Providing Greater Interaction and Individualization

Sheree Buikema and Wanju Huang
CAN WE FACILITATE THE NEXT GENERATION OF DIGITAL LEARNING?

• Dynamic (algorithmic) questions
• Immediate feedback
• Adaptive learning
• Data simulations and analyses
• Interactive simulations
• Motion tracking
• Augmented reality
• Virtual reality
Next Generation eText: Providing Greater Interaction and Individualization OLC 2017 Presentation:

Our video presentation is listed below along with some sample works being used to enhance education:

• Next Generation eText: Providing Greater Interaction and Individualization OLC 2017 presentation: [https://youtu.be/Mr0Akz8bXqY](https://youtu.be/Mr0Akz8bXqY)

• Purdue Envision Center Demonstration
  • Here is a compilation of some of the educational augmented and virtual reality projects completed at Purdue’s Envision Center: [http://envison.purdue.edu/videos/ECPromoNoAudioCC.mp4](http://envision.purdue.edu/videos/ECPromoNoAudioCC.mp4)
  • For additional information about this presentation, contact Purdue’s Envision Center: [https://www.rcac.purdue.edu/envision/](https://www.rcac.purdue.edu/envision/)
  • Email: rcac-help@purdue.edu

• The following links demonstrate augmented reality being used to enhance learning.
  • This one centers around anatomy: [https://vimeo.com/cotpurdue/review/79126658/eb47dc11c3](https://vimeo.com/cotpurdue/review/79126658/eb47dc11c3)
  • This one demonstrates how an internal combustion engine works: [https://vimeo.com/133484752](https://vimeo.com/133484752)
  • For additional information about these videos, contact Carlos Morales: Email: morales@purdue.edu

• Leap Motion Controller: [https://www.leapmotion.com/](https://www.leapmotion.com/)
How can we engage the learner?

- **Animation/Instructional Videos**
  - Instructional Videos: [https://vimeopro.com/cotpurdue/sample-work](https://vimeopro.com/cotpurdue/sample-work)

- **Interactive Simulation**

- **Augmented & Virtual Reality**
  - Fire Science Demo: [https://sites.google.com/site/srcombexp/](https://sites.google.com/site/srcombexp/)
  - Purdue’s Envision Center: [https://www.youtube.com/watch?v=qADFJmNPKBY](https://www.youtube.com/watch?v=qADFJmNPKBY)

- **Form and Function 3D**
  - 3D Heart: [https://sites.google.com/site/srcombexp/](https://sites.google.com/site/srcombexp/)
LON-CAPA
DYNAMIC (ALGORITHMIC) QUESTIONS

LON-CAPA has dynamic plotting support - in this problem, both the plotted function and the x-value are different from student to student. The student has to graphically determine the slope.

Match the function indicated in black.
\[ f(x) = \quad \]

Submit Answer  Tries 0/99

Different students see different versions of a graph. In the example on the right, the student already entered an answer.
Demonstrates how the instructor uses LON-CAPA as an eText platform to house targeted, static learning resources in one place (red arrow) alongside a dynamic questioning tool (blue arrow).

For additional information or to try LON-CAPA, click here: http://loncapa.org/index.html
ONE THAT CONSIDERS CHANGING STUDENT NEEDS?

<table>
<thead>
<tr>
<th>Affordability</th>
<th>Individualized learning paths (remediation, enrichment, interests)</th>
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<tbody>
<tr>
<td>Portability</td>
<td>Partnerships with other students around the world</td>
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<tr>
<td>Immediate feedback</td>
<td>Partnerships with faculty and the community to create</td>
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<td>Interactive online elements</td>
<td>real-world experiences</td>
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<td>Virtual labs</td>
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<td>Multiple learning modalities</td>
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<td>Alternative ways to learn material</td>
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WHAT ARE THE HURDLES TO OVERCOME?

• Limited content storage
• Limited by good Internet access
• Accessibility issues
• Time constraints
• Programming constraints
• Lack of faculty buy-in
• Lack of faculty tech support
• Cost
• Fewer resources for open homework systems
PROPOSAL: WHAT’S NEXT?

• Create a resource website to:
  o disseminate information and collaborate
  o provide feedback and support
  o connect with a global audience to create partnerships

• Create internships with students to create content:
  • provide programming for simulations
  • provide graphic art support

• Share content in an OER portal
• Formally review OER content
• Provide faculty support
**PLEASE CONTACT US:**

<table>
<thead>
<tr>
<th>Sheree Buikema, M.Ed.</th>
<th>Wanju Huang, Ph.D.</th>
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<td>Purdue University</td>
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<td><a href="mailto:sbuiikema@purdue.edu">sbuiikema@purdue.edu</a></td>
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