The role of metaphor in learning and knowledge formation

Project coordinator: Assoc. Professor Niklas Pramling. Funded by the Swedish Research Council (2008-2011)

Project summary
This project, which is my work as a Research Assistant with the Swedish Research Council (2008-2011), revolves around the use of metaphor and other forms of figurative speech in learning. The purpose of the project is to study how children use what they already know when trying to learn something new. When confronted with the task of coming to grips with what for the individual is novel knowledge, children as well as adults tend to speak of and understand the new in terms of something more familiar. One way of analyzing this is to study how metaphors are used as resources to ‘bridge the gap’ between the familiar and the as yet unfamiliar. This is a foundational principle in people’s learning, on an individual level as well as on a collective level of scientific knowledge formation. This strategy may be most apparent when trying to make sense of abstract and complex forms of knowledge, such as scientific knowledge, since this knowledge is conceptualized in unfamiliar terms or, rather, familiar terms that are used in a novel sense. Another strand of this research interest concerns the role of metaphor in scientific knowledge formation and communication (Pramling & Säljö, in press). I have studied (Pramling, 2009) how Darwin uses metaphors when explaining the theory of evolution by natural selection in the first edition of On the Origin of Species from 1859. The analysis reveals how he uses several metaphors central to his line of reasoning and that he himself struggles with this fact, as evident in him commenting on some of these. Implications for science education and teaching this theory are drawn. A popularized version of this article (and with a link to the original paper) is part of an exhibition at the famous science center Exploratorium in San Francisco, with the purpose of making science education research accessible to science teachers and others interested in these matters. I have also studied the introduction and uptake of a metaphor central to cognitive psychology (Pramling, 2011), the metaphor of chunk as introduced in a seminal paper by George Miller in 1956. How the metaphor is taken up and conceptualized, and put to work in reasoning and experimentation in psychological studies of memory/remembering are analyzed. In the research literature the metaphor tends to be taken in a static sense (as a limitation in human ability) rather than in a dynamic sense (i.e., how humans find ways of reducing complexity and hence expanding their abilities). As a consequence, the important premise of Miller’s analysis, that is, that humans are not fixed in their abilities but transcend these through many means (learning), is left undeveloped. This means that a key issue for a psychology of learning and remembering was to large extent left unanswered. Finally, I have studied how scientists use metaphors when communicating their field of expertise to lay audiences in popular science magazines (Pramling & Säljö, 2007). The analysis of scientists explaining genetics in such fora shows, among other things, how anthropomorphic metaphors are frequently employed and that these transform genes and DNA into intentional agents (that decide, choose and remember) in a story about human life. Other metaphors used come from the domain of communication (e.g., texts, libraries, and letters), architecture, and several other fields. Popularization in this literature to large extent implies making the representational
model (i.e., the metaphorical nature of these renderings) invisible, transforming epistemological tools into ontological claims.