From “Seeing there” to “Being there”

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Relate to COHERE sessions...

• Great resources!
• Dr. Haythornthwaite
  – Great work in understanding social networks
  – Relate network diagrams to mode of participation
• Dr. Bower
  – Great work understanding current uses
  – Unpack the models in terms of educational psychology
• Dr. Schwier
  – Intriguing look at online learning communities
  – Figuring out strategies across modes
The challenge...

Increasing access while maintaining quality for all
The challenge...

Increasing access while maintaining and possibly increasing quality for all

A first-hand struggle for us...
Educational Psychology & Educational Technology (EPET)

• PhD program
• Started as a Face-to-Face (F2F) program
  – Full-time graduate students
• Added a Hybrid program (1/3)
  – Full-time educators who stay in their jobs
  – Only on campus two weeks per year
• How to implement?
  – Not enough faculty for parallel programs
  – Want same high standard for both modes.
Educational Psychology & Educational Technology (EPET)

• Core Value: “One Program in Two Modes”
  – Same requirements for everyone
  – Goal: the same courses available to all
  – Often the same sections of those courses… how?

• “Synchronous hybrid”
  – Related to “multi-access” and “blended synchronous”
  – We also use “alternating hybrid”
    • F2F this week, online next week, …
  – Face-to-face and online participants in the same synchronous learning experience.
Synchronous Hybrid in our Setting

• Perhaps ours is a “best case scenario” for synchronous hybrid
  – Mature learners
  – Abundant technology
  – People comfortable with learning and technology

• So…
  – Existence proof (if it doesn’t work here…)
  – Study it before it goes to more challenging settings.
Environmental model: Symbiosis

different species living together

- **Parasites / Parasitism**
  - F2F sacrifices so Online can join
- **Commensals / Commensalism**
  - Online joins without hurting F2F
  - Our early goal
- **Mutuals / Mutualism**
  - Everyone gains because the others are there
  - Special education students added to mainstream classroom
  - Disadvantaged youth added to an advantaged school setting.
Overview:
Our Studies, Experiences, and Learning

• First Generation: videoconferencing

• Second Generation: robotic telepresence

• The emerging conceptual framework

• Reflections on robotic telepresence

• Next steps.
First Generation Synchronous Hybrid

• Different models for different contexts and pedagogical strategies.

[Diagram showing different models for synchronous hybrid learning, including Linked Classrooms, Shared Portal, Small Groups, and Personal Portals.]
First Generation Synchronous Hybrid

• **Strengths**
  – Fewer technical challenges to solve
  – Easily expands access for many

• **Weaknesses**
  – Two groups glued together
  – Minimal inter-group interactions.
First Generation Synchronous Hybrid

• Strengths
  – See and hear well
  – Scales easily

• Weaknesses
  – Individual presence is reduced when on shared devices → Applies to both online and face-to-face participants.
First Generation Synchronous Hybrid

• **Strengths**
  – Greater individual presence for online people
  – More “cross mode” interaction

• **Weaknesses**
  – Passive experience & projection
  – Dependence on others.
First Generation Synchronous Hybrid

• Question: How can we make online people “more present”?

• Embodiment (Haans 2012, Berti 2000)
  – The sense of acting in a remote location.
First Generation Synchronous Hybrid: Looking for more...

- 1st Generation: looking in through a window
- 2nd Generation: turn the window into a portal
  – *Let people “come through the glass”.*
Led to exploring robotic telepresence

• Wide range of functionality and costs
• What happens when online people can join via robotic telepresence?
Second Generation Synchronous Hybrid

• Different models for different contexts
  – Courses
    • Mostly face-to-face plus a few online
    • Mostly online plus a few face-to-face
    • Purely online interacting via robot
  – Research groups
    • Mostly online
    • Mixture of face-to-face and online
  – Talks and conversations
    • Mostly face-to-face plus a few online
  – Academic governance
    • Mostly face-to-face plus a few online.
Class: Mostly face-to-face plus online
Class: Mostly online plus face-to-face
Class: Mostly online plus face-to-face
Class: Purely online via robots
Research Group: Mostly online
Research Group: Mixed
Talks/Conversations: Mostly face-to-face
Initial findings

• Often great enthusiasm
  – Novelty \(\rightarrow\) “Transformative!”, selfies, …
  – F2F perspective
    • “Like they were actually here!”
  – Online perspective
    • Having a real seat at the table
    • Walking into the room without assistance
  – F2V (Face-to-virtual) had big gains
    • Building a stronger relationship with instructor.
Initial findings

- Often great enthusiasm
- Sometimes problematic
  - Distracting cognitive load
  - Unreliable network throughput
  - Technical troubles
    - Frozen app (Kubi)
    - Unstable robots (Double)
    - “Driving impaired” (Beam)
  - Narrow field of view (Kubi & Double)
  - Problematic audio
  - V2V: Virtual to virtual preferred no robots.
Interaction Strategies refers to both the pedagogical and collaborative strategies of leaders and participants (Stahl, 2013).

Embodiment refers to the sense that online participants are physically located in the shared space (Haans, 2012; Berti, 2000).

Social Presence refers to the perception that online participants are real participants in the shared space (Gunawardena, 1997), and that all participants can be psychologically involved and behaviorally engaged (Biocca, 2003).

Mutualism is an ecological perspective that refers to situations where different species interact in mutually beneficial ways, in contrast to situations where only one group gains or where one group gains and one group loses (Paracer, 2000).

Goal
Promote perceived and actual mutualism for achieving course/group goals across modalities by increasing social presence through embodiment and interaction strategies in collaborative contexts where some participants are physically present and some are online.
Mutualism

• Perceived gains for everyone through the blending of face-to-face and online participants
  – Richer perspectives
  – Critical mass for special interests
  – Access to expertise

• Non-mutual benefits
  – Access
  – Efficiency.
Social Presence

• The degree and manner in which people are present together in a shared space

• Aspects of social presence (Biocca, 2003)
  – Copresence
    • Mutual awareness as people in a shared space
  – Behavioral engagement
    • Mutual influence of behaviors
  – Psychological involvement
    • Mutual influence of thoughts.
Social Presence is enacted via Embodiment

- **Aspects of Embodiment**
  - **Perception**
    - See & Hear (someday other senses too)
  - **Projection**
    - Be seen & Be heard
    - Move self, point, & move things
  - **Self-monitoring & adjusting**
    - Perceive my projection

- **Embodiment writ large**
  - Can be in “aphysical” and asynchronous spaces.
Social Presence is enacted via Strategies

- Technology Navigator
- Intentionally draw in both groups
- Make integration an explicit goal
- Gather data regarding progress toward goal
- Emerging behavioral engagement strategies
  - Unmute to request the floor
  - Turn your ‘head’ (robot or video) to show attention
  - When it is okay not to turn your head
  - Use people’s names each time.
A surprising gain

• Discernible attention
  – *Whenever there is a shared device (camera, display, microphone, speaker, unless explicitly ‘tagged’) attention cannot be individualized*
  – *Lose sense of copresence and ability for behavioral engagement*

• Surprise
  – *We can gain some discernible attention with pure videoconferencing.*
Dissertation Defense:
Every F2F & Online Participant individually joins Video Conference
A Conceptual Framework

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Does robotic telepresence work?

• **Principles**
  – *Very few things are always best*
  – *Picking a solution before identifying the key need or opportunity only succeeds by chance*

• **Key questions**
  – *For what purpose in what context?*
  – *What is the alternative?*

• **Our findings about where it has worked…**
  Research groups: *great enthusiasm*
  Classes: *students did not know how restricted they felt*
  Creative uses: *unexpected valuable applications.*
Is robotic telepresence practical?

• Expense may not correlate with value
  – Sometimes people prefer free and inexpensive options
  – Embodiment is a continuum
  – So pick the technology wisely

• Expense is justified for us
  – Multiple uses of the same devices
    • As classroom/department infrastructure
  – Unexpected additional uses
    • First classes, then defenses, virtual visits for prospective students, research groups, talks, defenses, academic governance, …
  – Tuition gains of a few extra students.