

# **An analysis of two kindergarten teacher's orchestration of mathematical activities: Choices and reasons**

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## **Background**

Research has shown that high quality early childhood programs carries the potential of improving children's early learning. Moreover, intervention programs have shown to positively effect children's learning of mathematics (Clements & Sarama, 2011; Stehler, Vogt, Wolf, Hauser, & Rechsteiner, 2013). The current study is part of the research conducted within the Agder Project<sup>1</sup> (AP). The AP is a research and development project designed to even out differences between children as they enter school. The AP thus bares characteristics of an early childhood intervention program. In the project focus has been on nurturing 5-year old children in their development within four competence areas that research has shown to significantly contribute to children school readiness. The competence areas are social skills, self-regulation, literacy, and mathematics. The current study reports on research with respect to the competence of mathematics. In the AP, researchers have designed mathematical activities in close collaboration with participating kindergarten teachers (KTs); activities that the KT's orchestrated with the group of 5-year-olds from their own kindergarten.

The mathematical activities were designed based on two principles; (1) Playful learning; and (2) Inquiry. The current study thus takes as point of departure these two principles when researching the orchestration of mathematical activities in the kindergarten context. Research has documented that emphasis on playfulness in engaging with mathematics in the early years is particularly important with respect to long-lasting effects (Marcon, 2002; Singer, Golinkoff, & Hirsh-Pasek, 2009).

The current study draws on interview data from two KT's in order to come up with answers to the following research question:

What reasons do the kindergarten teachers provide regarding their choices in orchestrating mathematical activities for 5-year-olds?

Despite the collaborative design of the mathematical activities, including explicit intentions and suggestions for implementation of the activity, the KT's were left with a lot of freedom regarding how to orchestrate the activities in detail. The interviews are analysed employing the Knowledge Quartet, proposed by Rowland, Huckstep, and Thwaites (2005). The KT's' reasons are categorised with respect to the four dimensions of the Knowledge Quartet: Foundation, Transformation, Connection, and Contingency. Preliminary findings suggest that the KT's revealed reasons for the orchestration choices made give insights into these KT's' knowledge-in-action and knowledge-in-interaction.

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