

Designing a multimedia interactive to support shared learning experiences

Steve DiPaola & Caitlin Akai
Simon Fraser University

Siggraph Boston 2006
Educator's Workshop

Outline

- Technology in informal learning spaces
- Design issues for multimedia interactives
- Introduction to the Virtual Beluga project
- Technical description of the simulation
- Educational content
- Interaction Design

Technology in informal learning spaces

- Informal learning spaces like museums, science centres, zoos and aquaria are increasingly incorporating technology into their exhibits
- However, inherent in these spaces are many constraints that can limit the potential of technology
- Appropriate design of multimedia exhibits can ensure technology enhances educational content and visitor experience

What is multimedia interactive technology?

- The use of various forms of technology (may include text, video, sound, animation, haptics, and realistic graphics) that users can interact with
- Examples include computers, touchscreens, spinbrowsers, sensor or camera-based interfaces, and virtual reality environments.

Design issues for multimedia interactives

- Limited contact time
- Educational content must be engaging and accessible
- Exhibits must work without supervision
- High traffic, use and abuse
- Effective use of technology
- Visitors travel in groups

Virtual Beluga Project

- In collaboration with the Vancouver Aquarium and Bill Kraus from Digital Biology
- Based on a highly realistic dynamic virtual beluga simulation
- Interaction goal was to create a user-centric, shared, collaborative, and reflective learning space
- Important to encourage deeper interaction with the content than that available through traditional wall signage or video

vBeluga System

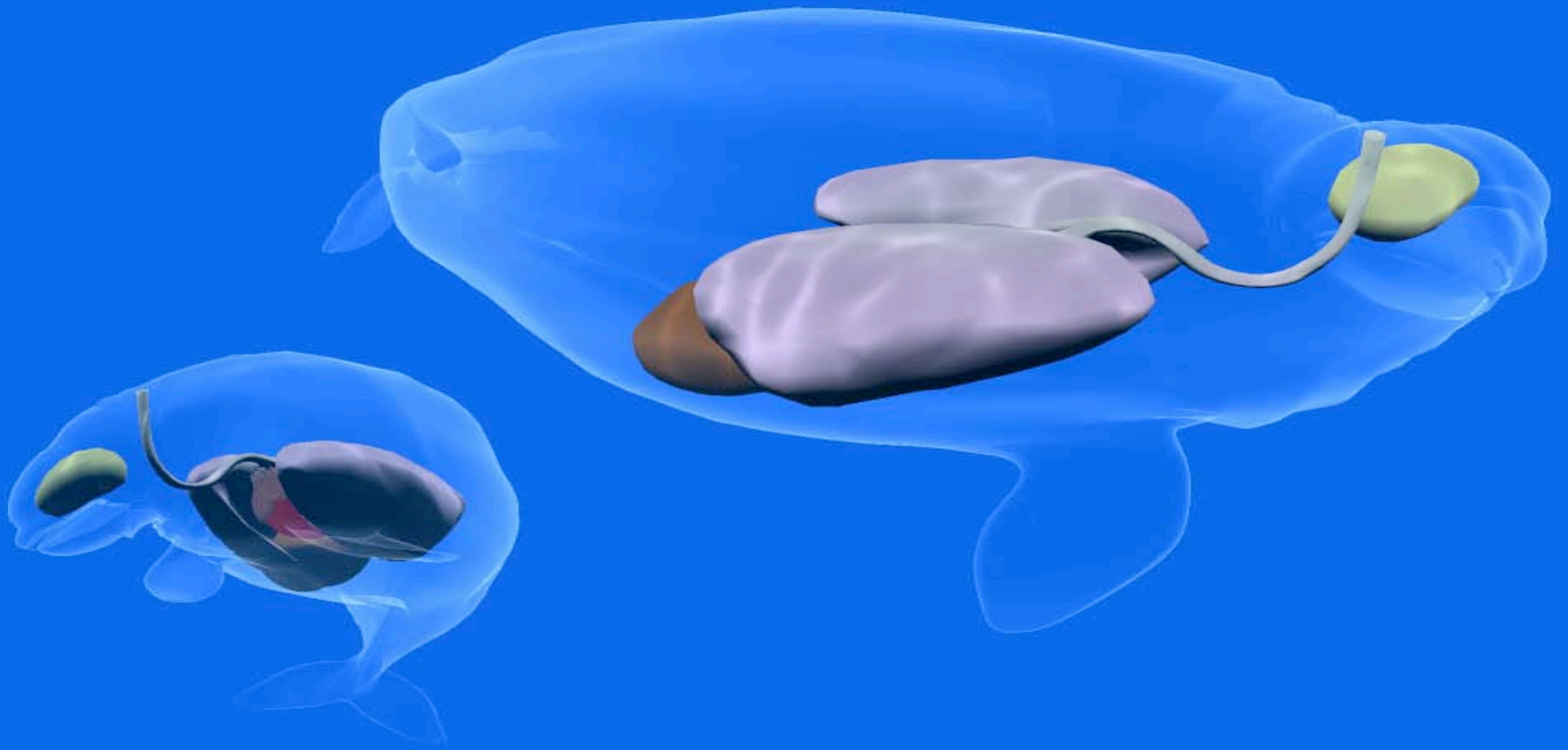
- The virtual belugas are shown in a wild pod context
- The system is based on an artificial intelligence architecture so the belugas can learn and alter their behavior based on changes in their environment
- The use of a physically-based system allows for natural whale locomotion and realistic looking water
- Highly realistic graphics are achieved through actuators ('virtual bones and muscles'), a virtual physics model, collision detection, lighting and shadows



Simulation Software

Educational messages

- Data from researchers, aquarium staff and visitors were incorporated into the interactive
- Belugas live in an acoustic world
- Human activities affect the way belugas use sound to navigate and communicate
- Our knowledge of wild beluga behaviour is very limited



Interaction Design Solution: Camera-tracked tabletop

- Allows visitors to engage in educational "what if" scenarios of wild beluga behavior using a shared tangible interface controlling a large screen display
- Focuses on collaborative aspect of visitor experience
- Removes technology from direct visitor contact
- Does not allow visitors to directly control 'wild' belugas

Adaptability

- Summer camp
- Beluga encounters
- Receptions

Conclusion

- Well designed multimedia interactives can provide new possibilities for both shared learning experiences and collaborative interaction

Acknowledgments

- Steve DiPaola
- Bill Kraus
- Vancouver Aquarium
- Valerie Vergara