Indie: An Authoring tool for building simulated Investigate-and-Decide Learning Environments

Lin Qiu
Department of Computer Science
Northwestern University
qiu@cs.northwestern.edu
Roadmap

- Underlying learning theories
- Overview of Indie
- Software Demo
- Future work
The Challenge:
Educating Adaptive Experts

Students  ➔  Experts
How People Learn

Learning Environment
Community
Knowledge Centered, Learner Centered, Assessment Centered
HPL Framework
Knowledge Centeredness

• Constructivism
  – Assimilation
  – Accommodation

• Critical concepts

• Expert’s knowledge
  – Explicit patterns (e.g. Simon, 1980; Bransford et al., 1989)
  – Conditionalized knowledge (Simon, 1980; Glaser, 1922)
Learner Centeredness

- Learning goals (Dweck & Leggett, 1988)
- Appropriate Challenge
- Usefulness of learning
- Just-in-time learning
- Apprenticeship Learning (Suina and Smolkin, 1994)
Assessment Centeredness

- Constructive critique
- Instant feedback
What is Indie

• Software-based “Investigate and Decide”
• Challenge
• Investigate
  – Run experiments, research domain, analyze data
• Decide
  – Select claim, attach evidence, get critiques
Why Indie

- Time & cost
- Expertise for critiquing
- Consistent with HPL framework
Where are we

- “Corrosion Investigator”
- Analyze emails
- Interview expert
- Data generator
New Indie vs. Old Indie

- Java instead of Lisp
- Domain knowledge & scenario in XML
- More complicated experiment data
- Display of cost & date
Future work

- Web-based version
- Content Authoring tool
- New critiquing framework
  - Complementary role of computer critiquing