Intelligence Augmentation for Collaborative Learning

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Today’s Classrooms DON’T Look Like This
Instead, Today’s Classrooms Look Like This
Plan for This Talk

1. Shift from *individual* to *social and contextual* learning

2. Highlight value of CSCL

3. Three Quick Scenarios

4. Recommendations for social and contextual Augmented Intelligence for learning
About my work

Community Hub for NSF’s “Research on Emerging Technology for Teaching and Learning”
CIRCLS.org

Digital Promise works with large national networks of innovative schools
see League of Innovative Schools
see Verizon Innovative Learning Schools
### AI Messaging: EdTech vs. Educator Goals

<table>
<thead>
<tr>
<th>EdTech messaging about AI over-emphasizes individual, cognitive</th>
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<tbody>
<tr>
<td>● Often tackling isolated skills</td>
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<tr>
<td>● Personalized - 1:1</td>
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<tr>
<td>● Adaptive - to one learner at a time</td>
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<td>● Often remedial (deficit oriented)</td>
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<tr>
<th>Today’s Curricular Frameworks emphasize social, contextual</th>
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<tr>
<td>● Complex intellectual challenges</td>
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<td>● Discourse, argumentation</td>
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<tr>
<td>● Project-based, group work</td>
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<tr>
<td>● Engaging student identity, culture (asset-oriented)</td>
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*image of AI as a personal agent for an individual student can be limiting*

*rethink AI to augment the social intelligence of teachers and students*
Computer Supported Collaborative Learning

CSCL has been a field of the learning sciences for about 30 years

Has a scholarly society, a handbook, a series of international conferences

Has lots to offer, but rarely applied at scale or outside its bubble

see isls.org for conference series and more... also see iaied.org for recent AI & ed research
Computer Supported Collaborative Learning

(an old) Definition of CL: “coordinated, synchronous activity that is the result of a continued attempt to construct and maintain a shared conception of a problem”

“Scripts” understanding roles, responsibilities, dynamics of CL, and how computers can providing enabling supports for better CL

Kirschner and Erken’s 3x3 framework
1. Cognitive, motivational and social aspects of learning
2. Community, small group and individual levels
3. Tools for representation, discourse, and process
When it is well-structured, collaborative learning has proven to be extremely effective, especially for learning concepts and complex problem solving.

And Learning to Collaborate is a valuable life skill.

But it’s never as simple as “students, work together”
In practice, collaborative situations often fail to be productive

How could intelligence augmentation make *orchestrating* social and collaborative learning more easy, equitable, effective?
CSCL Scenarios the Field is Exploring

“How can one teacher create an equitable and collaborative classroom for all students?”

see $20M NSF iSAT AI Institute
https://www.colorado.edu/research/ai-institute/

Could AI reveal social learning patterns, including related to equitable discourse?
see https://TeachFx.com

Could a voice-based AI assistant make it easier for teachers to manage CSCL?
see https://merlynmind.com

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Recommendation: Add Four New Verbs

Individualized EdTech approaches

- **Assess** (what each student needs)
- **Assign** (appropriate next activity)
- **Adapt** (providing personalized supports, hints, guidance)
Recommendation: Add Four New Verbs

**Intelligence Augmentation for Collaborative Learning**

1. **Automate** (complexity of organizing social, contextual learning)
2. **Add awareness** (of what is occurring in social learning)
3. **Assist** (facilitate engagement in social learning behaviors)
4. **Augment** (social intelligence about group learning in a context)

**Individualized EdTech approaches**

- **Assess** (what each student needs)
- **Assign** (appropriate next activity)
- **Adapt** (providing personalized supports, hints, guidance)
As we explore Intelligence Augmentation for Collaborative Learning, issues of ethics and equity are paramount.

Not enough time in this short presentation to also cover these issues.
What do you see?

- Is Intelligence Augmentation for Collaborative Learning a compelling grand challenge?

- What do we know that can be brought to bear to accelerate advances?

- Who needs to be engaged in participatory design and research?

Thank you!

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