PICCO: The Ecology of Children's Conceptual Thinking and Learning of Science

PICCO project (2007-2009) is funded by the Academy of Finland (project number 115161). The project is a collaboration between researchers from the Universities of Tampere and Helsinki (Finland), The Open University (UK), and Waseda University (Japan). The project leader is Professor Marjatta Kangassalo (University of Tampere).

PICCO research programme investigates young learners' conceptual thinking and learning of science in early years classrooms, namely in a pre-school classroom context and in a second grade elementary classroom context. The research programme approaches conceptual thinking and learning from the ecological perspective, which recognizes the inter-dynamics between psychological, social and cultural elements in human activity, learning and development.

Whilst taking an ecological stand to human activity and learning, the project aims at widening theoretical, methodological and pedagogical understanding of young learners’ science learning in activity contexts mediated by socially shared inquiry learning activities and modern technological tools. The empirical data of this study were collected in two phases and involved classroom community of 22 children, aged between six to eight years. The learning activities and tools in the unit consisted of child-initiated, exploratory activities during which children had versatile tools in their use, including a multimedia learning tool, PICCO.

The research programme directs its analytical lenses to psychological, interpersonal and cultural dynamics in conceptual thinking and knowledge construction in science. Consequently, the units of analyses are to be found in both the individual and the social and their inter-dynamics. In order to tackle the multi-faceted scientific objectives of the present the research programme, its theoretical and methodological foundations are laid by theories and set of concepts derived from cognitive and social psychology, cognitive science, as well as by studies of discourse, learning and social practice.

In all, the research project aims at increasing theoretical, methodological and pedagogical understanding of children's conceptual thinking and learning in pedagogical contexts based upon child-initiation, exploratory activities, socially shared learning activities and the application of multimedia technology.

Research team:
Assistant Professor Marjatta Kangassalo, University of Tampere
Dr Kristiina Kumpulainen, Finnish National Board of Education
Researcher Satu Vasama, University of Oulu
Researcher Eva Tuominen, University of Tampere
Dr Karen Littleton, The Open University
Professor Setsuo Ohsuga, University of Waseda