

Online Learning Objects: Affecting Change Through Cross-Disciplinary Practices and Open Technologies

The traditional format of the large, introductory course within research universities has consistently resisted change. Instead, instructors often leverage technologies to reinforce the teacher-led paradigm rather than to break down age-old structures and facilitate classroom "flipping" strategies (Berett, 2012) that can lead to a student-centered orientation that facilitates constructive and innovative learning opportunities. In a local initiative at the University of Michigan, we have found that rather than depend on individual instructors to make wholesale pedagogical changes on their own, they can learn from colleagues across disparate disciplines to find appropriate solutions toward effective teaching practices.

In this presentation, we will describe how a cross-disciplinary group of instructors and graduate student assistants were able to learn from each others' implementations of new technologies, open practices, and assessment activities to arrive at new teaching and learning practices that will serve as a model for other instructors. Attendees of this information session will see examples of how this project was designed, how participants supported each other throughout the process, and how teaching and learning outcomes were assessed by leveraging various methodologies including online surveys, formative assessments, and learning analytics.

Audience members will have the opportunity to brainstorm about how these different integrations of Learning Objects (LOs) could be differently evaluated and how student learning can be assessed across disciplines. In addition, we will specifically lead a discussion about how conversations and collaboration across disciplines might be replicated at other institutions.

The Michigan Education through Learning Objects (MELO) project is a MERLOT award-winning initiative that brings together seven different disciplines spanning the natural sciences, social sciences, and humanities in an effort to tightly integrate LOs, through a variety of approaches, into the specific contexts of gateway undergraduate courses. LOs are interactive web resources designed to support a learning objective. By carefully incorporating media such as video, still images and digitized primary source documents into wikis, podcasts and lectures, participating faculty are exploring new ways to support their students' progress through large enrollment introductory courses.

Cross-Disciplinary Investigations of Learning Objects

Each MELO partner course has developed a unique set of tools and approaches to address their class needs through interactive and open LOs. Specific examples will be presented from the Organic Chemistry, History and Spanish teams. By utilizing mixed methodologies to collect evidence of successful interventions, members of this project are discovering their methods of LO development and integration provide both faculty and student satisfaction and may also contribute to higher student achievement in the classroom.

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The development and incorporation of openly licensed content supports the continued contextualization of these materials to suit specific classroom needs, at Michigan and elsewhere. The assessment of these LOs that can be used across institutions can also benefit the larger education community. We will outline the techniques used to develop assessment standards for the disciplines represented in this project and preliminary results of these efforts.

The Power of Openness

Open educational practices have been incorporated into both the training and development of this project. By considering the opportunity to create content that can be shared, reused, and adapted across specific educational settings, the members of this project are participants in the emerging standardization of open education. We will share outcomes of this project to session participants that showcase not only the application and impact of LOs but the ability to assess the success of integration of technology, open practices and innovation in the classroom. This open perspective supports the accessibility and replicability of inventive pedagogies in which students take an active, creative part in the teaching and learning process at the University of Michigan.

Preliminary Findings and Implications of MELO

A facet of this project includes assessing whether LO use promotes deeper student learning, engagement or achievement of course goals and objectives and preliminary results of this work will be highlighted in this session. For example, the History team developed wiki platforms to create open and interactive content. The primary intervention in this course is investigating how undergraduate teaching in history—and the humanities more widely—may benefit from interactive online syllabi, the use of open platforms for class assignments, and student projects that contribute to developing open content. Through qualitative investigations, the History team found that the instructor's role shifted from facilitating a mostly content-based lecture format to coordinating peer learning and self-learning that centered on transferable skills as well as content.

The Spanish team is investigating how the presentation of language concepts in video podcasts delivered for just-in-time learning prior to course quizzes and midterms can affect students' understanding and retention. Preliminary findings indicate that students who view these optional podcasts have greater achievement than their peers. Those who view these resources more than once demonstrate exponential gains in learning outcomes. Furthermore, those students who view the podcasts appear to be retaining the central ideas from the video presentations throughout the course much more than their peers.

The Organic Chemistry team is investigating how previously designed individual assignments can be redesigned as collaborative online assignments, utilizing learning objects presented within the context of Voice Thread, a multi-modal discussion tool that

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allows text, audio, and video participation. By splitting the lecture course into treatment and control groups, the team was able to carefully design and test their interventions. Formative and summative assessments have thus far revealed significant learning gains for students exposed to the online learning objects.

We will also include short examples from disciplinary teams in Statistics, Psychology, Chemistry, and Writing. The project participants developed a cross-disciplinary survey whose results will be discussed at this session. It examines how students and instructors across teams perceived the impact of the learning objects presented in their courses and how these resources can be improved and even more tightly integrated into the course content. Furthermore, learning analytics from the campus learning management system were utilized in conjunction with formative course assessments to arrive at meaningful outcomes for each MELO team. Audience members will discuss and learn how they will be able to employ these methodologies within their local context.