A Digital Repository of Reusable Learning Objects

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The Distance Education Graduate Track (M.S.) in Environmental Science was launched in 2002. Since then the program has attracted many students from Florida and elsewhere in the U.S. and around the world (e.g. Latin America and Africa). In an effort to support departmental education programs a digital repository based on the Reusable Learning Object (RLO) concept has been developed (EcoLearnIT). Reusable Learning Objects are based on a new way of thinking about learning and provide a digital educational resource that can be reused, scaled and shared from a central online repository in the support of instruction and learning. Each RLO supports a single learning objective and can be implemented in a variety of modes including text entries, web sites, bibliographies, multimedia, models, photographs, illustrations, mini-case studies, assessments, tutorials, simulations, animations, audio and video clips, movies, and interactive tools. They vary in size, scope and level of granularity ranging from small chunks of instruction to a series of combined resources to provide a more complex learning experience.

Reuseable Learning Objects (RLOs)

Characteristics:
- **Self-contained**: each learning object can be taken independently
- **Reusable**: a single RLO may be used in multiple contexts for multiple purposes e.g. distance education, on-campus, hybrid under-graduate or graduate courses, short courses, workshops or as searchable digital library
- **Focus**: on a specific learning objective and topic
- **Tagged**: with metadata – every RLO has descriptive information allowing it to be easily found by a search
- **Small units of learning**: (2-15 min.)
- **Interoperable**: blend into Learning Management Systems (LMS) such as WebCT Vista, Moodle or course web pages
- **Flexible**: easy to update and change
- **Standardized**: adopt the same organizational structure
- **Adapted**: to a new type of learner – “Net-generation learner” adapted to multi-tasking and digital technologies
- **Enhanced student-centered learning

Dimensions of Learning

http://soils.ifas.ufl.edu/distance
http://swsde.ifas.ufl.edu/rlo

Conceptual Approach

Traditionally, instruction has been top-down with the instructor delivering knowledge to students in the classroom. Recently, communication scientists have observed a different phenomenon of bottom-up communication/learning where students/learners participate in populating and developing learning materials. This concept blends with the ongoing migration of the Internet to the second generation Internet (so-called Web 2.0) where online material is generated by user communities (e.g. Wikipedia, digital libraries such as the Digital Library for Earth System Education). Our RLO-based digital repository EcoLearnIT supports this different way of learning that engages students, learners, faculty, scientists and instructors. A peer-review team ensures that only high quality learning objects are included in the digital repository.

EcoLearnIT Digital Repository

Each RLO in EcoLearnIT is standardized and contains the following information:
- **Title**
- **Author** (if RLO developer: affiliation)
- **Keywords** (metadata)
- **Rank**: (1: simple learning material to 10: highly complex learning material)
- **Time the RLO was accepted into EcoLearnIT
- **Learning objectives
- **Knowledge/Instruction (description of learning topic)** – clear explanation of the theory
- **Application** – demo or example application
- **Analysis, synthesis and evaluation** – learner applies newly acquired skills and knowledge (practice); learner is tested on acquired skills and knowledge

EcoLearnIT provides authoring tools for instructors and students that want to develop learning materials. A peer-review process ensures high quality of learning materials disseminated through EcoLearnIT. Learners/students can utilize EcoLearnIT to enhance their knowledge in different topic areas.

Benefits of the RLO-EcoLearnIT project

- The RLO digital library provides access to high-quality learning materials in environmental science with a focus on land and water resources, sustainable management, and soil and water quality
- Students can develop RLOs using the EcoLearnIT framework and earn teaching / service credits (M.S. and Ph.D.)
- Students gain experience in developing learning materials
- Faculty/Instructors can incorporate RLOs into courses which saves time and resources
- Learning resources provided in EcoLearnIT are shared across department, college and institutional academic boundaries among participating institutions
- RLOs are digital learning units and provide flexibility to support teaching in different modes
- RLO-developers can earn an award for developing the best RLO in 2007.

How to access EcoLearnIT?

“Light” Access

EcoLearnIT is an open digital system and academic, research or teaching institutions as well as individual learners can participate. “Light users” have access to the development framework of EcoLearnIT, which provides all authoring tools to develop RLOs.

“Full” Access

Full access is granted to: (1) all users that have developed 1 or more RLOs that have been approved by the peer-review team for inclusion in EcoLearnIT; or (2) host or partner institutions. Full access allows to browse, search, access and use all RLOs included in the EcoLearnIT digital library.