Learning Objects: Resources for Learning

Kay Chitwood
Director of Educational Technology Services
Fox Valley Technical College

David Bunnow
Manager of Center for Applied Technologies
Fox Valley Technical College

The Wisconsin Online Resource Center Digital Library

In 1999, the Wisconsin Online Resource Center (Wisc-Online Digital Library) is the foundation from two innovative projects that have successfully developed and demonstrated a unique approach to impact the teaching and learning effectiveness of web-based curriculum and course design in post-secondary education. Wisc-Online was funded as an initial project of the FIPSE Learning Anytime Anyplace Partnership to design and develop a digital library of learning activities (learning objects) that correlate with the common competencies of the nine core courses of the WTCS General Education curriculum.

Faculty content experts from across the state are trained to formulate creative approaches to teaching and learning of their course competencies that optimized the power of the new multimedia and web-based technology into dynamic and interactive online learning activities. The ideas were shared with a multimedia instructional designer who then worked together with a web technician to technically design into a small unit of learning known as a learning object. The completed learning objects are placed in the digital library www.wisconline.org. Metadata tagging (designed to be SCORM, IEEE compliant) is used added to learning object to ensure that it can be searched in the following ways within the Wisconsin Online Resource Center Digital Library: by key word, by content area, by topic area, by author, by learning style. The learning objects can be linked to course competencies that can be used and reused as an enhancement or alternative to traditional teaching of competencies, including alternative learning styles and assessment options. The learning objects can also be designed and use as an aggregation of multiple objects into larger collections and reused in a variety of applications.

Faculty enthusiasm for this collaborative approach to developing learning activities and integrating technology into the classroom spread to the WTCS manufacturing faculty who envisioned a digital library to support the core concepts and courses that support post secondary and adult basic education throughout the sixteen technical college districts in Wisconsin. In 2000, the National Science Foundation - Advanced Technological Education Program funds a three year WTCS project to develop the Core Manufacturing Digital Library component of the Wisconsin Online Resource Center. Highly technical content and laboratory procedures correlated with core competencies are able to be captured using creative online features that integrate a wide variety of interoperable multimedia options including video, graphics, animation and interactive assessment and instructor communication techniques. Those faculty, who have not been the most comfortable with technology, have embraced this approach as an effective way to teach the most complicated and confusing topics as well as being a “safe” introduction to instructional technology that emphasizes their content, not computer, expertise.

The student reaction has been overwhelmingly positive and impatient to have this learning approach available throughout their courses in every academic area. The seamless marriage of instruction and technology has been very effective in helping students learn the most difficult concepts and appeals to the increasingly computer literate student population.

Web-based resources are designed, built and linked to competency-driven/topic related curriculum. The digital library is developed with the collaboration of content-expert faculty and instructional technology specialists. The implementation of this collaboration is facilitated by faculty development to design multimedia based chunks of learning (learning objects) that can stimulate and accelerate student understanding of core concepts.

The project team for Wisc-Online Digital Library has witnessed how faculty who have become involved in the development of learning objects view this concept as a viable part of the curriculum development and design processes. With instructional technology now available to all educators, content moved from an analog version to
Faculty have appreciated the fact that the project dollars support instructional technicians who are able to take the content provided by the faculty authors and web the content into multi-media learning objects utilizing the Macromedia Flash software. The learning objects are then housed in a searchable digital library for easy access and may be used by other faculty from any of the sixteen colleges. As of May 2002, over 100 faculty representing 15 technical colleges have authored over 500 manufacturing learning objects with another 200 in development.

The Wisconsin Online Resource Center Digital Library is found at [www.wisconline.org](http://www.wisconline.org).

The Wisconsin Online Resource Center defines a learning object with the following characteristics:

- A new way of thinking about learning content—Traditionally, content comes in a several-hour chunk called a course. Learning objects are much smaller units of learning, ranging, for example from 2 to 15 minutes.
- Small, independent chunks of knowledge or interactions stored in a database—can be presented as units of instruction or information.
- Based on a clear instructional strategy—intended to cause learning through internal processing and/or action.
- Self-contained—each learning object can be taken independently.
- Interactive—each learning object requires that students view, listen, respond or interact with the content in some way.
- Reusable—a single learning object may be used in multiple contexts for multiple purposes.
- Able to be aggregated—learning objects can be grouped into larger collections of content, including traditional course structures.
- Tagged with metadata—every learning object has descriptive information allowing it to be easily found by a search.
- Built to meet the Wisconsin Online Resource Center Quality Standards.
- Learning objects let you have learning that is:
Digital barriers currently exist for a number of faculty and students within our country. With the demand and need on our educational institutions to integrate technology and adapt to technology, while at the same time institutions are faced with rising costs, the balancing act is challenged. The Wisconsin Online Resource Center is an open and free digital library for faculty to access and use. What become available to them are high quality, web-based resources through the Internet. Many faculty, within the Wisconsin Technical College System, who are teaching in store front operations or in incarcerated locations face the same barriers with the lack of hardware and access to the Internet. The Wisconsin Online Resource Center staff began to create CD ROMs with learning objects in order that faculty may use the learning objects with their students.

Multiple barriers continue to limit the integration of technology into the post-secondary curriculum. For most faculty members, it is neither appealing to adapt an already developed online course “off-the-shelf” that is created by another instructor or company. Most instructors are more comfortable with customizing their teaching and learning experiences for their students. In addition, there are often restrictions to using only portions of already developed courses or modifying certain components to meet specific needs. Practically speaking, existing online or digital resources often are prohibitive due to cost, uninviting password requirements or are instructionally incomplete having little meaningful use without major technology intervention, which effectively widens the digital divide. This factor inhibits the most disadvantaged individuals and institutions from access to dynamic and powerful technology-based resources to enhance those academic strategies where they are most needed.

Most educators find many of the digital collections or libraries are actually “flat files” of images or video-clips that in most cases have not been enveloped by comprehensive teaching and assessment aspects that lend them to be readily used and reused by faculty in their content area. The role of the instructional designers and technicians in higher education has been compartmentalized and often relegated to being a webmaster who is not connected with curriculum or student learning. Many assist with the development of online courses but are limited to using a singular software package to house the digital content. Rarely are they free to collaborate directly with faculty and access the plethora of digital solutions that can best convey a creative instructional idea in the most powerful pedagogical and technological manner.

The fundamental principle of the Wisconsin Online Resource Center approach is that faculty members value online educational materials that are peer-evaluated and collaboratively designed but not an entire course. The “buy-in” to this approach to instructional technology integration demonstrated by faculty members has created a growing demand in Wisconsin and beyond for training to expand the development of learning objects to new academic areas. Copyright and intellectual property rights that frequently emerge, as issues in the online educational arena have become a moot point due to the overwhelming faculty developers who have authored learning objects for Wisconsin Online Resource Center have belief in value of shared resources. The project team members respect the faculties’ interests and desire to share their ideas, and are not interested in profiting from the creation of learning objects. With this philosophy, the copyright is held by the authoring faculty member’s home college with a nonexclusive license to share and disseminate the learning object through the Wisconsin Online Resource Center. Educators are encouraged to use, reuse, evaluate and give feedback, but protection is assured from copyright infringement for unintended purposes.

**Bibliographical Sketches**

**Kay Chitwood** is the Director of Educational Technology Services at Fox Valley Technical College. In addition, she serves as the Director of the Wisconsin Online Resource Center Digital Library. Ms. Chitwood is the Co-Director of a Fund for the Improvement of Post Secondary Education – Learning Anywhere, Anytime Partnership Project and is also the Principal Investor for the National Science Foundation – Advanced Technician Education project that funds the creation of learning objects for the Wisc-Online Digital Library.

Address: 1825 North Bluemound Drive
Appleton, Wisconsin 54913-2277
E-mail: chitwood@fvtc.edu
David Bunnow is the Manager of the Center for Applied Technologies at Fox Valley Technical College. Mr. Bunnow also serves as the Technical Coordinator for the Wisconsin Online Resource Center Digital Library. He works directly with four webmasters/programmers and three student interns are learning objects are designed and developed for the online digital library.

Address: 1825 North Bluemound Drive
          Appleton, Wisconsin 54912-2277
E-mail: bunnow@fvtc.edu
URL: www.wisconline.org
Phone: 920.735.5634
Fax: 920.735.2582