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

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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 Interface: Viewing Concepts

Interactive Fisheye View

Context: Library of Hyperbooks

Concept mapping (by similarity)

HB1
HB2

Ensuring Food Security
Related concepts: food security

Public awareness programmes for food security awareness

Public school education for food security awareness

Public school education for food security awareness

Public school education for food security awareness

Public school education for food security awareness
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)