



## Brief

# The use of sociocultural and socio-material theories in studies of the role of kindergarten employees in toddlers' mathematical learning processes

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More research in kindergarten is needed about mathematics education provided to toddlers, those children aged up to 3 years old. In particular, as kindergarten staff play an important role in contributing to toddler's opportunities to learn, it is important to gain a wider understanding of their adult role. In this article I compare Nordic research that uses Vygotsky's and Barad's theories for understanding the role of kindergarten staff in the mathematical learning processes of toddlers. My aim is to investigate whether and how the choice of theoretical perspective affects the researchers' analysis and understanding the role of adults in mathematical work with the toddlers. These theories were chosen because they are frequently used in Nordic research about the adult role in kindergartens.

The reviewed studies either investigated data of kindergarten practices, as is the case with most of the selected studies, or the kindergarten staff's reflections or documentation of their own practice. I investigate whether and how the choice of theoretical perspectives has an impact on which aspects of the adult role are emphasized and which parts of an educational practice are examined.

The results of the analysis show that the reviewed studies in previous Nordic research which use Vygotsky's and Barad's theories highlight different aspects of the role of kindergarten staff in the mathematical learning processes of toddlers. The studies which use socio-cultural theory, based on Vygotsky, emphasize the importance of the guiding adult and social interaction in providing mathematical learning opportunities for young children. Research based on Barad's theory, on the other hand, described the adults as having the

role of facilitator and highlights the learning opportunities that arise in toddler's bodily interactions with the material environment. The results indicate that both theoretical perspectives provide different insights into the role of kindergarten staff in mathematical learning processes of toddlers. In future research, combining both perspectives could therefore contribute to understanding the variation and complexity in the practice of the kindergarten employees and their perspectives on the adult role in their contribution to toddler's mathematical learning opportunities.

**Keywords:** *adult role; Barad; toddlers' mathematical learning opportunities; Vygotsky*