How Interpreters Make Use of Technological Supports in an Interactive Zoo Exhibit

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Performative exhibits

Players

Peripheral audience

Facilitator
Research Question

How do we design support tools that can help interpreters facilitate dynamic exhibits, especially exhibits with large numbers of peripheral visitors?
Who are interpreters?

Museum staff that connect visitors’ interests to exhibit content by means of dialogue, first-hand experiences, and artifacts

- Creating visitor-centered dialogue
- "Facilitator" rather than "orator"
- Highly engaged and improvisational

Interpreters are mainly expected to learn these skills on the job, with little training and PD
Interpreters’ tools

At the zoo: “Skulls & Skins”
• Draws visitors’ interest
• Shared anchor of conversation
• Supplements engagement with exhibits, live animals

More complex tools:
Electronic Guidebook (Hsi, 2003)
21-Tech Project (Garibay & Ostfeld, 2013)
• Wide range of content, options
• Rich potential for new practices
Theoretical framing

- Interactive tablet support tools could serve as a mediational means (Wertsch & Rupert, 1993) for new facilitative practices
  - Current tools don’t always support rich facilitative practices and strategies
  - New mediating artifacts have potential to disrupt existing norms and goals (Engeström, 2001)
Theoretical framing

• Design of tool should support interpreters’ and visitors’ shared meaning-making
  – Using speech, media, gesture to position exhibit resources epistemologically as accessible sources of inquiry (Jaipal, 2010)
  – Opportunity for division of labor through co-facilitation of exhibits
A Mile in My Paws
Methods and data

• Two day installation, for 1.5 hours each day
  – 2-5 interpreters at a time, mix of youth and adults

• Fixed video of full exhibit, audio recorders on interpreters' lapels
  – Speech combined with gesture, gaze, physical positioning

• Redesign/reflection meetings
  – Debriefing interpreters, designing future iterations
1st phase: Case selection

• Only focused on instances where an interpreter was holding and referring to the support tool

• Not representative: Interpreters had not yet received substantial training, so much of their use was improvisational
Data analysis

2nd phase: Identifying facilitative strategies

• Episodes involving interpreter, visitor, and support tool

• Two facilitative strategies:
  – Co-facilitation
  – Bridging

Facilitative strategy: sequence of speech, gesture, and tool use that an interpreter employs to structure their interaction with a visitor
Facilitative strategy: Augmented co-facilitation

• Tablet creates an additional relationship in the exhibit that complicates the interpreters' coordination of their shared facilitation ("co-facilitation")

• But situational awareness provided by the tablet helps interpreters choose the right time to interrupt and introduce new ideas or connect across topics
**Claire:** So now in 2045 there’s gonna be a *lot* more *water* than there will be ice, so she’s gonna be swimmin’-- swimming a lot more [points back to current Paws player] than our last guest, <previous player> did, in 2010.

*Short pause as Claire looks back at current player and visitors look at TST and the current player, while Lorraine approaches the same group of visitors.*

**Claire:** <simultaneously> And that’s—

**Lorraine:** <simultaneously> Now have you guys-- sorry--

**Claire:** Go ahead.

**Lorraine:** Sorry, have you guys gotten to see the polar bears here? We have two polar bears, do we know-- do you guys know who our polar bears are here? <Lorraine has discussion with visitors about the polar bears at the zoo, Claire turns back to the Paws player>

**Claire:** <cheering on the player> Good job, keep it goin’, you’re doin’ a good job!
Lorraine encourages a group of children while Audrey watches with the support tool.

Lorraine focuses on swimming effort, hunger, polar bear hunting.

The player reaches the seal at the end, Lorraine congratulates the visitors.

Audrey interjects to bring in data displayed on the support tool (calories and time spent).

Audrey relates caloric expenditure to polar bear hunger and hunting, then to climate change mitigation.

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**Lorraine:** [...] So we gotta get to that seal. *Speaking to the pantomimers*
Are you helpin’ her swim? Are you helpin’ her swim?

**Pantomimer 1:** Why-- why—
**Pantomimer 2:** Yeah I am.

**Pantomimer 1:** Why does she-- need to eat the seal?

**Player:** Cuz I’m hungryyy!

**Lorraine:** It’s because, is-- is she a person? No, she’s a what?

**Children:** *in unison* Polar bear.

**Lorraine:** And polar bear-- and what—

**Audrey:** *interrupting* Alright you’re almost close!

**Lorraine:** Oh she’s almost there!

**Pantomimer 1:** Yeah!

*The player reaches the seal, which is the goal of the game*

**Lorraine:** She got it, yay, she eats her seal, it’s delicious!

**Audrey:** Alright so I’m—

**Lorraine:** Good job, good job.

**Audrey:** *looking down at TST* Alright, so in two minutes and eighteen seconds, you burned four hundred and eighty nine—*[turns to group and points to screen]* fifty two calories. So if you were a polar bear *[points to screen, turning TST away from group]* and you were tryin’ to get that food, that’s how much calories you would’ve burned in that little time.

**Player:** Is that good?

**Audrey:** That’s a lot, that’s a lot of calories. And if they burn a lot of calories, that means that their body’s gonna go lower and lower and they’re gonna have to find more food.

*One of the pantomimers says something inaudible*

**Audrey:** So do you guys think that it’s possible to help out polar bears that live over there, do you think it’s possible that we can do something here to help them out? Like what? What do you guys think we can do?
Facilitative strategy: Bridging

- Tablet re-represents exhibit content through graph and map, but interpreters had difficulty making graphs accessible.
- Variety of tablet resources allows interpreters to draw connections ("bridge") between visitor contributions (speech, actions) and the exhibit.
- Interpreters used the tablet to provide evidence, rather than as a didactic tool.
Visitor: What would be funny is if you had a squirt bottle and a sprayer.
Kristina: It would-- that would be-- that's actually kind of a good idea.
Visitor: [laughs]
Kristina: I don’t know if we’re allowed to do that, we might have to look in-- that would be fun, just when you hit the water.
Visitor: Just when she hits the water.
Kristina: [laughs] Now you swim, yeah.
Visitor: Yeah, that would be fun. [laughs]
Kristina: And you see if you pick the year like-- if you pick the projected year of 2045 <Visitor looks down at TST> you’d get squirted a lot more often.
Visitor: Yeah.
Kristina: More water in the area. <Visitor looks up and nods>
James uses the support tool to ask visitors questions that connect the player’s experience with the onscreen map.

James shows that a graph can provide evidence to back up the player’s experience.

James angles the tablet towards the visitors, asking them to use the graph to answer his questions.

James connects the graph to the visitor’s experience of playing the game.

**James**: [leans down to show Aaron the TST] Alrighty, so now you can kinda see what you had to travel, you see that distance from the blue dot to the red star? That’s what you traveled. But you had, did you think, did you think there was more ice or more water?

**Parent**: < ? > faster too on ice.

**Aaron**: Wa- ice.

**James**: Right, that’s right. So, now did you notice, was it harder to swim or was it ease- harder to walk?

**Aaron**: Harder to swim.

**James**: Exactly, it was harder to swim. So you can kinda see how that’s gonna happen on this little chart. ‘Cause graphs are awesome, they tell you a little bit about everything.

<Later in the conversation>

**James**: [kneels down and shows TST to Eli and Aaron, who both look at it] Now! On this graph! Where do you think he was swimming? When less energy was used, or more energy? [pointing at different segments of the line graph]

**Eli**: More.

**James**: More? Yeah. So you can kinda take a look at this graph, and it’s gonna kinda show you how over time, more energy is used when you’re swimming. So that’s proof right there, that you’re not crazy, you do get more hungry after you swim.
• Two facilitative strategies (co-facilitation and bridging) were **supported and extended** by tablet support tool
  – Warrants more extensive training

• This analysis (along with post-hoc redesign/ reflection meetings) led to redesigns emphasizing situational awareness and ability to display a variety of media resources
Thank you!


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