Low-Cost Embodied Concept Mapping

Andreea Danielescu
John Sadauskas
Caroline Savio-Ramos
Qiao Wang

Embodied Interaction

- Recent research has shown that embodied HCI has multiple benefits
  - Increases memory
  - Provides more control
  - Appeals to multiple modalities and learning styles
  - Provides more opportunity for collaboration
- Systems like SMALLab have been designed to address this issue in educational settings.

Embodied Interaction (cont'd)

Other Related Projects

- Traces in Creative Spaces (van Dijk & Vos 2011)
  - Collaborative embodied interaction using Kinect
  - Exploration of already-created media
- Designing Reality-Based Interfaces for Creative Group Work (Geyer, et. al 2011)
  - Semi-embodied touch-table intended for creating affinity diagrams

Our Project

- Educational system between Kinect, computer, and instructional media potentially allowing learners to create and interact with:
  - Concept maps
  - Organizational Charts
  - Storytelling Scenarios
  - Web Content
- Users would interact with content through gestural recognition detected by the Kinect.

Our Project (cont'd)

- While the system is intended to have multiple applications and uses, for this iteration, we will focus on creating a concept-mapping tool.
- Once this tool is refined, the plan (outside the scope of this class) is to add other capabilities.

Our Project (cont'd)

- The system will be intended for use with multiple surfaces (whatever is already in the classroom) including:
  - Whiteboards
  - Projectors
  - Walls
  - Butcher Paper

Unmet Needs

- Many schools (including John's former district) are adopting standards for concept mapping
- With this in mind, our aim is to create a low-cost, novel, embodied tool for interacting with concept maps
- Our hope is that it will be easy to connect and set up for teachers who are not necessarily tech-savvy.

Our Idea is New (We promise)

- Using Kinect makes the embodied system much simpler (won't need other accessories such as tags), thus greatly increase the usability in classrooms.
- The system can integrate different surfaces (whiteboard, wall, paper, projector), and facilitate mixed ways of interaction by the students

Steps and Milestones

- Acquire hardware needed for the prototype system.
- Make software to connect hardware with each other.
- Make preset configurations for concept map interaction.
- Develop platform allowing users to develop more content and personalization options.
- Evaluate the performance of the system.

What We Aim to Change

- Provide a low cost system as an alternative to SMALLab.
- Provide a simple, easy-to-use system for educators who want to use this type of technology but don't necessarily have experience with it.
- Bring concept mapping into the embodied realm, providing both collaborative possibilities and physical memory.

We are the Right Team

- We are a team of two computer programmers and two educators.
  - Caroline and John are both former teachers and have designed Ed. Tech. systems.
  - Andreea and Qiao have significant development experience.
  - Andreea and Caroline have worked on SMALLab.

Questions?