Make the mathematics visibly in children's free activities in preschool-Challenges for the teaching profession.  
PhD Student Kerstin Bäckman  
Åbo Akademi University and University of Gävle

This paper reports on how preschool teachers from two preschools work with four years old preschool children’s mathematical learning and expressions. In this study The Learning Study Model is applied, in which mathematical content is focused and a variation in the learning activities is arranged (Marton et al 2004, Runesson 2006). The Learning Study Model is based on the Variation Theory. In this theory necessary conditions for learning are the experience of discernment, simultaneity and variation. In the preschool model of Learning Study used in this study play and children’s experience of critical aspects are important. The teachers have chosen to work with the concept of Numbers. Variation should be done in the context of practical activities and through variation different aspects of relations within numbers and between numbers can be discerned.

The present study reports one part of my ongoing study, namely teachers’ opportunities to catch children’s mathematical learning and expressions in the preschool context. In the study, play and children’s various way of thinking of mathematical tasks play an important role.

Children experience mathematics in different ways in their everyday life, for example through play in the sandboxes, climbing in the woods, building decks, at lunchtime and in conversation with friends. They play games, listen to stories and they get challenges in their logical thinking through problem solving and in conversation with playmates and adults. In the interaction with the outside world children experience mathematic physically and mentally, which in turn enables them to create representations of various mathematical concepts and meanings. In order to grasp the children's views there must be adults who listen, follow up, ask questions and challenge the thinking.

The overall research question in the study is: How can a preschool teacher catch mathematics and challenge learning in children's activities in the preschool context?
In the study I have used video camera in interview situations, in planned activities and in children’s play in the preschool environment. The data consist of video observations from children’s interviews, from planned activities and from children’s play. In the study qualitative analysis methods are applied (Lindahl 2003, Marton et al 2004, Runesson 2006). The research results so far indicate that teachers do not consciously use mathematical language in connection with everyday language in spontaneous learning situations.

The data analyses suggests that children think and reason, explain and draw conclusions, sometimes they use mathematical language but it is also common that they are quiet when they are exploring things together. The preschool environment give children opportunities to use numeracy; explore shape, size and pattern during block play and imaginative play when they play inside and outside but children often play with themselves without adults’. Children explore their environment and communicate with their bodies and minds not always with words. When teachers are included in children’s activities they can help children to identify critical aspects of a phenomenon. In this study, the teachers use variation to make relationships within and between numbers visible in children’s activities in order to help children to discern critical aspects and thereby learn. Therefore teachers who can see the mathematics in children's activities may have opportunities to discern critical aspects for children’s learning and thereby “catch a learning moment”.

References:
