Ontologies and Ontology Mapping for Supporting Student Assessment in an Advanced Learning System

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Outline

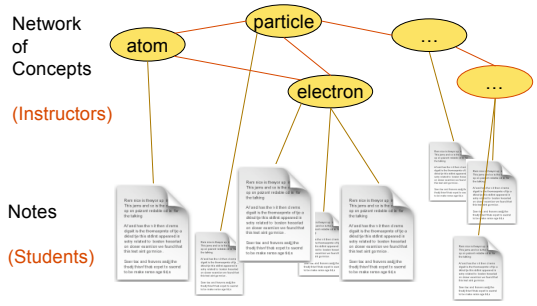
- Context
  - Learning by writing hyperbooks
  - Libraries of hyperbooks
- Extension
  - Learning by conceptualizing
  - Assess concept understanding

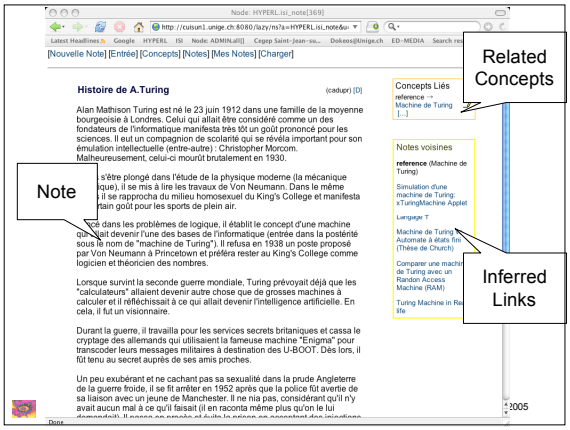
Context: Hyperbook writing

Objectives
- Learning by writing hypertexts
- Transverse view of the course
  - Show relationships between concepts
  - Not in the classroom presentation order

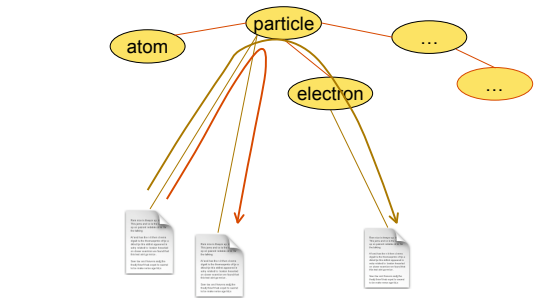
Blended learning
- Classroom lectures
  +
- Collaborative hypertext writing environment

Hyperbook Structure

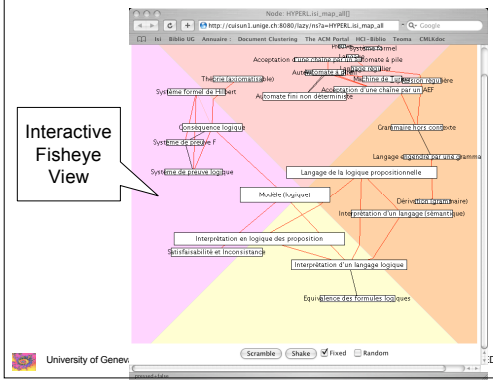




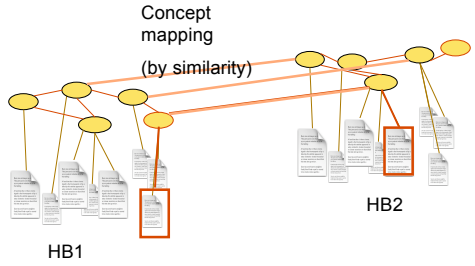
Link Inference

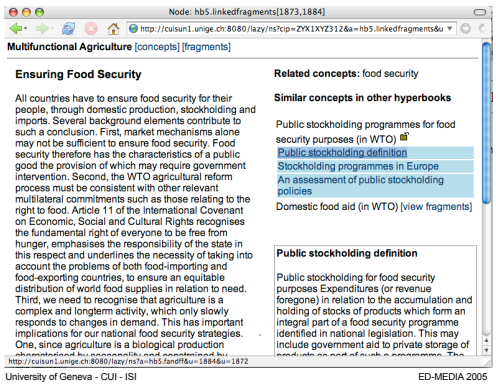


Hyperbook Interface: Viewing Concepts



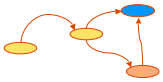
Context: Library of Hyperbooks





Next Step

- Let the student create their own conceptual structures



- Evaluate how students understand the concepts of a course

Concept map creation

Former results

- deeper understanding of the topic
- students are more active

- lack the possibility to explain a concept in words
- resulting maps are usually of poor quality

With Hyperbooks

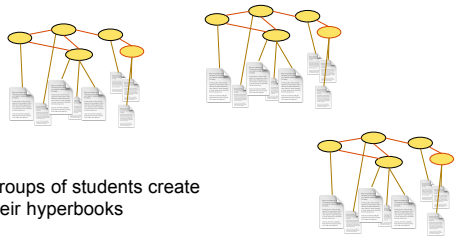
Simplify and enhance students' expression

- create concepts and semantic links
- create "old-style" textual chunks with their own words
- connect formal and informal expressions

Facilitate the comparison between conceptual structures

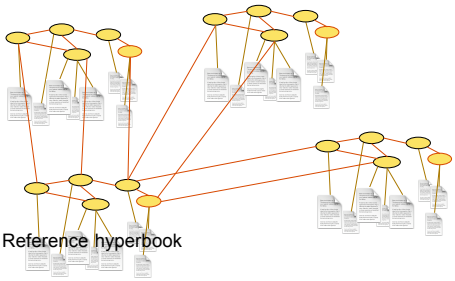
- semi-automatic assessment

Process - conceptualizing & writing



Groups of students create their hyperbooks

Process - comparison



Reference hyperbook

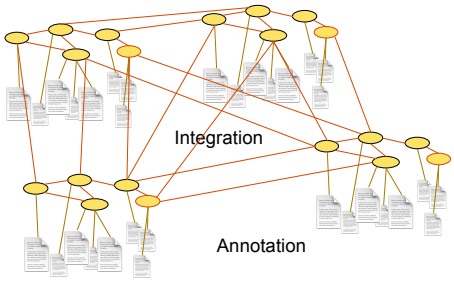
Comparing Conceptual Structures

Difficult problem
- Different terms for the same concept
- Several "correct" solutions
- Different modeling competencies

Comparison technique based on
- conceptual structure (terms, and relationships)
- and attached **text fragments**

Output: Similarity links between concepts of different hyperbooks

Process - discussion



Discussion phase

Interconnected hyperbooks
=> a global navigation space

View other perspectives on the same concepts

Attach remarks, positions, arguments to notes

Summary of the process

- Brief introduction to conceptual structures
- Groups create their hyperbooks
- Comparison with a reference hyperbook
- Integration, discussion, improvement

Conclusion

- Assessment through hyperbook writing
- Based on concept comparison/mapping
- Using existing hyperbook software
- First experiment
  - "Semantic web" course, Oct. 2005 (master)