

SI 682 – Hands-On Museum – Literature Review

We conducted a review of literature review to learn more about how other museums have used handhelds to support learning in museum settings. We looked to articles that focused on building common ground, controlling interruptions, and mediating social interactions with technology. We also reviewed multiple projects that introduced similar systems into museums in order to learn from their efforts.

Below is a summary of some of the key issues that we plan to address in our design with special attention paid to one particular device—the Soto Voce. We plan to continue exploring literature on learning as well as investigate more projects currently running in technology-focused museums.

Museums and Context Mediation

Behaviors in museums tend towards cooperative learning, which often includes a lot of talking with fellow visitors. Especially in a museum designed for children, interaction between child, exhibit and parent (or adult) is a large part of the experience. Context-mediated social awareness aims at minimizing the unwanted social interruptions (Bardram and Hansen, 2004). Though real cooperative benefits come out of interruptions, “unfortunately, informal spontaneous communication comes at a cost” (Dabbish and Kraut, 2004). This article recounts the design considerations that went into building the tool that mediated the needs for both awareness of others and learning, which ultimately took form of a PDA with a one-speaker headset. The article also recounts the research study of the guidebooks use by pairs of participants in the study used the guidebook in an actual museum.

Common Ground

Finding common ground within an organization keeps members cooperating and engaged. By facilitating a “mutual knowledge” or a shared understanding and meaning, members of the organization will identify with one another. The absence of this common ground can be detrimental to any project’s success (Cramton, 2001). Museum visits are frequently social and necessitate tools that are also socially aware to support this community use or they will not be functional (Shuman et al., 1992). To successfully support the kind of learning that was common in the museum, the guidebook needed to encourage and facilitate a shared awareness of fellow visitors and a shared learning about the collection.

Sotto Voce

The guidebook is a PDA that houses all of the data on each machine (Raptis et al., 2005). The electronic guidebook has a visualization of the rooms within the museum (see image below for screenshot. Image taken from Grinter et al. 2004 article). Objects with guidebook segments are highlighted with conspicuous green boxes. Visitors can choose the setting of volume and can use the guidebook to hear about the collection. Additionally, the pairs could use the tool for following one another through the museum by locating where their partner is within the museum on the screen.

Awareness and Interruptions

In the study on the AWARE project, mobile phones were used to accomplish a similar awareness among doctors and nurses (Bardram, J.E. and Hansen, T.R., 2004). In the hospital staff lost track of each other's location and in an effort to accomplish their own task, they often interrupted a colleague. The AWARE phone mediated the interruptions by providing awareness among staff of the activities and locations of the people they sought. By providing the context and messaging ability, staff could use their judgment and choose to interrupt colleagues or not (Bardram, J.E. and Hansen, T.R., 2004).

The Sotto Voce assumes that the awareness of fellow visitor's space and the potential for interruption is both worth it in the museum setting and can be mediated. The guidebook's functions will also provide enough context for pairs to make decisions about interruptions in tours. Pairs of guidebooks are connected electronically and when visitor 1 listens to a selection, visitor 2 has the option to eavesdrop on visitor one's selection. (This is the most interesting function in the context of CSCW and will be most frequently examined in this paper.) Each visitor's selection, always receives preference on their own guidebook and they have the option of turning off the eavesdropping function.

Trade-offs between workers are a common negotiation between users of cooperative systems (Ackerman, 2000). In this setting the eavesdropping function demonstrated the need for a small degree of negotiation and cooperation among pairs of users. While Sotto Voce did facilitate a higher degree of cooperative or shared learning, many pairs used eavesdropping to listen together, other groups found the negotiation irritating. Some pairs cited that their museum behavior was not cooperative or shared, that they preferred to engage with the objects independently. While some used the tool independently, even some of those pairs mentioned finding the eavesdropping useful when they needed to locate each other within the museum, they could begin listening in on their partners tour and then make a judgment on their location.

Cooperative Use of the Guidebook

Grinter et al. found that Sotto Voce supports the museum visit in four ways: shared listening, independent use, following one another, and checking in. In organizational settings, People both adapt to the systems they are using as well as modify the systems they use (Orlikowski, 1992). In this environment, Sotto Voce impact and adoption must be immediate, as users do not have the luxury of re-using the guidebook.

Users get one chance to navigate the guidebooks touch screen, choose to read or listen to the guide, and find a way to use the eavesdropping function. Some participants reported turning off the eaves-dropping function completely after not initially understanding its use (Grinter et al., 2004).

Positive reports of use included groups that spent the entire time touring together. Groups reported some instances of conversations emerging from the guidebooks comments. Pairs also listened together sometimes and then wandered off to explore on their own, making the most of all of Sotto Voce's functions, as opposed to the eavesdropping which is of primary interest in the discussion of CSCW.

Works Cited

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