

# Discovery Point: Enhancing the Museum Experience with Technology

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## ABSTRACT

The Discovery Point prototype allows art museum visitors to hear stories about a work of art without burdening them with lengthy commentary. It is simple and compact; it has only four buttons and can be worn around the neck. It is a nearly invisible addition to the museum experience, but one that fills the need to deliver the right amount of information to visitors. To develop this concept, we observed and interviewed visitors, constructed a prototype, and then evaluated that prototype through two rounds of user tests at the museum.

## Keywords

electronic guidebooks, shared audio, interaction analysis

## INTRODUCTION

The Carnegie Museum of Art in Pittsburgh, tasked us to explore how to “employ emerging technologies to enrich the visitor’s experience” and deliver a prototype, rather than a working deliverable, that could be implemented in the museum in approximately two years. Our concept, the Discovery Point, is a small remote control-like device that allows users to hear short stories related to the work of art they are standing in front of.

## RELATED WORK

Aoki et al [1] built *Sotto Voce*, an electronic guidebook that would facilitate social interaction. Like *Sotto Voce*, the Discovery Point’s goal is to promote social interaction — an important reason for museum visits. But unlike it, the Discovery Point’s short stories are an unobtrusive part of the visitors’ experience, offering them little conversation starters. Grinter and Woodruff [2] investigated headset design to work with their electronic guidebook. Like Grinter, we found that traditional headsets isolate visitors, so we chose a headset-less audio solution.

## DISCOVERY POINT FUNCTIONALITY

The Discovery Point prototype is made up of the physical device that visitors hold and special speakers which deliver pinpointed audio that can only be heard near the work of art. The speakers use the Audio Spotlight technology [3] that confines audio to a precise area near each piece of art. When visitors approach any work of art with a small icon indicating that the work contains stories, the icon illuminates to let them know that they can now hear stories since the system has recognized their presence using infrared technology.

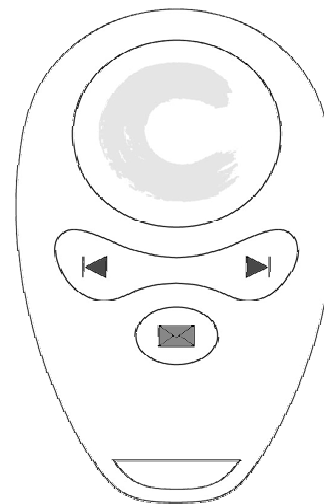


Figure 1: Discovery Point

The device has four buttons: Play, Back, Forward and MailHome. Visitors press the big Play button to hear a short story (about 30 seconds or less) related to the item. When the story is over, they can hear another story by pressing the Play or Forward button. Each piece of art contains approximately five stories on varying topics such as the artist’s life, technique, or style. However, these categories are not

standard across all the works of art to allow an element of discovery and surprise as the art tells its most intriguing stories.

Visitors can request additional information about the work or create a virtual souvenir of their visit, by pressing the MailHome button and the work of art is added to their personal website of their visit that day.

## INSIGHTS PROCESS

To develop this concept, we conducted three types of user research: gallery observation, shadowing observation, and short targeted interviews.

### Gallery Observation

We observed 110 people in 10 galleries. We recorded both quantitative measures such as how much time each person spent in the gallery, how many people were in the party, and which works of art they stopped in front of, as well as qualitative measures such as our impressions of their mood and interactions with the people in their party.

### Shadowing Observation

We observed 6 groups from the beginning to the end of their visit. We specifically paid attention to four aspects: interaction with the artwork, social dynamics in the group, wayfinding in the museum, and movement through the galleries.

### Short Targeted Interviews

We conducted 60 short interviews with visitors at one of three stages in their visit – before entering the galleries to find out their motivation for coming to the museum, in the galleries with a work of art to find out why they are looking at a particular piece, and after the visit to find out how they think they spent their time.

### Results

The observation and interview techniques uncovered the following insights about visitor behavior in the museum:

- Visitors spend very little time in each of the galleries – 90% of visitors spent less than 5 minutes in any gallery.
- Visitors spend very little time with each piece, typically less than one minute.
- People go to the museum with other people and use it as a place to socialize. The groups tend to stay close together.
- Most visitors wander through the museum without a specific plan in mind of what they want to see, heading towards those things that draw their attention.
- Visitors find their own connections to the art as the piece recalls something from their experience.

### DESIGN CHARACTERISTICS

We translated these major findings into guiding design characteristics for our prototype:

- *Deliver brief thought-provoking audio content that promotes discussion.* Since visitors do not spend a long time with each work, the Discovery Point delivers short and concise stories about a work of art.
- *Enable social interaction.* Because the stories are delivered through ambient sound, not isolating headphones, they serve as seeds of conversation for groups of visitors. Also, the stories' short length of the audio allows it to become another conversation partner.
- *Promote discovery for visitors.* The Discovery Point tells only the most interesting stories about the art,

thus surprising the listener with a variety of topics and tidbits.

- *Create a technology that is easy to use.* The device contains minimal buttons and a familiar “remote control-like” form.

### USABILITY TESTS

We conducted two rounds of think-aloud protocol tests at the museum with a total of 20 users (11 in round one and 9 in round two).

### Method

In both rounds of tests, we used a “Wizard of Oz” setup where a tester played the appropriate stories on a laptop with speakers. In round one, participants were instructed to give voice commands to direct the audio, while in round two, participants were given a foam device on which they pressed buttons to control the interaction.

### Results

The usability tests pointed to the following findings:

- The importance of having a physical device for users to control as even a minimal set of voice commands were difficult to remember and use.
- The ambient nature of the audio delivered without the use of headphones, allowed groups of visitors to use it as a turn in the conversation that they were engaged in.
- Users needed a mental model of how the audio content was structured – how many stories were there? Are they related? We augmented the audio to contain cues such as “There are 3 stories about this vase by George Ohr. First story...”
- Users want to control the interaction by being able to pause the audio, replay stories they liked and skipping over ones that did not interest them.

### Future Directions

Other issues that should be explored are making engaging stories and supporting a family experience. Also, an untapped opportunity lies in making sense of the data that is collected as visitors make their way through the galleries listening to stories, and based on their choices to further enhance their experience with more targeted content.

### References

1. Aoki, et al. “*Sotto Voce: Exploring the interplay of conversation and mobile audio spaces*”. Proceedings of CHI 2002 (Minneapolis, MN), ACM 431-438
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