THE ROOTS OF MATHEMATISING IN YOUNG CHILDREN'S PLAY

BERT VAN OERS
VU University Amsterdam

Abstract

In the presententation I will unfold an approach to early mathematics education based on a theory of playful activity, drawing from the perspective of Cultural-Historical Activity Theory (CHAT/Vygotskij). From this perspective I will demonstrate how direct instruction of mathematical operations can be reconciled with productive mathematical problem solving. The core of this latter process is mathematising, i.e. the (re)organisation of experiences into an object open for mathematical refinement (Freudenthal). Starting out from the cultural-historical activity theory, I will argue that *productive mathematising* is to be conceived as essentially a playful activity that has its roots in young children's (3 to 8 years old) playful participation in cultural practices, and which can continue as play under proper educational conditions.

When playfully engaged in cultural practices, children will encounter problems with number and space, which ask for new tools and solutions. Young children can build up the cognitive tools and skills that they need for the improvement of their mathematising, through dialogues with peers and adult assistance. In the presentation I will discuss some aspects of young children's mathematising, in particular aspects that contribute to children's communicative ability regarding mathematical dimensions of reality. In the context of their play activity young children invent new symbolic means for improving their communication about mathematical aspects of reality. Within this play context instruction of useful mathematical operations can be taught and practiced, as long as it can be meaningfully embedded in children's activity.

The argument will be illustrated by classroom examples from a play-based curriculum that is developed on the basis of the cultural-historical activity theory, and which is implemented in many Dutch primary schools.