidence of pupil understanding and provide such feedback that moves learners forward.

In the discussion we will concentrate mainly on (a) the interplay of teachers' intentions, subject matter and learners in inquiry; (b) the teachers' role in supporting learning and how they use assessment; (c) the pupils' role in their own learning and the learning of peers.