



2ª Conferência Ibérica de Sistemas e Tecnologias de Informação

2º Conferencia Ibérica de Sistemas y Tecnologías de la Información
2nd Iberian Conference on Information Systems and Technologies

de 21 a 23 de Junho de 2007
UFP - Porto, Portugal



Adaptive Learning Environments with Knowledge Representation and Social Interaction

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A ongoing PhD research since September 2005 at
Engineering Faculty of Porto University (FEUP-UP)

Background Theory

- **Educational matters:**
 - Modern models (Behaviorist, Cognitivist)
 - Postmodern phenomenological models (Constructivism, Connectivism)
 - Argumentation, Computer Supported Inquiry Learning and Learning Patterns
- **Technology strands:**
 - Semantic Web, Ontologies, Web 2.0
 - CMS Learning Platforms
 - Wikis, Chats, Forums, Social Networks
- **Adaptive learning:**
 - Learners models, Scaffolds and Assessment
 - Instructional Design
 - Technology Enhancement Learning
 - Knowledge Communities

Focal Theory

“knowledge must be constructed in our search for certainty in argumentation bases with a social context environment.”
Dewey pragmatic point of view

“A connectivism approach asserts the learning of knowledge in a distributive manner, based on a network of connections formed from experience and interactions in a knowing community.”

George Siemens

My Hypothesis:

Can Web learning environments improve social participation where students and teachers actively work towards wisdom?

Research questions:

1. People can use computers in collaborative learning environments, while constructing knowledge.
 - a) How web systems might improve the computer's usability in learning processes?
 - b) How do students interact with the learning community to develop knowledge?
2. How can a system that organizes, structures and enables navigation through web content, reinforces collaborative learning?

Research Purpose

- Echo on the learning paradigm
 - Motivation levels
 - Participation degree
 - Actors Involvement
 - Students Empowerment
- Complement the classroom activities with a web collaborative learning tool
- Combine learning material organized in topics, user personalization on each topic entrance
- Enable users to interact among themselves through discussions – argumentation
- New added value to make it a competitive advantage tool

Learning environments are changing from a presentation to a participation paradigm.



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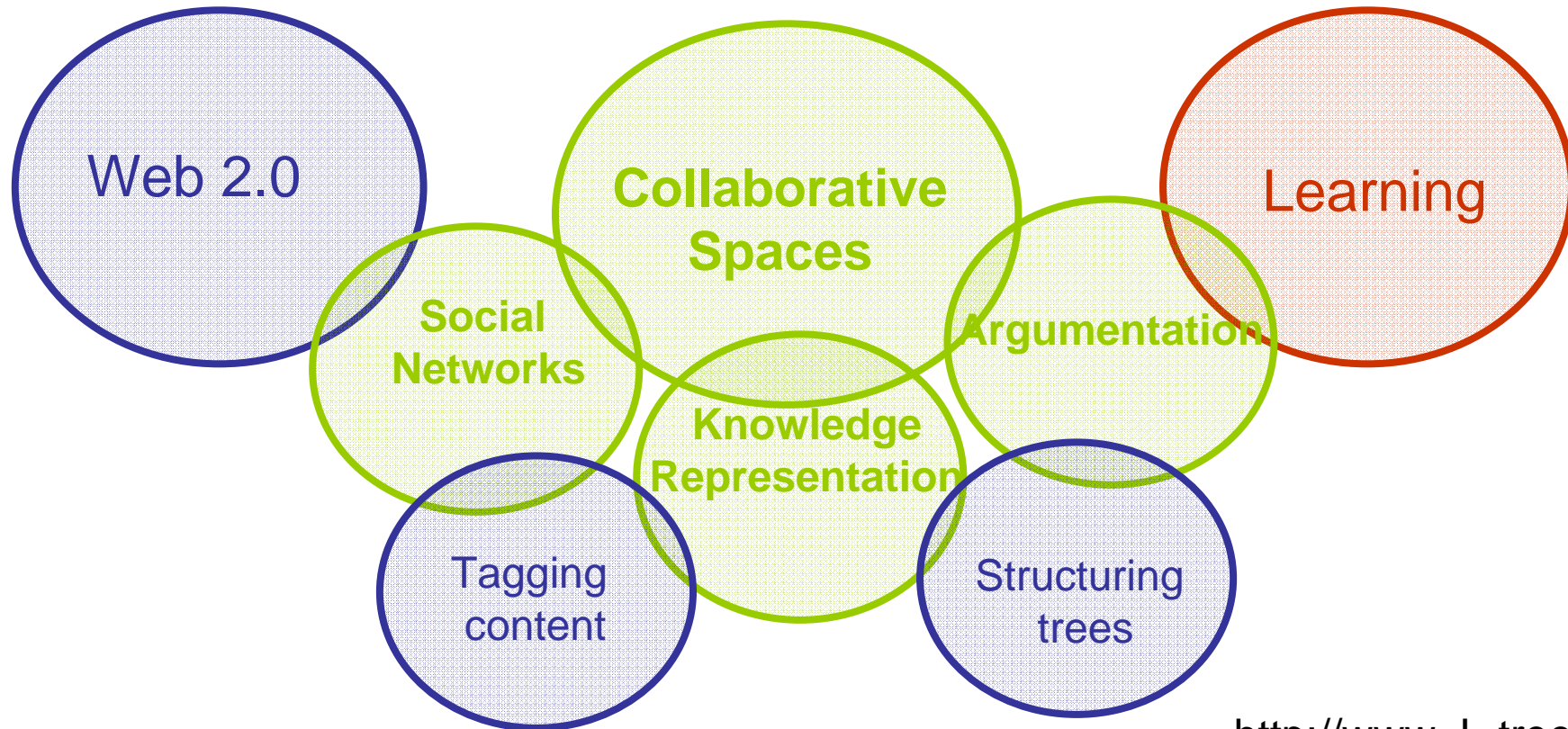
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Participation is a property of culture, while Interactivity is a property of technology



<http://www.L-tree.org>

Learning itself must modify, adapt and incorporate web technologies push-ups

Research Contribution

- Methodology
 - Literature Review
 - State of the Art
 - Platform and Web 2.0 tools analysis
 - Web Tool development (Ajax, Php)
 - Validation of proof of concept

A participatory culture is a culture with relatively low barriers to artistic expression and civic engagement, strong support in creating and sharing one's creations...



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Future Outcomes

- Learning scenario with knowledge trees usage (structure, visualize, distribute, store and share).
- Users interaction with learning material and make connections within a community who has the same topics of interest.
- Validate the two approaches in a class of high school students (K16 students)
- Merge both approaches and compare results.

Learning is a socially constructed activity among student's peers and teacher coaching

Thank you for listening
Questions?
Inputs are welcome

Research site:

<http://paginas.fe.up.pt/~pro05009>

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