Video Teaching Materials to Train Deaf or Hard-of-Hearing Curators in Museums

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- Miki Namatame is a professor at the National University Corporation Tsukuba University of Technology, where Miki researches information-accessibility for the people with hearing and/or visual disabilities, including Universal design and barrier-free.
- Before starting my research of information sciences of museums for the people with disabilities, at museums. Miki also provided higher education at the Department of Synthetic Design for people with hearing disabilities.
- After a successful career educating people with hearing disabilities, Miki now researches how to support visitors with hearing and/or visual disabilities at museums.

What does “Deaf”, “HOH” mean?

In our research

- “uppercase D” Deaf : the cultural identity of people with hearing loss who share a common culture and have a shared sign language
- HOH (Hard-of-Hearing) : people with Japanese as their first language who lip-read and use hearing aids
  (as well as sign language to help their communication)

Introduction

- Purpose of Museum: study, education, and enjoyment [ICOM, 1974]
- "deaf audiences are one of the most neglected by museums" [Atkinson, 2012]
- Persons with hearing impairment have different communication needs [NDC, 2020]
- Three categories of Deaf and HOH
  - "spoken-focused," "simultaneous language," and "sign language-focused."
- Deaf visitors' engagement is enhanced when tours are given by Deaf tour guides [Martins, 2016]

Purpose and Solution

- Improving the information accessibility of museums
- Facilitating Science communication
- Focusing on visitors who used sign language

- Training a curator to offer explanations via sign language

Obstacle of training

- Deaf or HOH trainees are unable to see the sign language interpreter, instructor's movements, and materials at the same time.

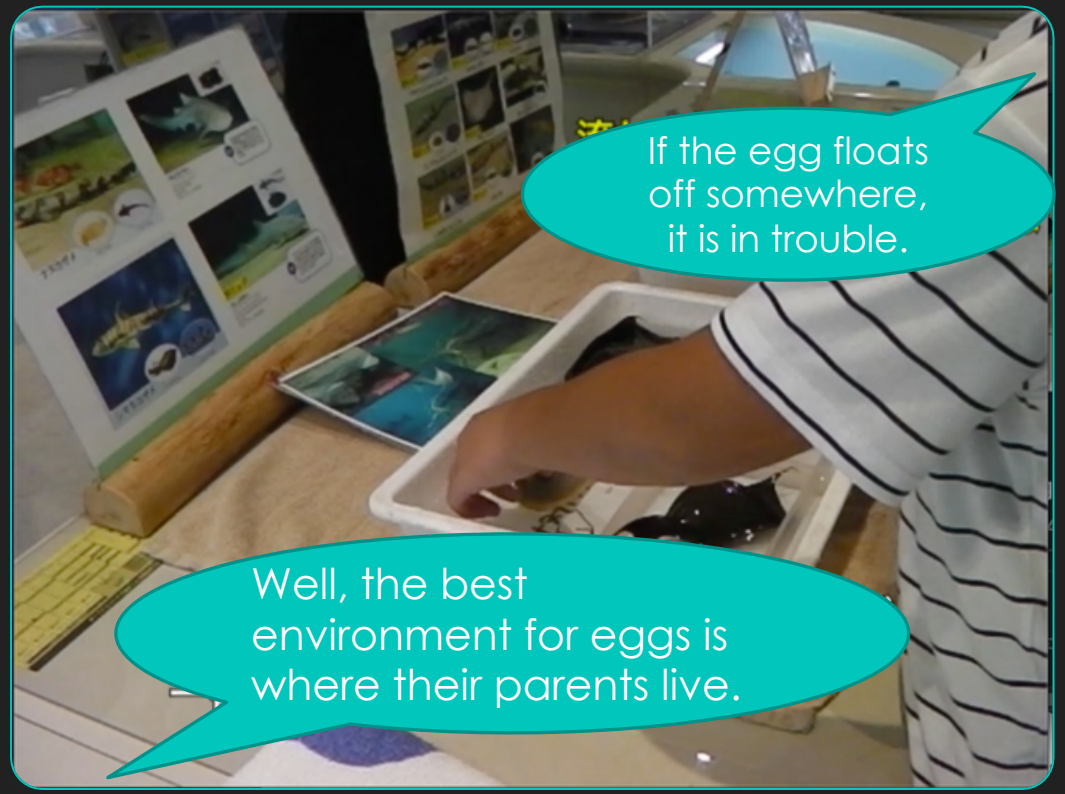
- Recording the lesson and creating a video with captions for review
- The materials can be operated on a tablet device

Training materials for curators who provide in-person explanations

- Museum type: aquarium
- Presentation scenario: face-to-face
- Training Team Composition:
  - a Deaf curator candidate, an aquarium curator, a sign language interpreter, an information supporter
- Contents: “shark eggs and shark skins”

Why is training difficult?

- The voice conversation between the customer and the curator was fast and simultaneous.
- The voice conversation was conducted with the face turned down as the user touched several materials, one after the other.
- The trainee was unable to lip-read because the speakers' faces were turned down.
- The time lag between the conversation and the interpreter's actions had disastrous consequences.



Training materials design

- Technical approach : automatic speech recognition
- Photographed the materials to be touched on the spot with the transcribed text that was then superimposed on the images.
- Composite images were saved on tablet devices.

Training Materials for Lecturers of classroom style

- Museum type: science museum
- Presentation scenario: classroom
- Training Team Composition:
  - a HOH curator candidate,
    a volunteer lecturer,
    a science museum curator,
    a sign language interpreter,
    an information supporter
- Contents: “human bone”

Why is training difficult?

- The scenario involved several technical terms.
- The trainee did not know why the instructor was making such remarks because he was unable to hear the unspecified number of students' voices.
- The trainee was unable to comprehend the instructor's conversation for encouraging students' awareness, in real-time.
- The time lag between the conversation and the interpreter's actions had disastrous consequences.

Training Materials Design

- Technical approach : authoring
- Video materials for the lecture, which were divided in the unit according to the scenarios.
- Contents consisted of multiple captioned videos, the scenario, a Q & A section, a figure with bone names, and the main menu.
- The trainee selected the necessary units from the menu and could study freely.

OUR PRACTICES

- Museum type
  - aquarium vs. science museum
- Presentation scenario
  - face-to-face vs. classroom
- Technical approach
  - automatic speech recognition vs. authoring
- Contents
  - “shark eggs and shark skins” vs. “human bone”

Features of training materials

- Technologies for superimposition of descriptions and speech recognition were suited to real-time communication about exhibits because they can indicate exhibition points correctly.
- Video teaching materials were suited to self-learning because they can also reproduce subtitles to solve the time lag between the speaker and the interpreter and help Deaf or HOH individuals to understand conversations.

Conclusion

- Training materials using media technology were essential for training curators with hearing impairment.
- Such types of content are adaptable and flexible for use in other types of scenarios or different educational contexts.

Future work

- Evaluate the effectiveness of such training materials for Deaf or HOH trainees
- Add sign language descriptions for the video training material

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- This study has been approved by the research ethics committee of the Tsukuba University of Technology (H30-4).

Thank you !

- We are looking forward to meeting you in CONTENT 2021
- See you next year

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