ALT-Pathway: A Web-based Synthesis of the Student-Tutor Interaction

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Motivation

Student-Tutor Interaction

- More effective than typical classrooms and mastery learning
- Perceived interaction is known to be important
- Provides direct access to students' knowledge production process

CAN WE SIMULATE THIS??

What is needed?

- Content
- A theory of learning
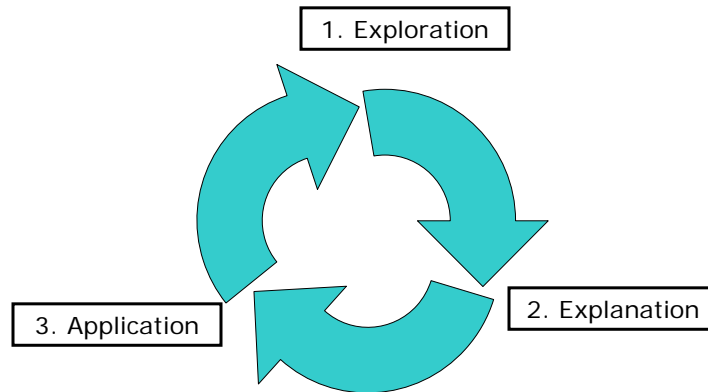- A pedagogical basis for teaching
- A model of tutoring
- Assessment

Content

- Newton's Laws: 1-D and 2-D motion
- Justification:
  - Most conceptually accessible concept area
  - Target audience is HS students
  - Many materials already developed

Pedagogical Basis

The Learning Cycle

1. Exploration

3. Application

2. Explanation

Karplus (1977)

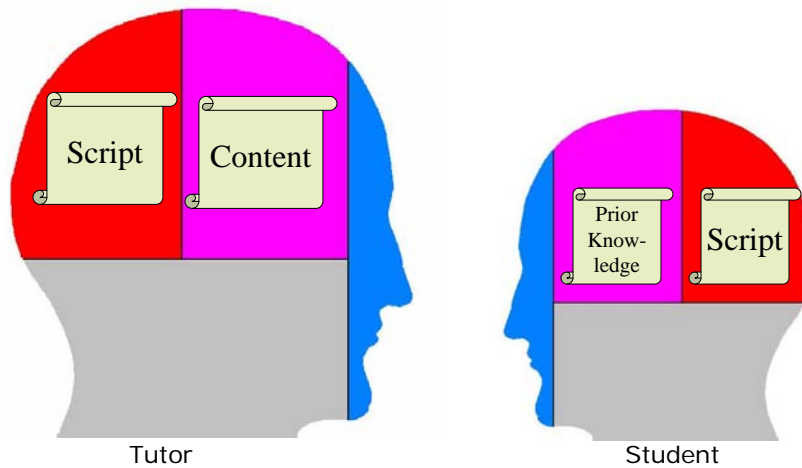## Incorporation

	Lesson	Tutors
Exploration	Observe videos & applets. Make measurements.	Students ask questions & receive answers.
Explanation		??? Tutors ??? ??? Written ??? ??? IDVL ???
Application	Use videos & applets. Make predictions & measurements.	Students ask questions & receive answers.

Content Knowledge

○ Informedia Digital Media Library

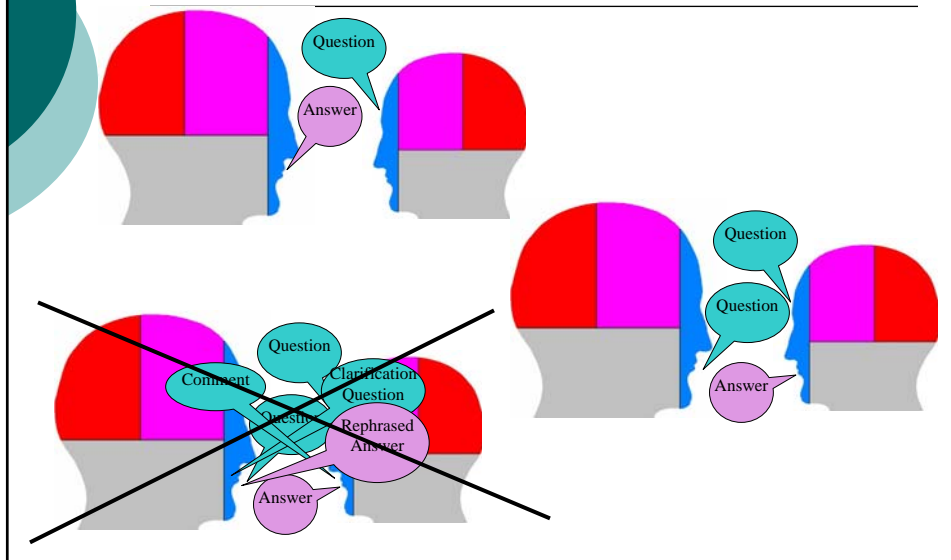# The Tutoring Interaction

Tutor   Student

Synthetic Interaction

○ Requires pre-recorded answers

○ Allows multiple perspectives and diverse backgrounds

The Tutoring Interaction

The Script

- Questions
  - Live student-tutor interaction
  - SI personas' teaching experience
- Results
  - ~80 Physics content questions
  - ~15 Technical question
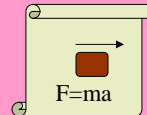 - ~100 Lesson assistance question

Varying the Interaction

The SI Speaks alone

The SI & a static image

F=ma

The SI & other video/applets

Future Goals

- Short Term
  - Recruit HS participants (Fall 2008)
  - Continue creation of video content (Ongoing)
  - Study lessons in HS and university context (Winter 2009)
- Long Term
  - Combine lessons and synthetic interviews (Ongoing)
  - Test the combined interfaces (2009-2010)

Thanks

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