

Open Educational Resources Policy Background¹

IPT 692R² :: Summer 2009

Executive summary

Open Educational Resources (OER) are online instructional materials that are provided under "open" licenses which give students, faculty, and all members of the public permission to copy, reuse, revise, adapt, and redistribute the materials, providing users meet specific conditions. An OER may be as small as a syllabus or diagram, or as large as an entire course. A growing national and international interest is expanding quantity--and quality--of OER. This interest comes from faculty and students and is expanding across colleges and universities in the United States and around the globe. As interest grows, institutions come to need policies and control processes to support these activities and insure copyright liability issues are mitigated as materials are shared online. Providing free public access to open educational resources could fit comfortably within the mission of BYU to advance learning and knowledge for our brothers and sisters throughout the world and make friends for the Church.

Research of the present state of OER efforts at institutions in the United States reveals some standardization of polices concerning the sharing of OER. OER policies commonly include:

- Voluntary faculty participation
- Allocation of some institutional resources for development and web hosting
- Materials are made available under Creative Commons licenses
- Ownership of materials used is retained by the faculty, the institution, or other rights holder(s)
- OER are reviewed to prevent intellectual property licensing conflicts
- The institution does not offer credit, student support services, or access to faculty in conjunction with OER

In most institutions, involvement in OER efforts has evolved from the efforts of a "champion" who has taken interest in sharing OER. As the desire to share grows from a few faculty to a larger group, the institution becomes involved with necessary policy and funding issues. Many institutions are struggling with resourcing OER efforts and their integration in overall institutional strategies. Continuing research is being conducted to identify financially feasible models of sharing, potential funding resources, and to

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solidify standards for the publication and sharing of OER materials.

BYU currently has some OER pilot projects underway across campus. These efforts include the conversion of several Independent Study Courses to OpenCourseWare format (a specific kind of OER), the Access to Knowledge Initiative in the David O. McKay School of Education, and the establishment and maintenance of a central repository for teaching and learning materials (some of which could be OER) in the HBLL. These pilots are expanding our understanding of OER efforts and resource considerations.

Recommendations include:

- University discussion of OER efforts at BYU and guidance for interested faculty and students
- Consideration of strategic support of OER at BYU and the use of institutional resources in support of these efforts
- Possible development of policy and process to catalog and support OER efforts at BYU and to protect the institution from liability and inefficient use of resources

Introduction

Ye are the light of the world. A city that is set on an hill cannot be hid. Neither do men light a candle, and put it under a bushel, but on a candlestick; and it giveth light unto all that are in the house. Let your light so shine before men, that they may see your good works, and glorify your Father which is in heaven. ([Matthew 5:14-16](#))

The Mission of Brigham Young University is to "assist individuals in their quest for perfection and eternal life." This mission is pursued primarily by providing undergraduate students "a period of intensive learning in a stimulating setting where a commitment to excellence is expected and the full realization of human potential is pursued." The "Aims of a BYU Education" are that each student's experience at BYU will be "spiritually strengthening, intellectually enlarging, and character building leading to lifelong learning and service." Consistent with the pursuit of these objectives, the Board of Trustees has directed BYU's faculty, staff, students, and administrators to "be anxious to make their service and scholarship available to The Church of Jesus Christ of Latter-day Saints in furthering its work worldwide. In an era of limited enrollments, BYU can continue to expand its influence both by encouraging programs that are central to the Church's purposes and by making its resources available to the Church when called upon to do so."

BYU faculty members and student teaching assistants teach courses on a wide range of topics there are "central to the Church's purposes." This work has blessed and continues to bless the Church and its membership in countless ways. The purpose of this document is to explore approaches by which the BYU community might make the results of its teaching activities even more open and accessible to the Church community, thereby

extending its influence even further.

When BYU faculty and students produce scholarly works, they publish these in academic journals for others in their academic fields to learn from and build upon. These publishing activities are consistent with the Board's charge to BYU faculty, staff, and students to "make their service and scholarship available" to those beyond the borders of its campus, particularly members of the broader academic community.

BYU faculty and student teaching assistants also develop a significant amount of teaching material in their various academic disciplines. Unlike their scholarly works, these syllabi, lecture notes, descriptions of in-class activities, slide presentations, and other materials are not made publicly accessible for other faculty or students to learn from and build upon, and the average member of the church has no access to these resources whatsoever.

This unavailability of BYU's own teaching materials to BYU faculty and students, faculty and students at other CES institutions, and to the the broader Church membership may be at odds with the institutional objectives of BYU. It is more expensive to "educate the minds and spirits of students" when BYU faculty cannot access existing resources and must "recreate the wheel" in their teaching preparation. It becomes very difficult to "advance truth and knowledge to enhance the education of students, enrich the quality of life and contribute to a resolution of world problems" when students have no access to the majority of the teaching materials developed at BYU and the world has no access to these materials. It is difficult to "extend the blessings of learning to members of the Church in all parts of the world" when teaching materials are not broadly available on-campus and are unavailable off-campus. And without the ability to share the results of faculty and student effort in developing teaching materials, the university's significant investment in teaching and student mentoring is unavailable to help BYU "develop friends for the University and the Church." In short, the current lack of sharing of teaching materials does not advance BYU's stated desire to "greatly enlarge Brigham Young University's influence in a world we wish to improve." (BYU Mission Statement, 2009)

Open educational resources (OER) is a relatively new term describing the practice of providing free online access to openly licensed teaching materials like syllabi, lecture notes, and audio recordings of lectures. In order to increase their influence in the world, a number of institutions have adopted OER initiatives - optional programs which support faculty who elect to share their teaching materials with the world. In this document we review OER initiatives at US institutions, their effects on the dissemination and reach of teaching materials, and explore implications of the trend toward open education for BYU.

Open Educational Resources, OpenCourseWare, and the Open Education Movement

Open educational resources (OER) are encompassed by the broader open education movement, and related to more targeted movements like open courseware (OCW)

initiatives. OER have been defined with varying exactitude. An increasing number of individuals and institutions worldwide are now producing and publishing OER. Amongst these perhaps the single most well-known institutional program is MIT's OpenCourseWare program, which provides open materials for over 1,800 courses. Other projects include Carnegie Mellon's Open Learning Initiative, Yale's Open Courses, and Stanford's Engineering Everywhere courses. Many institutions publishing OERs are members of the OpenCourseWare Consortium. As of April, 2009 there were 194 members worldwide (ref).

An OER may be an entire course, a complete book, or a more granular piece, such as a single learning object. Key criteria for OER include:

- publicly available
- digital or electronic format
- free of cost, at least for educational purposes
- reusable and redistributable
- adaptable, e.g. for other audiences and technology platforms

OER are made available through the World Wide Web, and are typically used by student seeking supplements to their coursework, self-learners seeking to benefit from freely available instructional content and learning materials, and educators seeking proven learning materials to reuse or adapt for their specific and local learner needs.

Growing interest in OER

International and national interest in open educational resources (sometimes called opencourseware) is increasing as educational institutions find that the internet provides new opportunities that support their missions. The OpenCourseWare Consortium, a group of "institutions working together to advance education and empower people worldwide," has almost 200 members from the United States, Japan, Brazil, France, Spain, Afghanistan, Iran, Israel, and dozens of other countries. Each of these members has committed to freely share the materials used in teaching at least 10 of their courses as OERs. US members of the OpenCourseWare Consortium include:

- Arizona State University
- Johns Hopkins Bloomberg School of Public Health
- Kaplan Higher Education
- Massachusetts Institute of Technology
- Michigan State University
- Tufts University
- UC Berkeley
- University of Alaska Fairbanks
- University of California, Irvine
- University of Massachusetts Boston
- University of Michigan

- University of Notre Dame
- University of Utah
- University of Wisconsin - Eau Claire
- Utah State University
- Utah Valley University
- Weber State University
- Western Governors University
- Wheelock College

Other US universities with OER programs (e.g., Stanford and Yale) are not affiliated with the OpenCourseWare Consortium, but engage in similar open practices.

In addition to institutional interest and commitments, OER have come front and center in national policy initiatives. The recently nominated U.S. Under-secretary of Education, Dr. Martha Kanter, is a long-time proponent of open educational resources and spearheaded the Community College Consortium for Open Educational Resources (CCC-OER) and the Community College Open Textbook Project in California. Her nomination was followed shortly by the following news:

Community colleges and high schools would receive federal funds to create free, online courses in a program that is in the final stages of being drafted by the Obama administration. The funds envisioned for open courses — \$50 million a year — may be small in comparison to the other ideas being discussed. But in proposing that the federal government pay for (and own) courses that would be free for all... the draft language suggests that the administration is throwing its weight behind the movement to put more courses online — and offer them free.

On July 14, 2009, President Obama formalized the \$50 million commitment to open online courses in the [American Graduation Initiative](#). 2009 also saw the introduction of [H.R. 1464](#): Learning Opportunities With Creation of Open Source Textbooks (LOW COST) Act of 2009 by Bill Foster (D-ILL). Dick Durbin (D-ILL) is also in the process of introducing similarly directed legislation.

Comparative Analysis

By examining current OER efforts at other institutions of higher education in the United States we hope to understand the potential for impact and recognize guidelines success for OER projects at BYU. Though the number of those institutions continues to expand, and the scope of their projects continue to increase, for purposes of this study we have taken a snapshot of six institutions and evaluated their experiences with OER. Those six institutions are:

1. Massachusetts Institute of Technology (MIT)

2. University of Notre Dame
3. University of Michigan
4. Stanford University
5. University of Utah
6. Utah State University

These institutions were selected due to their maturity and prominence in OER efforts and, in some cases, a perceived similarity to BYU. Many of these institutions have policies, provisions, and guidelines governing their OER efforts that provide instructive and comparative examples.

The six case studies provide relevant information about and insights into the formation, implementation, and maintenance of policies supporting institutional OER projects. The case studies examine policy features, including:

- **History.** Age, sources of funding, stated goals, measured impact, etc.
- **Infrastructure.** Supporting technologies, etc.
- **Administration.** Departments or units responsible for the project, sponsors of the project, etc.
- **Production models.** Processes and work flows support content collection, development, digitization, and publication), etc.
- **Faculty participation.** Requirements, incentives for participation, opt-in vs. opt-out, etc.

Massachusetts Institute of Technology

In October 2002 Massachusetts Institute of Technology announced the MIT OpenCourseWare project, an ongoing effort to publish content from every MIT course as free, online learning materials. While MIT makes it clear that OCW neither constitutes an MIT education nor qualifies for MIT degrees or certificates (<http://ocw.mit.edu/OcwWeb/web/about/about/index.htm>), the project encourages self-learners to use these materials for self-study, and educators to use them for curriculum development. As of July 2009 MIT OCW had published materials from over 1900 MIT courses. MIT President Susan Hockfield [said](#),

The goal of advancing education around the world is shared by the MIT Faculty. Indeed, we owe the existence of OpenCourseWare to the foresight, dedication, and generosity of our faculty. In the year 2000, a faculty committee first proposed this bold and innovative idea, and since then, the vast majority of our faculty—over 90%—have voluntarily contributed their teaching materials for free and open publishing on OCW. MIT faculty are passionate about their teaching, and they are keen to see their work benefit global society.

We do not yet know the full potential of OCW and its ultimate impact on global education. But it is clear to us that by thinking of knowledge as a public good for the benefit of all, and acting on this philosophy through OpenCourseWare, we can

make a difference. We know from our evaluation research and from many thousands of user feedback emails that OCW is improving education and bringing new opportunities to people everywhere. We expect this impact will continue to grow in ways we have already seen and in ways we have not yet imagined.

There is no limit to the power of the mind. We encourage you to use OCW—learn from it and build on it. Find new ways not only to pursue your personal academic interests, but to use the knowledge that you gain—and that you create—to make our world a better place. In the spirit of open sharing, we also encourage you to share your scholarship with others, as hundreds of other universities are already doing through their own OCWs.

MIT OCW was the first open educational resources project of its kind, and required extensive funding for developing processes, technologies, and incentives. A significant portion of MIT OCW's funding originated with the Mellon and Hewlett foundations, and at the end of the grant period total provisions totaled around \$42 million. MIT estimates that year-to-year costs of maintaining OCW as a permanent MIT project are approximately \$4 million per year, with half of those dollars coming from within MIT. MIT OCW notes that the cost of publishing each course "requires an investment of \$10,000 to \$15,000 to compile course materials from faculty, ensure proper licensing for open sharing, and format materials for global distribution. Courses with video content cost about twice as much..."

MIT reports that its OCW site has received "79 million visits from 56 million visitors from virtually every country" (MIT, 2005). Surveys indicate that visitors are distributed between self-learners, students, and educators, with the largest share being those who describe themselves as self-learners. The most frequently cited reason for visits by self-learners is to explore areas outside of their professional field. The greatest use indicated by educators and students is to improve or enhance personal knowledge.

MIT faculty who participate in OCW maintain ownership of most intellectual property as designated under MIT intellectual property policies. Faculty opt-in to the MIT OCW project, and in doing so choose to license their materials under a Creative Commons Attribution Non-Commercial Share-Alike license (<http://ocw.mit.edu/OcwWeb/web/help/faq3/index.htm>). During the pilot phase of the project, participating faculty were awarded small grants; after the project became widespread within MIT these incentives were discontinued.

The MIT OCW project is supported by an extensive, large-scale digital publishing process that workflows faculty materials from often analog formats into digital works, licensed, organized, and available on the MIT OCW web site. MIT OCW comprises an administrative and central support unit within the university with 24 on-campus staff and a number of off-campus contractors (<http://web.mit.edu/edtech/casestudies/ocw.html>).

The MIT OCW web site is powered by a customized content management system based on Microsoft Content Management Server 2002, and distributes some media content

through Apple's iTunes University. Digital materials are available as documents (HTML, XML, PDF), audio and video (RM, MP4), and organized packages (IMS ZIP).

University of Notre Dame

The OCW efforts at Notre Dame were funded initially with a two year grant from the William and Flora Hewlett foundation. The courses are hosted by the Kaneb Center for Teaching and Learning at Notre Dame. The first 8 courses were launched in September 2006. The University seeks to publish 30 new OCW courses each year. As of July 2009 there are 49 courses listed as available for participants in the OCW format from 23 different University academic departments. In reality, due to duplicate listings, there are actually 30 regular courses and two specialized orientation courses. The University hopes that "By offering free, high-quality course materials to the world, OCW strives to overcome the barriers geography, economics, age and language present to the spread of knowledge. OCW is neither a distance-education or degree-granting initiative but rather an open dissemination of educational materials, philosophy, and modes of thought." (<http://ocw.nd.edu/about>)

The University of Notre Dame indicates its objective for creating Open Courseware:

...is to make Notre Dame OCW course materials that are used in the teaching of undergraduate and graduate subjects available on the Web, free of charge, to any user anywhere in the world. Notre Dame OCW will advance technology-enhanced education at Notre Dame, and will serve as a model for university dissemination of knowledge in the Internet age. This venture continues the tradition at Notre Dame, and in American higher education, of open dissemination of educational materials, philosophy, and modes of thought, and will help lead to fundamental changes in the way colleges and universities utilize the Web as a vehicle for education. (http://ocw.nd.edu/help/help_text#q1)

Fr. John Jenkins, C.S.C., University of Notre Dame President stated,

I am pleased that the University of Notre Dame will be contributing a set of distinctive courses to the opencourseware collection. It is our privilege to share freely with the worldwide community an intellectual and ethical framework for viewing, confronting, and reflecting upon some of the most complex issues facing our society.

Notre Dame Open Courses are delivered on the eduCommons open source software platform. Digital materials are available as documents (HTML, XML, PDF) and include some video materials.

The OCW efforts at Notre Dame are facilitated by a full-time OCW Project Coordinator in the Kaneb Center for Teaching and Learning. While this coordinator is the only employee working exclusively on OCW at the University, the coordinator works with students and interested faculty in developing the OCW courses. The coordinator describes the process as follows:

In general, each course that we produce has a course production assistant, typically a graduate student selected by the faculty member. (The student is paid a stipend of \$1000 for a 1-credit course, and \$2500 for a 3-credit course.) In my initial conversation with the faculty and student, we discuss intellectual property and the possibility that some materials may have to be substituted or removed from the OCW version of the course. It is the responsibility of the production assistant, to research ownerships and to secure the necessary permissions. Periodically, I schedule a training session, conducted by one of our librarians, for the production assistants regarding issues such as copyright, public domain and fair use. In at least one case, legal advice regarding fair use was requested from the Office of General Counsel." (personal communication from Cathy Schulz July 14, 2009)

Notre Dame faculty participation in the OCW effort is voluntary. Each faculty member will "publish only as much content as they are comfortable having on a Web site that is freely accessible worldwide." Faculty maintain ownership of most course materials used in the OCW courses. Student materials posted are the property of the student. Where significant University resources were used to develop and produce the course, ownership stays with the University. Course materials are screened by the Notre Dame OCW team for ownership determination and licenses for use are obtained. Copyrighted or other proprietary materials where a license could not be obtained are not made available for OCW. Many course packets and other learning aids are not included in the OCW version due to the copyright restriction. (http://ocw.nd.edu/help/help_text) Under terms of use, the materials in the OCW courses are licensed by default under a Creative Commons Attribution license 3.0 unless stated otherwise on a specific course .

University of Michigan

(Much of the following material comes from a conference call held July 15, 2009. The call included Garin Fons and Pieter Kleymeer from the University of Michigan and Darin Oviatt at BYU).

The OCW and other OER resources made available from the University of Michigan evolved from the interests of two students in the School of Information at the University. In the Fall of 2006 the students discussed their shared interest in the emerging concepts of Open Education, particularly the open courses offered by MIT. The students set about to develop a mechanism to make course materials and student work at the University of Michigan available in open formats on the internet. The students, since graduated, are now employed full-time by the University and are continuing the efforts to add OER to

the University's collection. This effort has been dubbed Open.Michigan.

The University decided to pursue Open.Michigan with the following mission:

The site has a vision of a next generation learning environment: an environment that fosters collaboration around curricula, course materials, and content; generates connections between disciplines, teachers, and learners; and inspires use of educational materials in a more personalized and effective way. Envision an environment beyond a collection of courses. We hope to build a space where the interplay and visualization of curricular paths, learning modules, and discrete pieces of educational content expand a user's ability to comprehend material, adapt it to their individual needs, and contribute it back to the global community. Current efforts focus on developing a repository of course materials and identifying discrete educational content objects. Future work will analyze the connections between curricula, courses, and content to develop and display more comprehensive understandings of our learning environment.
(<http://michigan.educommons.net/about>)

Open.Michigan includes a variety of resources including "course materials, videos, software tools, and student work, that all have open copyright licenses."
(<http://michigan.educommons.net/>) The repository is made available under a default Creative Commons Attribution license 3.0 unless stated otherwise on a specific course.

Staffing to accommodate the OER efforts include these two full-time employees, a full-time publications and communications specialist, and shares a full-time software developer. The effort is primarily student-driven and relies upon students interns and volunteers. Some funding for the effort in 2009 comes from the William and Flora Hewlett Foundation, and half of the funding is provided by the University Office of the Provost. The effort is currently housed in the School of Medicine and is working on a project to make all first and second year medical courses available in the OCW format. Though housed in the School of Medicine, OER efforts continue to extend across the entire curriculum where there are interested students and faculty. The OER efforts have received significant administrative support, particularly from the Dean of the School of Medicine and the Provost.

Discussions regarding the long-term strategic direction and funding for these efforts have been held with the University President (also supportive of the OER efforts) but have not been finalized beyond the current year. Options considered include assigning the OER team to the central administration, as part of the University Library, or ongoing within particular schools. Another options considered by the OER team is to make the efforts independent of the University and expand the methods for student-led OER creation to multiple Universities using the tools developed as part of the Open.Michigan project.

Additional ongoing funding for Open.Michigan efforts at the University have been provided by Open Society Institute (OSI). The University also acknowledges receipt of funds from the Foundation for Advancement of International Medical Education and

Research (FAIMER) for limited specific purposes.

(<https://open.umich.edu/community/collaborators.php>) The stated objective of the open.michigan initiative is "to create and share knowledge, resources, and research with the global learning community." (<https://open.umich.edu/>)

One significant outcome of this effort was the development of dScribe, a software application that facilitates student-led creation of OER from existing course materials.

Open.Michigan explains:

The dScribe model makes use of a suite of software tools to help manage the process of gathering, vetting, and publishing course material. The software is currently in development. It will be both modular and portable, allowing other institutions to adapt and utilize the tools necessary to implement and manage their own OER publishing process. At the moment, the development team is building both a migration tool for exporting material from the U-M Sakai Collaboration and Learning Environment and web-based content capture and processing tools for managing content as well as student-faculty interactions. (<https://open.umich.edu/projects/oer.php>)

One of the aspirations of the Open.Michigan team is to make the dScribe and other tools developed available to other institutions to expand the OER available across the internet.

The Open.Michigan model to develop OER uses students on campus who act as "scribes" to publish course content into the OER library. Students are recruited at the beginning of each semester through announcements in various public forums, advertising on bulletin boards, and through word of mouth. While most students are volunteers, some departments and schools on campus pay students engaged in publishing their materials to the Open.Michigan library. The OER team holds a beginning of semester training meeting and then meets weekly with the student scribes and interested faculty to review efforts, answer questions, and provide additional support and training as needed. The process uses the dScribe software developed by the originators of the OER efforts at the University and involves students acting in conjunction with various faculty members, and advised by the OER team, to publish course materials to the Open.Michigan library.

This approach leverages the talent and interest of students and provides them with an opportunity to develop a unique perspective on the creation of classroom learning materials. It also gives them the chance to collaborate with faculty in new ways. During this process, faculty may learn about new presentation methods and techniques or new open resources, and benefit from the creativity of motivated students reviewing and working with their course material. (<https://open.umich.edu/projects/oer.php#dscribe>).

The dScribe process expands the student-led effort for making OER resources available across the curriculum of the University. The process allows content to be analyzed for intellectual property ownership concerns before making the content available. The leveraging of the student resources not only reduces costs to the University, but also

creates a generation of students with a knowledge of the issues related to OER (especially intellectual property issues) and a possible commitment to moving work in this area of education forward. Faculty and student participation is voluntary. The analysis of exit interviews conducted by the OER team at the end of each semester reveals that the students are motivated by the chance to work with other students, develop relationships with faculty, and out of an interest in publishing OER materials. One frequently mentioned area of interest was familiarization with IP law (particularly mentioned by students majoring in the School of Information). Another frequently mentioned motivator was the social opportunity and food provided at the regular meetings of the OER team with the student scribes and faculty.

Many of the institutions referenced in this document are invested in the open courseware component of OER. The Open.Michigan initiative extends to other open resources including textbook materials, student work, and publications from research projects. This allows the expansion of knowledge beyond learning objects organized into courses into a library of resources that can be accessed, remixed, and reused by individuals the world over.

The Open.Michigan initiative includes a blog, wikis, social networks, twitter, iTunes U, and materials in document formats (html, xml, php, pdf) and multiple audio and video formats including an Open.Michigan YouTube channel. The base technology for the Open.Michigan courses is the eduCommons open source software platform. The OER initiatives also support the development of tools that can be used to create OER. This toolkit, called OERca is an attempt to create an open software product designed "to help manage the process of gathering, vetting, and publishing course material. Open.Michigan's goal is to build the software so that it is both modular and portable, allowing other institutions to adapt and utilize the tools necessary to implement and manage their own OER publishing process." (https://open.umich.edu/wiki/Main_Page)

Stanford Engineering Everywhere (SEE)

Stanford Engineering Everywhere (SEE) provides free online course content to the public in an environment that allows self-learners to communicate and interact with fellow self-learners. SEE launched in the Fall of 2008 founded on the belief that technology transfer and sharing of research and teaching is an important part of Stanford's mission (<http://www.stanforddaily.com/cgi-bin/?p=193>). SEE's initial offerings include 10 courses from the Computer Science and Electrical Engineering departments at Stanford, including the three-course introductory sequence in Computer Science. SEE is produced by the Stanford Center for Professional Development (SCPD), which has 40 years of expertise in the realm of distance education, and received funding from Sequoia Capital, a bay area venture capital firm.

Stanford faculty volunteered to participate in SEE, and in doing so release materials to the public under Creative Commons licenses, such as the Attribution-Noncommercial-

Share Alike license. Learning materials for which Stanford Engineering was unable to secure a copyright holder's consent has been omitted from SEE.

Looking beyond merely publishing decontextualized learning materials online, SEE recognizes growing social media networks as a way to create connections between learners everywhere. Part of SEE's technological infrastructure includes access to course-specific Facebook pages, which are intended to be used by self-learners as public, self-moderated learning communities (Business Wire, September 17, 2008 <http://www.businesswire.com/news/google/20080917005182/en>). In addition to facilitating the formation of online, self-learning communities, SEE encourages educators from around the world to reuse Stanford course materials in their own classrooms. SEE collects feedback from community users via an online survey.

SEE's website, <http://see.stanford.edu>, provides OER as digital documents (HTML, PDF) as well as videos. Video content is made available as both direct and distributed downloads (via Bit Torrent) for viewing on portable media devices such as iPods and Zunes. SEE and other Stanford OER video also available on YouTube (<http://www.youtube.com/stanford>) and iTunes U (<http://itunes.stanford.edu/>). Complete packages of course materials are available for download as ZIP, which facilitates ease of access for reuse and remix.

University of Utah

The University of Utah's OpenCourseWare (U of U OCW) project provides a free and open educational resources for faculty, students, and self-learners throughout the world. Like other OER projects, the University of Utah does not grant credits or degrees, and does not provide access to faculty. University of Utah president Michael Young stated,

By making its course content and materials freely available, the U is extending its reach far beyond the classroom to empower lifelong learners around the globe. I consider it the University's duty to foster a global perspective in every aspect of our education; I cannot think of a more noble cause for any institution of higher learning. (<http://my.courses.utah.edu/course/category.php?id=3>)

University of Utah's project was announced and launched at the 2007 OpenEd Conference as a member of the Utah OpenCourseWare Alliance. The project has published a dozen OCW, and is a now member of the international OpenCourseWare Consortium (<http://www.ocwconsortium.org/>). Initial funding for the project came from the Utah OpenCourseWare Alliance. The project has since been sponsored and maintained by the university's department of Continuing Education - Distance Education (<http://continue.utah.edu/distance/>), which commits limited resources from two existing staff members. Faculty members who wish to publish OCW are guided through a process that closely resembles instructional design models for distance learning courses.

Copyright of intellectual property published as OCW is maintained by the owner as designated under University of Utah intellectual property policies. Faculty opt-in to the U of U OCW project, and in doing so choose to license their materials under a Creative Commons license. Though faculty are free to choose the Creative Commons license that best fits their philosophy of openness, U of U recommends the Creative Commons Attribution Noncommercial Share-Alike license.

The U of U OCW web site is at <http://my.courses.utah.edu>, and utilizes the free and open source learning management system (LMS) Moodle (<http://moodle.org>) to publish and host OCW. Though the project is in its infancy, U of U recognizes significant potential in using Moodle as an OER hosting system. The UK Open University's mammoth OpenLearn project also utilizes Moodle for OER hosting, and has modeled a number of customizations to the system to support not only resource publishing, but also self-forming learning communities and the sharing of remixed OER.

U of U OCW materials are available as HTML, PDF, and other digital formats. Future OER may include video, audio, and other rich media.

Utah State University

Utah State University OpenCourseWare (USU OCW) received administrative approval in 2004 and published open courses from 2005-2009. USU OCW received multiple rounds of funding from the William and Flora Hewlett Foundation as well as a one time appropriation from the Utah state legislature as part of the Utah OpenCourseWare Alliance. In stating the mission of USU OCW, President Stan Albrecht said:

In the tradition of land grant universities, Utah State University OpenCourseWare assures that no individual who is prepared and who desires the opportunity to advance his or her education is turned away. USU OCW provides an unprecedented degree of free and open access to the knowledge and expertise of our faculty for the benefit of every citizen of the state of Utah and every person in the world. As we enter the 21st century, services like OpenCourseWare will enable land grant institutions to more fully accomplish their missions.

USU OCW was run by the Center for Open and Sustainable Learning (COSL) in the Emma Eccles Jones College of Education's Department of Instructional Technology and Learning Sciences. USU OCW continues to receive between 40,000 and 50,000 unique visitors each month.

The key technical infrastructure for USU OCW was eduCommons, the free and open source opencourseware management system developed by COSL and used by approximately one third of OCW projects around the world. Hosting and technical support for USU OCW was provided by enPraxis, a COSL spin-off that specializes in hosting eduCommons sites.

USU OCW utilized on a number of content development models: some faculty did all their own course and content development, some courses were developed as student or course projects in the Department of Instructional Technology and Learning Sciences, and USU OCW staff digitized and created course content for some of the USU OCW courses.

Faculty participation in USU OCW was strictly optional. USU OCW used a modified version of the MIT faculty IP release form to allow faculty to grant USU OCW formal permission to distribute their course materials under one of the Creative Commons licenses. USU OCW courses were licensed using a spectrum of Creative Commons licenses from the most open license (the Attribution license) to the most restrictive (Attribution-Noncommercial-NoDerivatives). Though it provided no incentives for faculty to participate in USU OCW (like grant funding or course releases), USU OCW published materials from 84 USU courses over its four years of operation.

Of the six projects examined USU's is the only OER project that is no longer operating. Funding for USU OCW stopped on June 30, 2009, though the OCW web site remains active. USU operated primarily on one-time funded, and when that funding ran out, the economic environment of the institution did not allow for internal or State funding to continue the project. Additionally, USU OCW was not integrated with an established, relevant strategic host or partner unit on campus, such as the faculty technology center or distance learning department. These sustainability pitfalls should be considered as cautions for other OER projects.

Policy Framework

Based on examples described in the comparative analysis above, and with an understanding of potential benefits of an OER projects to the institution, we recognize the following key considerations for the establishment of institutional policies that would support OER/OCW:

Administrative Support

We have highlighted institutional OER projects because of the significant advantages that a cohesive, institution-wide OER policy and support system can have for both the initiation and long-term success of the projects. Because institutionally-driven efforts in the U.S. are still minimal and in their infancy, most OER current development is driven by interested faculty and students. And though the enthusiasm and passion driving these "grassroots" projects are admirable, their efforts have been hampered by lack of institutional support and resources.

Institutional support may come in a variety of forms. At the very least, institutional support should provide a mechanism through which faculty authors may open-license materials. The institution should provide an online hosting system through which faculty--either independently or assisted by designated OER staff--can upload, tag, publish, and thereby share OER. And though most institutions will not be able to afford the full-scale

OER development process exemplified by MIT and others, many institutions already have faculty technology support centers whose staff who can assist faculty in the digitization and publication of materials. Some institutions have stimulated interest in OER by providing monetary stipends to early participants.

Institutions can provide intrinsic support for OER projects by recognizing and lauding their OER and faculty authors through institutional publications. Further, faculty support can be made known through recognition of OER participation and publishing in the tenure and promotion process (or, in BYU's case, Continuing Faculty Status).

In order for institutions to maintain OER projects in the long-term, institutional administration must decide how OER fits into their mission and strategies. Institutions who adopt the opening of their educational resources as part of other strategies, such as their educational strategy or their student recruitment and retention strategy, may then more easily make the funding of such efforts a key part of their strategic planning.

Faculty Participation

In the policies reviewed in this document, every institution that has adopted OER policies makes faculty participation voluntary. Interested faculty are granted access to institution resources charged with making the materials available. In instances where the materials are not already the property of the institution, copyright on OER is retained by the faculty. At the same time, faculty should be fully informed of the ramifications of licensing their materials under Creative Commons license.

In our survey of institutions, we did not find an institution that required faculty participation; all institutional OER projects were "opt-in".

Intellectual Property

One of the most troubling and expensive aspects of OER adoption at institutions is the development of a consistent process to protect the institution from violation of intellectual property (IP) laws. Some institutions maintain IP policies that identify faculty authors as the Copyright holder; in such cases open licensing of the faculty authors' IP is little more than the formality of s/he adopting a Creative Commons license (see below). In other institutions, the school, college, or university may own faculty authored materials--for example, as "work for hire". In such cases the institution must agree to make the IP available under an open license. Regardless of the legality, faculty may be sensitive to institutional control over open licensing of IP; therefore, institutions should consider an "opt-in" policy as recommended above.

Some IP found in learning materials may be owned by third-parties, for example, textbook publishers. To avoid third-party copyright infringement, all materials to be published in the OER library should first be screened and third-party IP identified. Third-party IP owners may be contacted to request consent for publishing of materials as OER, or such materials may be filtered or removed prior to OER publishing. To this end, many institutions maintain a dedicated staff within the OER project assigned to screen materials; other utilize other campus resources, such as library or administrative staff.

Alternatively, the responsibility of screening out third-party IP may be left to faculty, similar to the responsibility they already accept when presenting materials in the classroom.

Open Licensing

Open licensing allows intellectual property owners to modify the copyright on the intellectual property to facilitate openness. A resource that is "open" may provide one or more of the following abilities to the end-user:

- Reuse. Materials may be reused by others.
- Redistribute. Users may share with others.
- Revise. Users may edit materials.
- Remix. Users may significantly adapt or change materials.

Several open licenses may be suitable for OER, but the most popular and well-known open license is the Creative Commons license (CC). Creative Commons licensing does not change the copyright ownership; rather it allows for affordances and sets stipulations for end-users based on the following license *conditions*:

Attribution (By)	The standard condition for CC licenses. Usage requires citing, referencing of the creator/source. Many believe that--by itself--this is the most open license for OER.
No Derivatives (ND)	This condition mandates that no derivative works or adaptations may be made by users. This restrictive condition is uncommon in OER, as it disallows any revisions or remixes of materials.
Non-Commercial (NC)	This condition mandates that users not sell or make commercial usage of the licensed materials. This is a common condition of OER.
Share-Alike (SA)	Usage requires that any derivatives, remixes, or adaptations of the work be licensed under the same Creative Commons license. This condition is common for OERs, as it preserves the openness of the work in any and all future derivatives.

Creative Commons licenses are created by choosing one or more of the aforementioned conditions (<http://creativecommons.org>). While many institutions recommend a single Creative Commons license for faculty-authored OER, others encourage faculty members to choose the specific CC licensing conditions under which their materials will be published. Regardless, it is important that OER project web pages clearly indicate the CC license under which materials are published, with a hyperlink to the legal details of the license, and additional information on how attribution should be provided to the copyright holder.

Student Services and Access

Most OER projects do not consider self-learners as students, and a consistent feature of the OER policies reviewed is the restriction of access to any services from the institution. Such policies mirror that of MIT, which states:

"MIT OpenCourseWare is a free publication of MIT course materials that reflects almost all the undergraduate and graduate subjects taught at MIT.

- OCW is not an MIT education.
- OCW does not grant degrees or certificates.
- OCW does not provide access to MIT faculty.
- Materials may not reflect entire content of the course." (About MIT OpenCourseWare, 2009)

Since self-learners do not have access to student services, and no credit is awarded, there is no need to create and maintain a system that provides for secure login, student grade tracking, records, and participation is not required.

Institutions may, however, leverage OER projects to provide additional or enhanced services to registered students. Such service may include access to OER as a preview of the course or as a study aid, or use of OER as a planning or advisement tool.

Technology

A number of online publishing and content management systems are available that can facilitate the transfer, development, work flow, and publication of learning materials as OER. Since many of these systems are free and open source, they allow interested faculty and institutions to engage in OER without significant cost to technology or staff resources. The costs of the hardware required to host and service users is marginal, particularly in cases where the institution already has an online delivery environment that may be dual-purposed for OER, such as a learning management system or content repository.

Possible OER publishing platforms include:

- edumcommons, an open-source publishing platform specifically created for opencourseware
- Drupal or Joomla, open-source content management systems
- Moodle or Sakai, open-source learning management systems
- WordPressMU, a blogging/community publishing platform (used by the McKay School Open Learning project)
- Other custom-built or customized content publishing platforms or repositories

As OER activity grows at an institution one can expect the quantity of OER to grow, and the number of external visitors to university web sites to increase. Though such increases will provide benefits to the institution and the OER project, they will over time also

increase the costs for storage, bandwidth, and server maintenance.

Funding and Sustainability

Funding for early pilots and development efforts in OER have been provided by philanthropic or governmental organizations, or through institutional sources such as endowments. Funding continues to be an ongoing issue as economic times create uncertainties in the endowments for both the institution and its benefactors. Much of the early work in this area in the U.S. has produced significant materials that have blessed those who now have access. Many of these efforts have either been terminated, or are struggling to continue to exist due to these financial concerns. Institutions are now proposing and testing funding streams that may be available outside of the direct institutional support or philanthropic donations.

Some OER advocates have argued that OER projects can only be sustainable when mainstreamed--that is, part of normal institutional workflows. For instance, the cost of co-publishing a new distance learning or online course as OER is relatively low compared to processing existing course materials through a publishing workflow specifically designed for a distinct OER project. Institutions that are already producing digital materials to which it holds copyright or employs the copyright holder may find that adding an OER publishing option is simple, and can be streamlined as an integral part of the process.

Benefits of OER

The MIT OpenCourseWare project released an executive summary in 2004, and an evaluation of their initial opencourseware in 2005 that highlighted numerous benefits that engagement in OER provided for their institutional community. Conversations with other OER project coordinators reinforce MIT's findings, and lead us to predict the following benefits of engaging in OER at BYU:

- **Support student advising.** Published OER could provide advisors and students with access to actual course syllabi and content, providing a more accurate picture of the course.
- **Increase student learning.** Student access to OER can support learning by providing digital materials anytime, anywhere. Such materials are not trapped within a proprietary learning management system, available only for a single semester, but are open to students throughout their academic--and even professional--career.
- **Encourage faculty collaboration.** Faculty may leverage the efforts of their colleagues to produce learning materials that can be shared across the department and even the institution. Faculty may collaborate on new versions or revisions of existing curriculum published as OER.
- **Foster an open campus community.** Greater transparency in learning objectives and increase emphasis on sharing information among students and faculty.

- **Enhance the institution's reputation.** OER are freely available online, providing broad access to learning materials to people around the world. In addition to the philanthropic gesture of openness, sharing of educational resources showcases departments' offerings, and provides a glimpse at the great minds and ideas fostered in the university environment.
- **Bolster alumni relations.** OER can provide alumni with a reason to visit institutional web sites, whether to remember an element of their academic career, or bolster their knowledge in their professional lives. Strong OER projects can instill pride in alumni that maintains close ties with the institution.
- **Share the inspiration and mission of BYU.** BYU's institutional objectives include, "Extend the blessings of learning to members of the Church in all parts of the world", and, "Develop friends for the University and the Church." Sharing OER with educators and self-learners around the globe can be an excellent introduction to BYU and its faith-based mission. (BYU Institutional Objectives, 2009)

OER Efforts at BYU

Several fledgling but significant OER pilot activities at BYU are underway that may lead the institution toward active, institution-wide engagement in the OER movement:

BYU Independent Study OCW Pilot Research Project

In the late spring of 2009, BYU Independent Study made several courses available in the Open Courseware format. The courses were already offered through the traditional Independent Study on-line course format for credit. The OCW pilot project manipulated the content of several of these courses to remove student services, evaluations, and faculty interaction components, making the content available in the OCW format.

The OCW pilot is associated with dissertation research being conducted by a doctoral student in the IP&T program at the University. The research is evaluating the affect of the OCW conversion as a marketing tool to create a funding stream for OCW efforts. In summary, the OCW versions of the courses contain links that invite the student to take the course for credit by registering and paying the traditional enrollment fee. The number of OCW participants, and the number who convert to paying enrollments, are tracked. The conversion rate in the early stages of the project indicate that 2%-3% of OCW participants eventually convert to the paid enrollment version of the course. Additional information on the costs of the conversions to OCW format, and the estimated affect of the OCW on enrollments are being considered in the study.

The completion of this research should yield interesting data on the costs, impacts, and revenue potential of OCW courses. Future studies can build on this research to determine development and delivery models that may successfully exist within the revenue streams such strategies would provide.

David O. McKay School of Education Open Learning Project

The McKay School of Education (MSE) currently supports faculty who would like to openly publish their course materials through its Access to Knowledge (A2K) Initiative. A2K faculty and students work with interested faculty to publish and share course materials on the school's Open Learning Project website (<http://open.byu.edu>). The site currently houses a handful of courses from the Instructional Psychology & Technology department, with a number of additional faculty / courses waiting in line for support services to become available.

Potential for Hosting OER in a Central Repository

A key feature of many OER projects is the use of technology to process, store, index, and share OER from a central content repository. Existing content repositories at BYU, such as the Harold B. Lee library's Digital Resources (ContentDM) system, provide controlled access to a broad range of resources and artifacts. Such repositories might facilitate publishing of OER through a modification of the existing system. On-campus expertise with these systems is available, and may be leveraged to move BYU OER projects forward without creating redundant content hosting systems.

The key idea of a central OER content repository is that it might be utilized by departments and units across campus, and encourage storing and sharing of existing resources. The Center for Teaching and Learning (CTL), for example, is continually producing new learning objects and resources for BYU faculty. Though CTL maintains copies of these resources internally, they are neither centrally stored nor processed for sharing as OER. By providing with the process and the means by which these learning resources might be shared as OER, BYU could quickly tap into a vast number of existing high-quality resources, releasing such resources to the public quickly, and without the tremendous cost associated with digital conversion necessary for some OCW projects.

Recommendations

Support Pilot Projects and Research at BYU

Several pilot OER projects are already under way at BYU, and more opportunities are certain to arise. As BYU moves towards an informed, reflective policy for engagement in OER, administration could consider a structure and approach to encourage and support these pilot projects and research as a means of testing ideas and interest in the movement.

Provide Guidance and Policy Direction

Our study reveals that OER efforts at institutions throughout the U.S. have been led by interested faculty and students. The increasing popularity of the OER movement is likely to result in increasing interest on the part of members of the BYU community. As individuals and departments explore opportunities and desire to develop and share materials with the OER community, the University will need to develop institutional

policy governing these sharing activities. Research conducted by the Office of the Assistant to the Academic Vice President - Academic Technology shows that 5% of BYU faculty have already begun sharing course materials under an open license in the OCW/OER format. (Absent a policy statement explicitly directing otherwise, BYU's existing [Intellectual Property Policy](#) permits faculty to do so as long as there is not "substantial" use of university resources in developing course materials). 44% of BYU faculty responding to the survey indicated they would be more inclined to share their materials in the OCW/OER format if University "support" was provided. The results of the comparative analysis suggest that institutional OER projects require cohesive and integrated policy and supportive administration for long-term success.

We recommend that the University initiate a conversation to establish guidance for members of the faculty and student-body who desire to participate in OER efforts.

Examine Resource Availability to Support Sharing

If members of the BYU community continue to move toward sharing OER, institutional resources will increasingly be utilized by these efforts; the question is whether or not these resources will be officially sanctioned for OER and coordinated for maximum efficiency and value of investment. Integration of OER efforts with existing departments or units may be the best path to leverage existing resources.

Intellectual property ownership of materials developed by faculty will also need to be considered, and may lead to use of University resources to address copyright concerns. In some cases, faculty may produce materials in a manner that utilizes "substantial" University resources, thereby designating BYU as the copyright owner as described under the BYU Intellectual Property Policy. Further, liability concerns may necessitate the involvement of campus personnel to assure that any materials made available in OER formats are free from 3rd-party intellectual property. Finally, faculty and students who elect to engage in OER may be diverting time from other University work.

Consideration of resources used for OER efforts should include both the technology and support needs of BYU faculty. A web-based OER publishing platform or repository will be necessary to provide public access to shared materials. This platform may be an existing system customized or expanded for OER, or it may be a new platform specifically designated for OER. Faculty may simply be granted access to publish their learning materials on the OER system. Though this approach will cause minimal impact on University resources, faculty will still require training on use of such a system. Alternatively, BYU may also elect to provide services to faculty to facilitate the digitization and publishing of their learning materials.

If BYU chooses to share University-owned learning resources, for example, those created by the CTL, this will require a directive and provision of resources to the appropriate campus unit(s).

We recommend that the University thoroughly discuss the utilization of resources to support OER efforts and plan to allow for hosting of OER using campus IT resources as a

minimum. We recommend that the University examine the possibility legal liability that may arise from improper dissemination of material owned by others and make provisions to prevent such liability. All resources used to support OER should be transparent and approved through proper channels.

Facilitate Processes for Sharing, and Tracking OER

If the University chooses to support faculty and student participation in OER efforts, proper processing and sharing of OER will provide for useful tracking data. We recommend instituting the following work flow and tracking measures:

- Create a process to catalogue OER materials
- Provide access from a central University infrastructure
- Develop a control process for the roll-out of content to insure all IP considerations are properly vetted prior to release, if there are concerns about University liability.

Conclusion

If BYU chooses to include support of open educational resources within the scope of the University's mission, policy is needed to ensure successful and sustainable projects wherever they grow on campus. To this end we have surveyed 6 institutional OER projects and gleaned important information from each regarding policy, resources, and sustainability. During our comparative analysis we have noted potential benefits--both short and long-term--to the University and its constituents. Our comparative analysis found that successful OER projects provide administrative support, encourage faculty participation, protect intellectual property while providing for open licensing, recognize the distinction between student and self-learners, utilize technology efficiently and in context of the institution, and provide appropriate funding and support for sustainable practices. As BYU faculty and students begin to explore OER projects, we recommend that the University consider a strategy that supports these pilots and research, provides policy guidance and direction, examines resource availability to support sharing, and facilitates processes for sharing and tracking of OER.

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