

*Concept Map-Based Framework for  
Learner-Centered Knowledge Management in  
ePortfolios*

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# *Outline*

- Project background
- Qualitative research and concept maps
- Framework for knowledge management
- Prototype and examples
- Future directions

## *Project Background*

- The aim of the project: a learner-centered e-learning system that will provide students with an environment which reflects their needs as lifelong learners
- We conducted 17 in-depth semi-structured interviews with lecturers and students who used ePortfolio systems
- High priority problems: managing and organizing data into data sets, tracking personal learning progress, sharing ePortfolio content with others and making sense of graduate attributes that represent the core learning outcomes, skills and qualities
- In this work we aim to introduce a potential way of addressing these problems by incorporating a concept map-based framework as a tool for knowledge management into the ePortfolio space

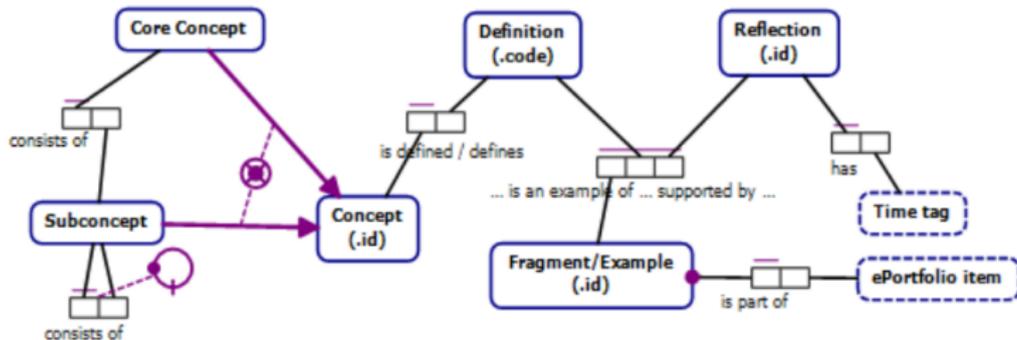
## *Parallels to Qualitative Research*

- ePortfolio process
- Qualitative analysis process
- Qualitative analysis support software (NVivo, MAXQDA)
- Current approaches in ePortfolio systems

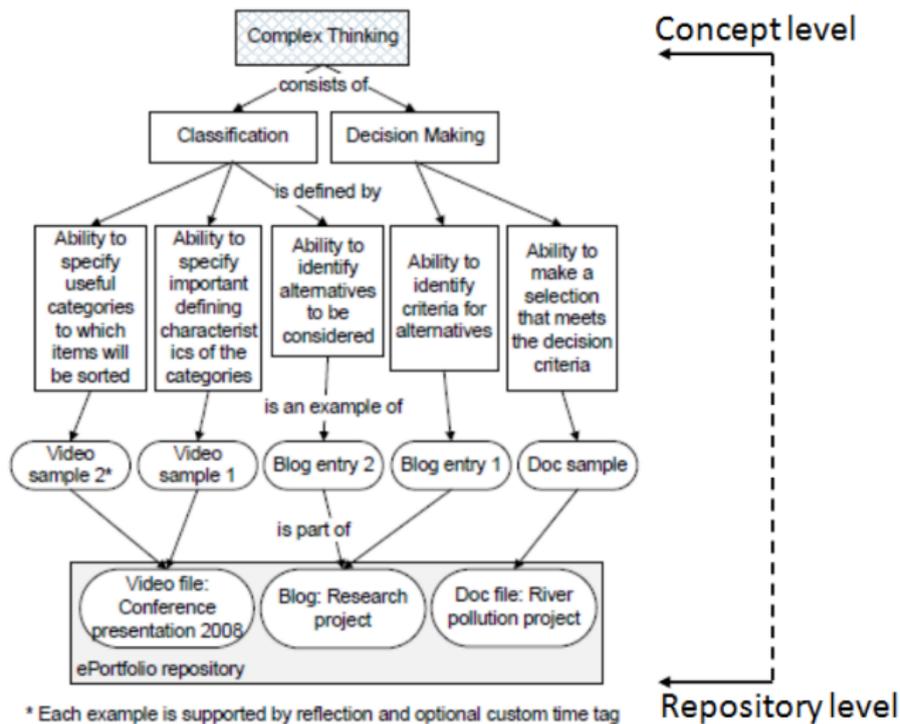
# *Concept Maps*

- Definition:
  - “A directed acyclic graph that consists of a set of Concept Labels and a non-empty set of Relationships between Concepts” (McAleese, 1998)
  - “Graphical representation of the hierarchy of knowledge concepts and connections between them” (Novak, 2008)
- Already successfully used in education to communicate complex ideas, assess understanding of learning objectives, elicit knowledge and provide conceptual frame for learning

# A Proposed Framework for Learner-Centered Knowledge Management



## Framework Applied to an Example



## *Prototype Implementation*

- ePortfolio system Mahara - <http://mahara.org>
  - Open-source system
  - Modular and extensible
- Javascript + HTML5 standard
  - Increasingly supported by the majority of browsers
  - User interaction with graphics (concept maps)
  - Creating dynamic timeline
  - Access artefacts' fragments (audio, video)

# Prototype Implementation

## Concept Map

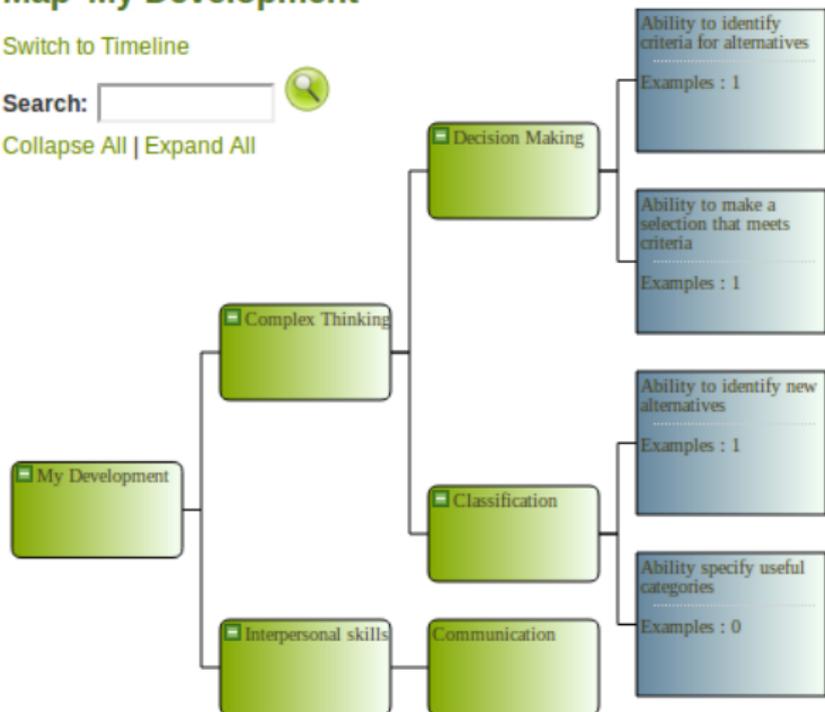
### Map 'My Development'

Switch to Timeline

Search:



Collapse All | Expand All



# Prototype Implementation

## Timeline

### Map 'Map Testing'

Switch to Concept Map

Select time frame  Select concept



# *Prototype Implementation*

## *Artefact's Fragment*

### **Edit Fragment**

#### Step 1. Select image fragment



You can select an image fragment in a usual way: press the left mouse button, drag cursor, release the button.

**Enable downloads**

Check this box if you want others to be able to view and download an entire file

## *Outlook*

Expected benefits of the framework implementation:

- Manage and structure large amounts of information in their ePortfolio
- Track personal progress in various areas and aspects
- Share their progress/development map with others for feedback or evaluation
- Access and address institutional graduate attributes
- Develop a flexible structure for self-directed learning
- Facilitate setting up learning/development goals and expressing students visions of their knowledge

## *Conclusions and Future Directions*

- Potential way of delivering graduate attributes in a form that would be understood and accepted by students
- Help students look at their study from the lifelong learning perspective
- Aid in organizing and managing evolving data in ePortfolios
- Current main goals:
  - Prototype refining based on feedback
  - Evaluation using case studies

Questions?