An Asynchronous, Personalized Learning Platform: Guided Learning Pathways

Cole Shaw
Soheil Sibdari
Problem in Introductory Classes

• How to teachers address varied class backgrounds? Varied student interest?
• Can we leverage technology while maintaining good pedagogy?

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Challenge for Educators

- Educators have to juggle challenges of differentiated instruction to meet students’ cognitive abilities

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Students Also Frustrated

• Students are either bored or behind
  – Have to keep pace with others
  – Have to learn what they already know

• Imagine the alternatives:
  – Learn at your own pace
  – Learn what interests you

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Our Solution: Guided Learning Pathways

- Students Pick Learning Goals
- Students Learn At Own Pace
- Personalized Learning Materials

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GLP Is Based on Concept Maps

From Khan Academy
Students With One Major Might Focus On These Topics

- Derivatives
  - Power Rule
  - Special Derivatives
  - Product Rule
  - L'Hôpital's rule
  - Quotient Rule
  - Chain Rule
Students With Another Major Might Focus On Different Topics

- Derivatives I
  - Power Rule
    - Product Rule
    - L'Hôpital's Rule
  - Special Derivatives
    - Quotient Rule
    - Chain Rule I
Learning Materials Teach Each Individual Topic
Learners Receive Personalized List of Recommended Materials
GLP Updates Effectiveness
Ratings of Learning Materials

Assessment Failed

MIT Course Notes - 0.2
Ms. Angie's Interactive Applet - 0.8
Khan Academy Video 1 - 0.1

Assessment Passed

MIT Course Notes + 0.7
Ms. Angie's Interactive Applet + 0.1
Khan Academy Video 1 + 0.4
We Defined the System Architecture

[Diagram showing layers and components of the system architecture]
We Developed Simulation To Evaluate Recommendation Algorithms