Teachable Mo[bil]ment: Capitalizing on Teachable Moments with Mobile Technology in Zoos

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MOTIVATION
Support docents in their orchestration and interpretation of dynamic interactive exhibits.

DESIGN APPROACH
We identified two factors as needing further investigation:

- Group debrief meetings and meetings with zoo’s personnel
- Individual docent interviews
- Research fields notes

Data sources:
- Most of the time they worked in pairs.
- 15 docents (12 high school students, 3 college students)

Participants:
- 3 sessions - (38 trials, 12 trials, 3 trials respectively).
- a baseline session (45 trials)
- 4 sessions

Notification Timing
For delivering cues to docs (pop-ups)
- Just-in-time approach
  - System pushes notifications
- Orchestration approach
  - System requires user’s action to acknowledge readiness for new notifications

Presentation Technology
Means this delivery is managed.
- Tablets which afford one-on-one discussions or large projection screens which allow the docent to display information to visitors

RESULTS
Important features to keep in mind while designing to support docs:
- Mirroring content of tablets on additional displays helps to engage a large audience.
- Provide orchestration along with mobility to do not constrain the docent to a particular physical space.
- Support interpretation along with mobility to seamlessly shift between spectators and the main user.
- Adaptable delivery pace of notifications are needed.
- Show concise content and attractive pictures to serve docs and visitors.
- Avoid showing videos when orchestrating or interpreting a dynamic interactive exhibit.

Figure: “A Mile in my Paws” is played by a visitor who interacts with the game with swimming and walking motion. Docents (in green shirts) provide explanation and ongoing explanations.

RESULTS

<table>
<thead>
<tr>
<th>Notification presentation technologies</th>
<th>Advantages and disadvantages of docent-center analysis, as compared to the previous configuration</th>
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</table>
| 1. No notifications * Monitor (print-outs and web-based) | - Docents had to remember the content; so they delivered only half (51%) of it  
- Docents mainly conveyed the information to the player, not the audience  
- Docents were constrained to a physical space since they had to be close to the secondary display |
| 2. Orchestration * Tablet | - Automatic notifications helped docs deliver about 73% of the content, but they still skipped some of it  
- Docs mainly liked to have control of the exhibit in their hands  
- Docs could move around using the tablet  
- Docs conveyed the message to the audience |
| 3. Just-in-time * Tablet | - Automatic just-in-time notifications support docs' interpretation  
- 100% of information was delivered by the technology  
- Docs felt interrupted by the technology a few occasions |
| 4.5. Orchestration / Just-in-time * Large display | - A larger audience was addressed  
- Docs lost mobility and in some extent the feeling of controlling the exhibit |
| 6. Orchestration * Large display * Tablet | - Docs could engage with a larger audience with the support by two presentation technologies  
- Mobility and control was recovered |

Table. Tested configurations. △ Advantages. ▴ Disadvantages

CONCLUSIONS AND FUTURE WORK
Implementation of Hybrid presentation approach – tablets synchronized with a large display.

- Docs preferred personal control (offered by orchestration approach). Just-in-time notifications were also useful to augment ongoing explanations.
- Further research: Incorporation of docent voice recognition to detect long pauses, keywords, or a falling voice pitch; and touch-screen gestures where docs can switch between notification modes without looking at the screen.

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