

**Small Stories for Learning: A Sociocultural Analysis of Children's
Participation in Informal Science Education**

by

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ABSTRACT

This dissertation examines the ways children use language to construct scientific knowledge in designed informal learning environments such as museums, aquariums, and zoos, with particular attention to autobiographical storytelling. This study takes as its foundation cultural-historical activity theory, defining learning as increased participation in meaningful, knowledge-based activity. It aims to improve experience design in informal learning environments by facilitating and building upon language interactions that are already in use by learners in these contexts. Fieldwork consists of audio recordings of individual children aged 4-12 as they explored a museum of science and technology with their families. Recordings were transcribed and coded according to the activity (task) and context (artifact/exhibit) in which the child was participating during each sequence of utterances. Additional evidence is provided by supplemental interviews with museum educators. Analysis suggests that short autobiographical stories can provide opportunities for learners to access metacognitive knowledge, for educators to assess learners' prior experience and knowledge, and for designers to engage affective pathways in order to increase participation that is both active and contemplative. Design implications are discussed and a design proposal for a distributed informal learning environment is presented.