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A LEARNING ENVIRONMENT WITH KNOWLEDGE REPRESENTATION AND SOCIAL INTERACTION

Joaquim Silva
Joaquim.silva@fe.up.pt
Francisco Restivo
fjr@fe.up.pt

Faculty of Engineering, University of Porto
Portugal

Agenda

- Theoretical approaches on Web Based Learning Systems
  - Technological
  - Social-oriented
- Collaborative learning tools analyses
- Research Purpose & Contribution
- Later usage in a real learning scenario

- **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, Virtual Learning Environments
  - Wikis, Chats, Forums, Social Networks
- **Adaptive learning:**
  - Learners Models, Profiles, Scaffolds and Assessment
  - Instructional Design
  - Technology Enhancement Learning
  - Knowledge Communities

"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?

- **Adaptive learning processes:**
  - -Shape the learner's interaction
  - -Provide an effective learning system
  - -Increase student's participation and involvement levels

- **Also**

> "On Computer Supported Inquiry Learning (CSIL), which involves students in an active engaged and constructive learning process, students by investigating a domain, actually learn about it and build inquiry skills"
>
> Tom de Jong

several systems have been developed using CSIL approach:

- -CoLab
- -Inquiry Island
- -Cool Modes

•Semantic social network

-Merge personal descriptions (social networks) with resource descriptions (semantic web) to form a single network (Downes)

•Learning systems

-More interaction

-More connection between social space and data space (semantic web)

-Go social (social software)

-Go visual (interactive systems)

-Maintain the social cost low (poor semantics- Keywords, tags) (Marchiori)

•Some examples:

-Tagworld for meeting people

-Flickr for sharing photos, bookmarks, and promote news

-Technorati for tracking blogs

-Wink for making tutorials

-Eurekster system for vertical community web search.

Tools analyses relating user's interaction

All tools provide factual information

Types of tools	Formulate opinion	Contribute own opinion
Alerts		
Wikis		✓
Podcasts	✓	
Blogs	✓	
Chat Interview	✓	
Discussion Boards	✓	✓
Quick Poll		✓
Survey		✓
E-portfolios	✓	

Learners achieve critical thinking have more control over managing resources and activities

Virtual Learning Environments (VLE)

- Moodle
- Sakai
- Drupal
- uPortal
- Sloodle (merge Moodle with Second Life)

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

Collaboration E-learning 2.0 Systems

- Elgg
- Nuuvo
- Digication
- Chalksite
- haiku LMS

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…

Research Questions

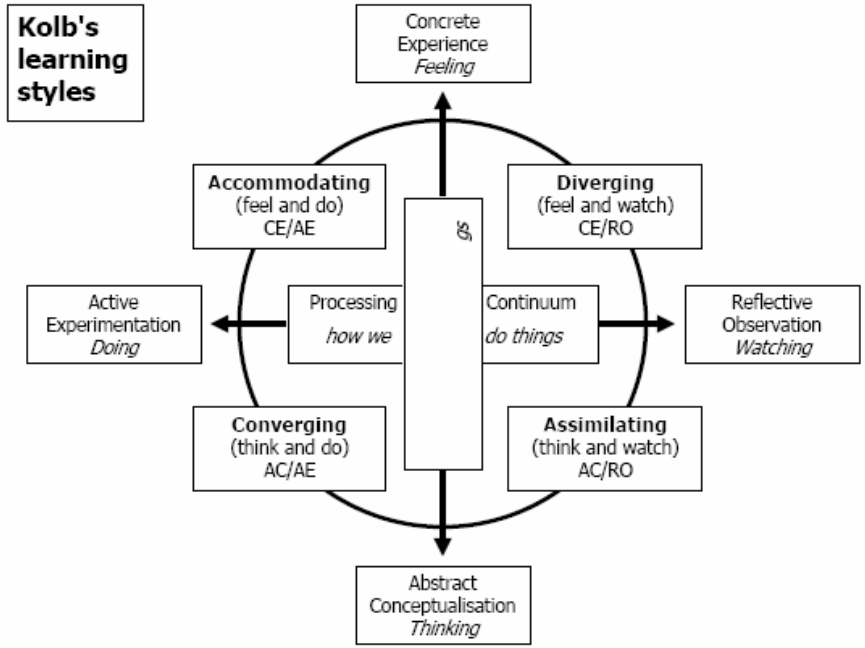
1. People can use computers in collaborative learning environments, while constructing knowledge.
   a) How web systems might improve the computer's usability in learning processes?
   b) How do students interact with the learning community to develop knowledge?
2. How can a system that organizes, structures 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 an improved web collaborative learning tool
- Combine learning materials organized in topics, user personalization on each topic entrance
- Enable users to collaborate among themselves on a social network
- New added value to make it a competitive advantage tool

- Validate the clause if learner's have effectively substantial control over the way in which they organize or control their pace they will learn effectively
- A real experience, using the scale of Kolb's Learning Style, to compare the students performance levels

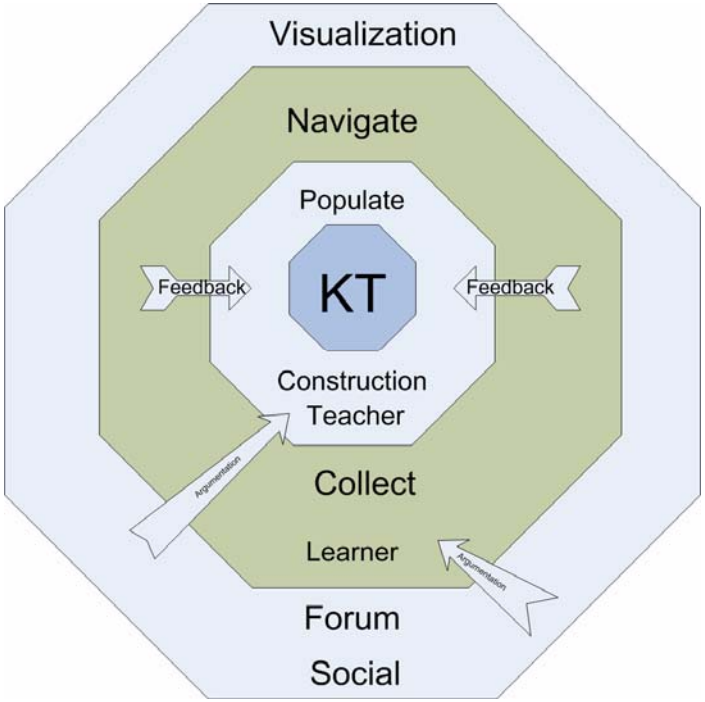
"Learning Style - the way in which a learner receives and interacts with instruction and responds to the learning environment."
Billings



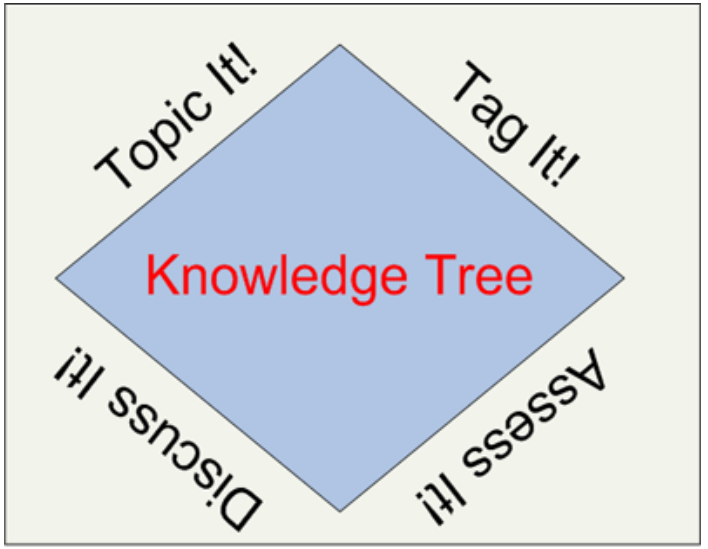
- Confirm the hypothesis that students by interacting with a learning community on a social network develop knowledge more rapidly
- Personalized learner assignments and individual levels of performance in tasks completion
- Learner activities on demand, adjusted to one's particular difficulties

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

Layered Architecture



Tool components



http://www. L-tree.org

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

- Knowledge trees usage
  - Structures
  - Visualizes
  - Distributes
  - Stores
  - Shares

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

- User's interaction with learning materials and enables them to make connections within a knowing community

Solution under development

- Plug-in for **Moodle*** a course management system (CMS)
- Use a tag approach to share favourite links: **Scuttle***
- Use a social networking platform: **Elgg*** which encompasses weblogging, file storage, RSS aggregation, personal profiles, FOAF functionality and more.

* Open-source project licensed under the GNU General Public

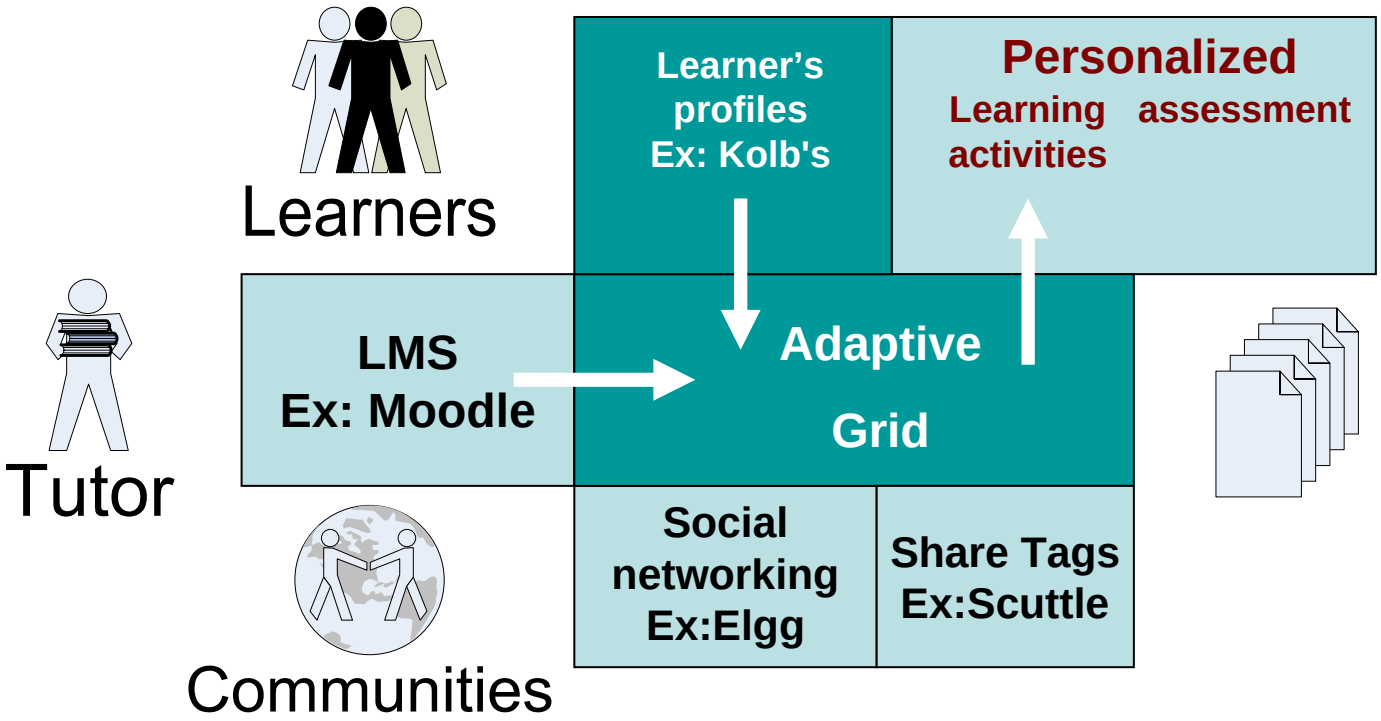
- Use of adaptive learning paths:

  •Pre-tests measuring preferences for the sensory channels (auditory, tactile, or visual), and level of knowldege.

  •On going-tests based on a neural network grid to choose which learning materials should be provided to learners (they will always have to choose among several possibilities). Each learning material will be rated, based on: number of times used, who has recently used it, percentage of completion, how relevant was for the performance on the evaluation…

  •Pos-tests to measure the level of user's satisfaction and knowledge achievement.

Learning is not defined as a process but as a result



Learning involves creating links between learning materials

Validate our approach

•Use it in a class of high school students (K16 students)

•On the assumption that b-learning is better than a traditional class method, comparison between a learning class performance :

- Having a learning platform as support
- Or with our improved Learning platform

•Levels of motivation:

-Participation

-Involvement

-Empowerment

-Acquire new knowledge

•Use of questionnaires to enable students and teachers to express their opinion about the tool.

Thank you for listening.
Questions? Inputs are welcome.

Email:
joaquim.silva@fe.up.pt
Research site:
http://paginas.fe.up.pt/~pro05009
Address:
Faculty of Engineering, University of Porto
R. Dr. Roberto Frias, Porto, Portugal