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Preschool class – one year to count!

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I will present results from a case study of teachers’ experiences and opportunities to assess pupils’ mathematical development and thereby identify pupils’ mathematical difficulties during the preschool class year. The study is part of a development and cooperation project between NCM (National Center for Mathematics education) in Gothenburg and Umeå University.

Keywords: Preschool class, intervention, assessment, teachers.

BACKGROUND

The Swedish preschool class (age 6 years old) is often described as the link between preschool and school. Curriculum for preschool (age 1–5 years old) in Sweden has an ambitious mathematical content (Skolverket, 2010) that is in many ways linked to the compulsory school curriculum in mathematics (Skolverket, 2011). But for preschool class there is no specific curriculum in mathematics. In preschool and school in Sweden there are different views on what develops pupils’ knowledge and/or competencies. Knowing mathematics can be understood in two different types of knowledge (Wedege, 2010). Knowledge developed in everyday life (Type 1), with representatives as D’Ambrosio and Bishop, and knowledge wanted in everyday life (Type 2) were Kilpatrick and Niss are predominant. Preschool in Sweden are influenced by Type 1 whereas school are strongly influenced by Type 2. When it comes to developing mathematical knowledge, preschools assess their activities which is different from the school context were the pupils’ knowledge are assessed. This circumstances lead to a lack of clear guidance for the mathematical work in preschool class. In view of the lack of clarity that surrounds goals in mathematics for preschool class, questions arise regarding on what grounds teachers meet and assess students’ knowledge and when do teachers in preschool-class discover misunderstandings that may exist in mathematics?

AIM

The twofold aim of my study include to describe preschool-class teachers’ perception of pupils’ mathematical development and analyze if raised awareness of pupils’ mathematical development changes the possibility of early identification of difficulties in pupils mathematical development and prevent creation of pupils with special educational needs in mathematics. For this purpose two questions are posed:

When and how will pupils’ mathematical development become visible to preschool-class teachers? When and how will pupils’ difficulties in their mathematical development become detectable to preschool class teachers?

METHODS

Data was generated by following 14 teachers in nine preschool classes with a total of 200 students from four different schools from November to June. Three of the classes and three teachers were part of a control group where I followed their regular activities. The remaining 11 teachers and six preschool classes were part of an intervention, designed to build structured activity in mathematics where pupils meet, use, develop and reason with different representations of numbers (Sterner, 2014).

The study includes several data collecting elements. At four occasions the teachers were asked to assess their pupils. The assessment was based on a matrix, influenced by Kilpatrick’s framework (2001) on mathematical proficiency and the similarities in curricula goals for preschool and primary school. All the pupils were interviewed and tested with the Van Luit’s “Early Numeracy Test” (2005) – in November and in June. The scores are used mainly as control points in relation to the teachers’ assessments in regards to number sense, as being one of the key factors in knowing mathematics.
Interviews were held with the teachers in November and at the end of the preschool class year, in June. Observations were conducted in the preschool-classes on several occasions.

RESULTS

The intervention group had more activities and communication between teachers and pupils and in-between teachers. Increased communication between teachers led to raised awareness regarding their own knowledge of mathematics and of pupils’ mathematical development. Raised awareness of pupils’ mathematical development enhances the teachers’ possibility to assess pupils’ and to detect and correct gaps in pupils’ math skills. The teachers describe a feeling of security in their knowledge and assessment but at the same time they express a sense of greater difficulty in assessing, even when the assessment were more accurate.

REFERENCES


