Museums in Schools – Schools in Museums:
Interactive tabletops and meaning making in art and architecture

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This paper presents new research on the design and use of multi-touch tabletop applications for two different museum learning contexts. In the school setting, a traveling museum workshop on architectural design integrates an interactive tabletop into a two-day sequence of pedagogical activities and resources for middle school students (12-13 years old). In the museum setting, the tabletop is accessible in a 'learning lounge' as a walkup activity for high school students (17-18 years old) on a class field trip to learn about Edvard Munch and his art. The same table is used in both contexts, and the applications were developed, tested and fully piloted in collaborative design processes involving researchers, interaction designers, architects, teachers, and curators from the National Museum of Art, Architecture and Design in Norway.

Horizontal multi-touch displays, or 'interactive tabletops,' were first introduced into museum spaces as a digital resource over a decade ago, with the aim of supporting learning and new forms of interaction with curated information about exhibitions and collections (Hornecker 2008; Isenberg, Hindrichs et al. 2010; Marshall, Morris et al. 2011). In schools, tabletops are explored as educational tools to support argumentation, group collaboration, and hands-on problem solving activities in mathematics and other subjects. In their recent review of the extensive research on tabletops, Dillenbourg and Evans (2011) discuss issues from human-computer interaction (HCI) and learning research perspectives, pointing to ways in which design and pedagogical issues overlap. Accordingly, as backdrop for the preliminary empirical analysis, we first discuss design features of the tabletop applications in relation to some central HCI issues. We then describe how the pedagogical aims have informed the interaction design for the two museum learning contexts.

Video recordings, field notes, semi-structured interviews, log data and visitor-generated 'products' comprise the data corpus from the studies in the two settings. We present video data from recordings of user interactions with the tabletops, as the young people engage in problems or tasks related to art or architecture. Applying methods from interaction analysis (vom Lehn, Heath et al. 2001; Derry, Pea et al. 2010), we present some preliminary findings from studying the relations between tabletop and social interactions, the tasks, and the institutional features of the respective museum settings. The investigation is framed by the main research question: in which ways may interactive tabletops mediate participation and meaning making in relation to specific disciplinary domains and museum learning contexts?

References

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