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## TRAINING FIRST LANGUAGE IN LEARNING ENVIRONMENTS RELATED TO NATURAL SCIENCES IN KINDERGARTEN

**Aims and Research Questions.** This research project examines two main educational areas: acquisition of first language and understanding in natural sciences. The project investigates how teaching-and-learning settings can be designed and used to build up concepts in natural science and help to achieve academic language at the same time. It builds upon the project of Anna Groness about first-language training, concentrating on two main aspects. Firstly, it evaluates the extent to which the quality of a teaching-and-learning setting for experiments in mechanics is improved by cognitive activation achieved by using focused language-training strategies. Secondly, it investigates the impact of subsequent deepening activities after this setting (e.g. open vs. guided activities).

**Theoretical Background.** Empirical evidence has been found to show that group- or child-focused pedagogical process quality in kindergarten positively impacts later success in school, especially with regards cognitive activation (Pianta et al. 2011). In addition, science learning in primary school, which follows a moderately constructivist paradigm and integrates cognitive activation, has been shown to be successful (e.g. Möller, 2012, Hardy & Kempfert, 2011). While the quality of emotional support and group/class management in kindergarten is quite high, cognitive activation is considered less (Kammermeyer, Roux & Stuck, 2012). For developing learning situations, the conceptual change theory is largely applied (Möller, 2009, Möller & Steffensky, 2010). One reason for this is the strong focus on children's self-education and interaction with peers in open settings. Therefore questions how to observe and to document self-education and interaction are dominant within the debate on pre-school pedagogy, which neglects targeted activation by the teacher (e.g. Schäfer, Alemzadeh, Eden & Rosenfelder, 2008).

**Relevance.** Fostering competence in science and in first language in kindergarten are commonly seen as the main facets for a successful educational process leading to scientific literacy. On the one hand, there is a high expectation placed on science and language education in Kindergarten and, on the other hand, little is known about ways of putting these expectations into practice in early educational processes.

**Method and Design.** A quasi-experimental study with various teaching-learning settings is planned. Multi-criterial effects (developing scientific concepts, academic language, interest in natural science, language competence, frequency of sustained shared thinking) will be investigated on a child level.