Transforming classrooms with telepresence robots.

Presented by

John Bell - Professor, Michigan State University
William Cain, Research Assistant - Design Studio, Michigan State University
Marcus Rosenthal, CEO, Revolve Robotics
Context

• Educational Psychology & Educational Technology @ MSU
• Synchronous Hybrid Contexts for Shared Learning and Collaboration
• Emphasizing mutual benefits
The Challenge: Comparability

- In single mode classes (all f2f or all online)...
  - No students are at a “modal disadvantage”
  - Largely comparable understanding of each other
- In mixed mode classes (some f2f and some online)...
  - Different kinds of constraints: mediated versus immediate
  - Different ways to participate
  - One-way dependency
First Generation Synchronous Hybrid

- Different models for different contexts and pedagogical strategies
First Generation Synchronous Hybrid

- Strengths
  - See and hear well
- 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
  - Active awareness of and thoughtful interaction with others in a remote space
Second Generation Synchronous Hybrid

- 1st Generation: looking in through a window
- 2nd Generation: turn the window into a portal
  - Let people “come through the glass”
Different approaches with different costs, strengths, and weaknesses

So there is no “one right answer”

Tradeoffs for different contexts
Question: What does it mean to be “more present”?

<table>
<thead>
<tr>
<th></th>
<th>Individual Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Being there</td>
<td>Awareness of place</td>
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<tr>
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<td>Taking action in that place</td>
</tr>
<tr>
<td>Thinking and learning there</td>
<td>Situating one’s thinking in that place</td>
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Question: What does it mean to be “more present”?

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<th>Social Presence</th>
<th>Examples</th>
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<tr>
<td>Being there</td>
<td>Awareness of place</td>
<td>Awareness of other(s) in the same place - Copresence</td>
<td>Each person with a separate “physical avatar”</td>
</tr>
<tr>
<td>Doing there</td>
<td>Taking action in that place</td>
<td>Engaging in interactive action - Behavioral engagement</td>
<td>Turn taking; Discernible attention</td>
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<tr>
<td>Thinking and learning there</td>
<td>Situating one’s thinking in that place</td>
<td>Engaging in interactive thinking in that place - Psychological involvement</td>
<td>Robot as an extension of self and others</td>
</tr>
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1st Generation Telepresence: Zoom videoconferencing
• Online students behind the glass
2nd Generation Telepresence: Double robots
• Online students “walk up” to the instructor
2nd Generation Telepresence: Kubis
• Online students talking to each other
2nd Generation Telepresence

• 12 online plus 1 face-to-face as comparable partners
Question: Does greater embodiment make people more present?

- What greater embodiment changes
  - Discernible attention:
    - A powerful form of behavioral engagement
  - Autonomous movement:
    - Increases psychological involvement
    - Important for both remote and face-to-face people

- What greater embodiment does not change
  - Seeing and hearing well still matters and is still challenging
  - Instructor and student strategies are still critical
So, does robotic telepresence transform the classroom?

• It can.
  • Not all kinds of courses or collaborations are equally helped
  • Good strategies are still *more* important

• Expanding the community of comparable learning partners in rich learning interactions
  • Opens doors to let in a otherwise isolated learners
  • Provides greater sense of mutual benefit and contribution
  • Enables fuller exchange of diverse perspectives
Thank you for listening!

QUESTIONS?
The Design Studio blends two objectives in the Michigan State College of Education

RESEARCH & SERVICE