

## **Designing and Developing Interactive Learning Objects for Online Courses**

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Online teaching has sparked new teaching strategies for faculty to incorporate whether in campus-based courses, web-augmented course sites or in an online delivery mode. One of the most effective and significant of these techniques is the integration of interactive, learning objects. This integration of technology provides a way to engage online students in the learning process and allows the instructor to take their courses to a higher level of learning.

When preparing to teach online, many instructors look at the campus-based model and try to design their online course based on this model. In order for online delivery to be a successful learning medium for the student, though, a major redesign must take place. The redesign process fosters the emergence of a teaching strategy, which facilitates students engaging themselves in their individual learning cycle. This teaching strategy is the integration of learning objects into the learning cycle for a particular unit of content.

Learning cycles are the process by which students work through course content and concepts. Typically, critical content is delivered to students via text and presentations building a foundation of understanding to apply what they have learned about the content through an instructional concept. Learning cycles should include the opportunity for the students to practice the application of the content and provide performance feedback and subsequent opportunities for relearning and reassessment. Learning objects can become a core component of the learning cycle.

Learning objects include the application components of the critical content of a course or module. These learning objects may be: 1) concepts that have been historically difficult for students, and/or 2) critical course concepts, which students must know to function in real-world situations. Learning objects provide the students with the opportunity to apply what they have learned and receive performance feedback. Typically these objects are associated with a particular content unit.

Once developed, these learning objects can become a part of an integrated learning experience where critical content is first presented to the student via text or presentation followed by the integration of the instructional concept. Students are given the opportunity to work with the concept as many times as needed before completing a performance assessment providing them with feedback on their progress, which may lead the student back into the learning cycle for supplemental relearning and reassessment. The foundation for any course is based on good instructional design, which begins with the development of clear, concise learning outcomes.

Communication of these outcomes is crucial to student success and they should be conveyed in related learning objects.

In online and Web-augmented courses, learning objects fit well into the course management delivery system. Course features such as threaded discussions can be used to supplement the use of learning objects in these learning delivery environments.

At Northwest Missouri State University, the Center for Information Technology in Education, a faculty instructional technology office, plays a key role in the design, development, and delivery of learning objects. The curriculum design specialist works with faculty to identify appropriate instructional concepts. Simple storyboarding techniques are used to outline the initial project and how the learning object can be integrated into an instructional plan. Student employees and/or interns are assigned to the project and a meeting is held with the faculty member, curriculum design specialist, and computer software specialist. This project development team devises a plan to manage the design and development of the learning object. The computer software specialist guides the group in determining the most appropriate delivery format whether it is a multimedia software, productivity software, HTML, content creation software, or game creation software. The student employee or intern constructs and develops the learning object and becomes the main coordinator of the project with the faculty member. They set up meetings with the faculty member as the project progresses to assure that the project is on target with the faculty member's expectations.

A template is used in the planning stages of the design and development of these learning objects. The first steps are to include the related learning outcome and determine the appropriate delivery format. Brief exposure to critical content can be included depending upon the concept. The incorporation of multiple learning modalities to include text and graphics, animation with narration, and scripting of narrations is incorporated to provide students with more than one way to learn the concept. Functionality must be built into the learning object so that the students are able to complete the application multiple times providing the opportunity for relearning. A formative assessment of the concept with immediate performance feedback is built into the learning object. Once the learning object is complete, a tutorial is created to teach students how to use the learning object. These tutorials should include text, graphics, animation and possibly narration of the tutorial and the ability to replay the tutorial.

Learning objects can be incorporated in campus-based, web-augmented or online course sites. They provide students with engaging, interactive material, which can be easily integrated into the learning process allowing the instructor to take their courses to a higher level of learning.

### **Biographical Sketches**

**Ms. Darla Runyon** is the Assistant Director and Curriculum Design Specialist for the Center for Information Technology in Education at Northwest Missouri State University. She received her Masters in Education from Colorado State University and a Bachelor of Science in Business Management and Secondary Business Education from Northwest Missouri State University. She currently is working on her doctorate in information science and learning technologies from the

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**Dr. Roger Von Holzen** is the director of the Center for Information Technology in Education at Northwest Missouri State University. Since completing his doctorate in instructional technology from Texas Tech University in 1993, Von Holzen has been extensively involved in the various technology initiatives undertaken by the university, leading to his appointment as the director of the campus' faculty technology center in the spring of 1999. Under his leadership, the CITE office has played a significant role in the establishment and development of several undergraduate and graduate online degree programs.

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