

Panel 1: PGL Instructional Design for the Web: Training and Applications for Online Learning

**Panel Chair: Elizabeth Lowe, Ph.D., University of Florida, Center for Latin American Studies
Director, Partnership in Global Learning**

1. PGL Online Module Development: A flexible, adaptable approach to Instructional Design for the Web

Presenter: Sue Legg, Ph.D., University of Florida, Center for Latin American Studies

Abstract

The Partnership in Global Learning (PGL) began developing online learning materials for K-12 schools in the Brazil, Mexico and Florida, U.S.A. in 2000. The need for a coherent strategy to develop online material that could be adapted for different cultures, led to a module development plan based on the concept of learning objects (LOs). These LOs were relatively small chunks of content related to concepts that were defined by the instructional goals and labeled using metadata to indicate the content area, level of difficulty, etc. These LOs were stored in a database and could be configured or adapted in many different ways. In 2006, PGL revised the Online Instructional Design mini course. It now provides an interactive learning experience and has print, email, and response tracking. The Online Instructional Design Module will be used for online module development training graduate teaching assistants in many academic disciplines at the University of Florida. Plans are underway to provide versions in Spanish and Portuguese.

2. Implementation using an ontology editor

Presenters: Elsa S. Sepúlveda Bustos, Fedro S Zazueta and Howard H. Beck (Fedro Zazueta will present for the co-authors)

University of Florida, Agricultural and Biological Engineering Department, Gainesville, FL USA

Abstract

This work presents a methodology for the rapid prototyping of Learning Objects (LOs). The methodology is based on basic tenants of instructional design and borrows heavily from project management and software engineering concepts. The methodology was developed and tested by creating LOs for Agricultural and Biological Engineering students and uses for its implementation the ontology editor and an object database. The methodology was successful in producing LO's that led to a quality learning environment for the students. The use of the ontology editor made it relatively simple to implement the learning materials and synthetically create a presentation layer.

3. The Chiapas Online Learning Project: Impacts on Cognitive Skills

Presenter: Yolanda Heredia, José Escamilla de los Santos ITESM

Abstract

This paper will present findings of a research project designed to determine the impact that internet-based multimedia materials have on learning of science concepts and cognitive skills of elementary school students (grades 3 through 6) of indigenous communities in Chiapas, in Southern Mexico. Materials were designed in Tzotzil, the first-language of these students, and attending to cultural characteristics of their community, which are different from the mainstream population in Mexico.

Results from the project support the contention that designing Internet-based multimedia applications, designed in ways that respect the linguistic and cultural contexts of indigenous children can contribute to improve the quality of education, both in terms of curricular content and in terms of cognitive skills, especially for younger children that live in economically deprived areas. In this sense, technology-based materials can make a difference to compensate for other factors that affect educational quality, and maintaining cultural and ethnic diversity in the process.

4. Ontology-driven Interoperability of Learning Objects

Presenters: Carlos Portela, Cássia Baruque, Lúcia Baruque and Rubens Melo
Pontifícia Universidade Católica do Rio de Janeiro, Brasil
(ccastro,cassia,lbaruque,rubens@inf.puc-rio.br)

The PGL (Partnership in Global Learning) Project is an international initiative for research, development and dissemination of e-learning in which secondary schools, universities, and corporations may participate.

Partnership in global learning depends heavily on the structural and semantic interoperability among learning objects (LOs) and other resources on the Web. Recently, technologies of the Semantic Web and specially the use of ontology (explicit formal specification of domains) have been proposed as improvements for this desired interoperability.

Learning communities, such as the PGL, typically share learning object repositories that are geographically distributed and heterogeneous, that is, they are usually described by different metadata standards. The effectiveness to interoperate learning objects among these repositories calls for easiness to discover semantic similarity among elements of LOs.

This paper describes a solution in layers to foster interoperability among LOs. Initially ontology is used to enrich semantically the description of LO content in different repositories in order to provide context to these LOs. Then, through a process of ontology mapping and merging, a global ontology is derived. Finally, LOs are shared among the learning community, by using this global ontology.

Structural differences and semantic heterogeneity among components are resolved in order to generate the global ontology to facilitate the indexing, retrieval and visualization of concepts and LOs, thus increasing LO reusability. This paper also shows how LORIS (LO Repository Integrating System), an ongoing project at PUC-Rio, can be extended to support the implementation of the proposed solution.

Panel 2: Aymara on the Internet: An interactive, online database approach to language learning.

Presenters: Sue Legg, Ph.D. University of Florida, Elizabeth Lowe, Ph.D. Center for Latin American Studies
Fedro Zazueta, Director, Academic Technologies, University of Florida

We are utilizing an ontology management system (OMS) for representing and archiving knowledge associated with the language and culture of Aymara, the native language of Bolivia, Peru and Chile. Our project is based on the work of linguist M.J. Hardman, whose life work has been the study of the Jaqi languages (Aymara, Jaqaru and Kawki). The project is funded by a grant from the U.S. Department of Education Title VI program (2004-2007).

The OMS provides a framework for integrating everything from raw data elements (sound recordings, transcripts, images, video), to more abstract linguistic elements (morphemes, words, phrases, phrase patterns, and dialogs), including grammatical information about each element. Logical relationships between any two elements are expressed using ontology property relationship.

While ontologies are traditionally used to represent semantics of words, we expand the use of ontologies to the level of a database management system, that is a database system that uses a formal ontology language (such as OWL, the Web Ontology Language) as the data definition language, rather than tables as used in conventional relational databases, or general purpose persistent objects as used in object database management systems.

A FLASH student interface has 12 units in which students study grammars, and listen and see pictures and text of culturally relevant dialogues. These dialogues are followed by a series of interactive exercises in different formats. Each line of text is also presented in a grammatical analysis screen that gives the morpheme structure of the phrase and individual words. The interface connects to the database with XML tags, and all data in the student interface is drawn from the database in real time.

The developers will present the database design and features as well as the student interface. The plans to make this a generic web services tool for the study of languages will conclude the session.