THE OPEN COURSE LIBRARY:
USING OPEN EDUCATIONAL RESOURCES TO IMPROVE
COMMUNITY COLLEGE ACCESS

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To the Faculty of Washington State University:

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dissertation of MARYANN LUND GOODWIN find it satisfactory and recommend
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Community colleges are committed to meeting the educational needs of the communities they serve and they have increased access to higher education by offering new and innovative services to students often unable to attend traditional baccalaureate institutions. An innovation known as Open Educational Resources (OER) promises to make college more accessible and affordable by reducing textbook costs. OER are digital materials offered openly and freely for others to use and reuse for teaching, learning and research.

This dissertation, based on a descriptive qualitative study, examines how faculty participating in the Open Course Library, a grant project sponsored by the Washington State Board for Community and Technical Colleges, redesign community college curriculum using OER to improve access, student success and reduce student costs to attend institutions of higher education. The study used interviews and document analysis to look at how faculty approach innovation and adopt and change curriculum in light of new resource and delivery options. The study also considered how OER influence curricular redesign and looked at the
resources faculty relied on to redesign course curriculum for the Open Course Library.

Viewed through the lens of Rogers’ (2003) theory of the diffusion of innovations and Innovation-Decision Process model, study findings suggest that while faculty may be motivated to adopt new innovations like OER, for some, the time it takes to identify and integrate OER into courses presents a significant barrier to adoption. Financial and other incentives can mitigate these barriers, however, and encourage faculty to adopt new curricular innovations. Further research is needed to determine the most effective way to motivate faculty to develop and use OER in order to increase educational access and student success.
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Dedication

This dissertation is dedicated to my family:

- Kyle, who never questioned my decision to go back to school

- Maddie and Anthony, who took great delight in asking me “Shouldn’t you be working on your dissertation, Mom?” during the past year;

- Eric and Michael who encouraged me as only brothers can, and

- Mom and Dad, who laid the foundation for success with their love and high expectations.
CHAPTER ONE

INTRODUCTION

Founded in the early years of the twentieth century, community colleges have been responsible for opening the door to higher education for many who would otherwise be locked out. “Established in every metropolitan area, they were available to all comers, attracting the ‘new students’: minorities, women, people who had done poorly in high school, those who would otherwise never have considered further education” (Cohen & Brawer, 2008, p. 31).

Open access to higher education reflects the belief that democracy survives and thrives when people are educated (Vaughn, 2006). Community colleges are committed to serving their communities “through an open-access admissions policy that offers equal and fair treatment to all students” (Vaughn, 2006, p. 3). Community colleges have multiple missions one of which is to provide access to higher education to students living within a particular geographic area. Many of the students served by community colleges would otherwise be unable to attend a traditional college.

Community colleges provide access to higher education for students unable to afford the tuition at a baccalaureate institution, those unable to leave their homes, work and /or families in order to attend college full-time, and those who do not have the skills necessary to succeed in college level courses (Cohen & Brawer, 2008). Indeed, the growth experienced by community colleges has been fueled primarily by an interest in serving new and neglected groups such as immigrants, displaced homemakers, ethnic minorities and older adults (Callan, 1997). Community colleges have been able to increase access to higher education (Townsend & Bragg, 2006) by implementing new and innovative educational services to accommodate
the educational needs of these underrepresented groups. As a result of this innovation, by 2007, 43% of all undergraduates in the United States were attending a community college, including 40% of all first-year students (American Association of Community Colleges, 2010).

Unfortunately, at the end of the first decade of the 21st century, the United States finds itself in a situation where too many young adults and unemployed workers find they do not have the education necessary to succeed in the workplace. As President Barack Obama told a crowd at the University of Texas at Austin on August 9, 2010,

In a single generation, we've fallen from first place to 12th place in college graduation rates for young adults. Think about that. In one generation we went from number one to number 12. Now, that's unacceptable, but it's not irreversible. We can retake the lead. If we're serious about making sure America's workers -- and America itself -- succeeds in the 21st century, the single most important step we can take is make -- is to make sure that every one of our young people . . . has the best education that the world has to offer. That's the number one thing we can do (Obama, 2010, August 9).

According to President Obama’s administration, community colleges can provide the educational experiences Americans need to obtain the high-demand skills and knowledge required to compete for jobs in emerging industries (White House, President Barack Obama, n.d.). The following section discusses how community colleges have used innovations to reform curriculum in order to meet the educational needs of diverse groups of students.

**Curriculum Reform to Increase Access**

Community colleges have a long and innovative history of providing access to higher
education and encouraging student success. Innovations in the use of distance education have been used to extend access to students who would otherwise be unable to attend college. The 2008 Sloan Consortium report on online education found that over one-half of all students enrolled in online courses were attending a community college in the fall of 2007 (Allen & Seaman, 2008). The report suggests this trend may be due to the fact that community colleges consider online distance education central to their missions (Allen & Seaman, 2008).

An analysis of retention trends shows many students begin college but fail to complete a degree or certificate. In 2009, only 53.7% of all public community college freshmen returned to school as sophomores (ACT, 2009). Students who left college before graduating reported they needed to work full time and didn’t think they could work and attend school at the same time (Johnson, Rochkind, Ott, & DuPont, n.d.). Although online learning options offered by community colleges might help these students complete their education, they don’t address the cost of attending college. A study conducted in 2009 found that 55% of students who left college before earning a degree could not afford to return to college (Johnson, Rochkind, Ott, & DuPont, n.d.). Furthermore, 36% of the students surveyed who had not completed a post-secondary degree responded that the cost of textbooks and other fees affected them ‘a lot’ with another 24% saying these costs affected them ‘a little’ (Johnson, Rochkind, Ott, & DuPont, n.d.).

Recognizing that accessibility goes beyond providing flexible scheduling and the use of technology to provide online instruction, the Washington State Board for Community and Technical Colleges (SBCTC) sponsored a competitive grant project to redesign curriculum using Open Educational Resources (OER) in 2010. The Open Course Library (OCL) grant project is based on the principles of the OER movement, which assert knowledge is a public
good that should be shared, used and reused by all who can benefit (Smith & Casserly, 2006). The OCL project has the potential of increasing access to higher education by creating curriculum that can be used in traditional classrooms as well as in hybrid or online environments while also making courses more affordable by encouraging faculty to incorporate low cost or free, open source materials into their courses.

The Cape Town Open Education Declaration states that the open education movement “is built on the belief that everyone should have the freedom to use, customize, improve and redistribute educational resources without constraint” (Cape Town Open Education Declaration, 2007, para. 2). The declaration advocates three strategies to increase the impact of OER: (a) encouraging educators and learners to participate in the emerging open education movement, (b) asking educators, authors, and others to release resources with open licenses to facilitate use and sharing by others, and (c) requesting public entities like government, school boards, and higher education to make open education a high priority.

David Wiley, one of the founding members of the OER movement, is passionate in his support of openness in education. He writes,

I am frequently asked: ‘What is the appropriate role of openness in education?’ I find the question to be deeply troubling and insidious. The question implies that openness might play any of several roles in the educational enterprise—a core or a peripheral role, a large or a small role. The question subtly distracts people from seeing that openness is the sole means by which education is effected [sic]. If a teacher is not sharing what he or she knows there is no education happening. . . . Education is sharing. Education is about being open (Wiley, 2010, p. 16).
Washington State and the Open Course Library Project

In Washington state, interest in the use of OER has been growing among policy makers and community college leaders. The SBCTC’s Strategic Technology Plan acknowledges the potential of OER, noting that information technology can make education more accessible and user-friendly even though “we are late to recognize the educational impact and potential of the Internet, late to take advantage of the shift to open, student-centered, web-based applications, and late to listen to what our students and faculty are telling us about what they need to thrive in the 21st century” (The Board, 2008, November, p. 3).

Similarly, a report to the Washington State Legislature found that “higher education has moved from a culture of information scarcity . . . to a culture of information abundance” (eLearning Work Group, 2009, p. 12) and OERs provide faculty and students with new opportunities for learning. Additionally, student groups are telling legislators and educators that the textbooks required for college courses cost too much and that they want faculty to provide more affordable options (The Student PIRGS, n.d.).

The State Board’s Open Course Library (OCL) project, funded by the Bill & Melinda Gates Foundation and the Washington State Legislature, provides faculty with an incentive to incorporate OER into courses which will be made open and available for anyone to use, regardless of where they live or how they learn. The OCL grant provides funding to redesign 81 high enrollment, gatekeeper courses\(^1\) using open source materials. The grant also offers an opportunity to respond to student concerns over textbook costs as well as to the Washington State Legislature’s interest in ensuring access to the “culture of information abundance”

\(^1\) Gatekeeper courses are considered to be college-level courses with low rates of student success which prevent students from progressing in their academic pursuits (Union County College, n.d.).
The rationale for mandating the use of OERs and affordable textbooks in the OCL courses is based on the understanding that “instructional materials in these courses are expensive and limit students’ ability to afford college. For students to get the courses they need, when they need them, at an affordable price, these disparities need to be eliminated” (Washington State Board for Community and Technical Colleges, n.d., p.1). The next section describes the OCL project in more detail.

**Description of the Open Course Library (OCL)**

The OCL project is an example of a curriculum reform project. As one project funded under the Washington State Board for Community and Technical Colleges’ Student Completion Initiative, its goal is to “improve access and completion of higher education for low income young adults in Washington State” (Washington State Student Completion Initiative, n.d., p. 1).

The OCL project expects to fund the redesign of 81 high enrollment, gatekeeper and pre-college courses mandating that each redesigned course limit student costs for instructional materials, including required textbooks, to $30 or less, per course. By lowering the cost of enrolling in these courses, the grant project promises to increase access by making highly enrolled courses more affordable for low income students. The SBCTC estimates that students will save $6.4 million each year even if only 20% of Washington state community and technical colleges eventually adopt all 81 redesigned courses (Open Course Library, 2011b).

Because the redesigned curriculum will be 100% digital and designed for delivery in traditional classrooms as well as hybrid and online classes, access to high demand classes will be enhanced as students will be able to access sections in the format that best suits their needs.
The 81 gatekeeper courses included in the OCL project include general education courses such as US History I, II, and III, Music Appreciation, English Composition I, Calculus, Physical Geography and lab-based Chemistry.

Faculty were selected to participate in the project based on a competitive grant process, with successful applicants granted $15,000 to complete each course redesign. Recognizing that a comprehensive course redesign project requires support, the OCL project also solicited grant applications from librarians, instructional designers, and institutional researchers through a competitive process. Successful applicants were assigned to assist faculty working on the OCL courses. Lastly, disability directors and a multicultural specialist were also solicited to work with faculty and ensure the completed courses not only reflect the system’s diversity values but also met accessibility standards so all students, even those with disabilities can benefit from them. Like the faculty, successful applicants for these specialist positions received grants of $15,000 to complete their OCL project assignments.

Phase one of the OCL project had an aggressive timeline. The project was announced in early fall 2009 and grants were awarded in the spring of 2010 to redesign three (3) pre-college and 39 college level courses. Faculty were expected to complete their course redesign work by December 2010, and pilot the courses during the following winter and spring quarters, revising courses as they were taught. On October 28, 2011, the OCL courses were released and made available to users around the world.

The OCL project has attracted national attention, especially in relation to the project’s goal to limit the costs of textbooks to $30 or less per course. Stories about the grant project have been featured in the academic press as well as the popular press. For example, The
Chronicle of Education (Overland, 2011, January 9) featured a story about the OCL grant which focused on the experiences faculty had finding resources to satisfy the $30 resource limit while Newsweek’s (2011, January 25) story provided more detail about the project’s goal to create shareable, engaging, interactive learning materials to improve course completion rates. Many individuals and organizations will be scrutinizing the OCL project to see how well it achieves its goals.

**Purpose / Significance of the OCL Study**

The purpose of this dissertation is to examine how faculty redesign community college curriculum using an innovation known as Open Educational Resources (OER) in order to provide information to improve access, student success and reduce student costs to attend higher education. Focusing the study on the Open Course Library (OCL) project is useful as this project uses innovative means to improve curriculum with a goal to facilitate the community college access mission. The proposed study is significant because it is important to understand how faculty participating in the OCL project incorporated OERs into their redesigned courses. This understanding provides insight into how other faculty may adopt OERs in the future which is important as widespread adoption of OERs promises to increase student access to education as well as to reduce the cost of textbooks.

**Methodology of the Study**

The study uses a qualitative approach to better understand how ten Washington state community and technical college faculty developed college courses using Open Educational Resources (OER). Study participants were interviewed using an interview guide with open ended questions. Document analysis of eight OCL courses guided an assessment of the openness of a sample of courses developed by faculty involved in the study.
Rogers (2003) theory of the diffusion of innovations was used to analyze the data collected from interviews and document analysis as many educational researchers looking at change, innovation and adaptation in educational settings have found this theory useful. Specifically, Rogers’ Innovation-Decision Process model will be used to understand how faculty develop favorable or unfavorable decisions about using the OER curricular innovation and then go on to make decisions about implementing OERs as they redesign their courses.

Definitions

Two terms are used frequently throughout the study and are defined here to clarify their meaning.

**Open Educational Resources (OER)**

A wide variety of educational material can be ‘open’ including (a) learning objects like flashcards and puzzles, (b) audio and video lectures, (c) images such as photos, (d) sounds and music, (e) entire courses or ‘opencourseware,’ (f) collections of articles, (g) textbooks, and (h) software (Baker, 2007).

Downes (2007) notes that the most basic definition of OERs is based on a simple dichotomy where ‘open’ resources are essentially anything that isn’t ‘commercial.’ He points out that this definition of OERs is too rudimentary to account for the wide variety of resources available, saying some material published by non-commercial entities like professional societies is not freely available or open while other resources created by profit-seeking enterprises like Google are “widely and freely available without constraint” (Downes, 2007, p. 31).

The Organisation for Economic Co-Operation and Development (OECD) provides a more comprehensive definition, stating that OERs are “digitized materials offered freely and
openly for educators, students and self-learners to use and reuse for teaching, learning and research” (Organisation for Economic Co-Operation and Development. Centre for Educational Research and Innovation [OECD], 2007, p. 10). OERs are “free in the sense of being open to sharing, customization, translation, and virtual collaboration with people who have never met before” (Bissell, 2009, p. 97).

**Open Textbooks**

Open textbooks are licensed in a manner that allows free digital access and options for affordable printing or purchasing an inexpensive print copy. The open license also allows faculty to customize the text to meet the needs of the course being taught by either eliminating sections and/or adding new material (Student PIRGs, n.d).

**Research Questions**

The purpose of this qualitative study is to determine how community college access can be broadened through curriculum innovation. The study accomplished this by looking at how community and technical college faculty used Open Educational Resources (OER) as they redesigned courses for the Open Course Library (OCL) grant project.

The primary goal of the OCL project is to “support new and promising efforts to improve access and completions for low-income young adults in Washington state over the next three years. . . [by] expanding access and success in 81 high-enrollment courses by lowering textbook costs for students, providing new resources for faculty, and improving course completion rates” (Yoshiwara, 2010, p. 1).

The intent of the study is to more fully address the issue of expanding access, using data obtained from faculty interviews and document analysis to answer the following questions:
How do faculty approach innovation?

How do faculty adopt and change curriculum in light of new resource and delivery options?

How do Open Educational Resources (OER) influence curricular redesign?

What resources do faculty use in redesigning their curriculum for the Open Course Library (OCL)?

The following chapter reviews literature related to the community college’s tradition of providing an open door to higher education, educational technology and its relationship to the OER movement, and the role that the theory of diffusion of innovations plays in adapting curricular reform. Chapter Three describes the study’s methodology. Data from the study are discussed in detail in the chapters following Chapter Three, with interview data considered in Chapter Four and data from the document analysis found in Chapter Five. Chapter Six presents an analysis of the study findings using the lens provided by Rogers (2003) theory of the diffusion of innovations and discusses how the findings help answer the study’s research questions. Chapter Six also includes recommendations for future practice and research.
Access to education is the cornerstone of the community college mission. Community colleges in the United States have a long tradition of providing access to higher education for students who otherwise would not be able to attend college (Cohen & Brawer, 2008). The access mission is frequently expressed in terms of physical access, geographic proximity, and relatively low costs (Dougherty, 2003) with distance education playing a major role in extending accessibility to those who would otherwise be unable to attend college due to geographic isolation, family and work responsibilities or other limitations.

The access mission provides the foundation for the three areas of literature relevant to the OER movement. The first area of literature examines the role public policy concerns about access to higher education has played in the development of community colleges in the United States, including concerns related to the high cost of attending college. The second area of literature considers the growth and development of the OER movement within the context of distance learning technology. Finally, the role technology plays in expanding access to education will be discussed in light of Everett Rogers’ theory of the diffusion of innovations.

Public Policy and Access to Higher Education

In 1947, President Harry S. Truman’s Commission on Higher Education noted that 9,000,000 citizens over the age of 19 had either never attended school or had stopped attending school before finishing the fifth grade (U.S. President’s Commission on Higher Education, 1948). Although higher education enrollments were booming following World War II, the Commission (1948) stated “we are forced to admit nonetheless that the
educational attainments of the American people are still substantially below what is necessary either for effective individual living or for the welfare of our society” (p. 25).

The Commission (1948) was determined to recommend solutions to increase educational attainment by removing barriers that saw many potential college students unable to access college due to a lack of income to pay for advanced schooling and/or a lack of curriculum relevant to their career goals. The Commission (1948) concluded:

The time has come to make public education at all levels equally accessible to all, without regard to race, creed, sex or national origin. If education is to make the attainment of a more perfect democracy one of its major goals, it is imperative that it extend its benefits to all on equal terms. (p. 38)

Influenced by Commissioners George Zook, Henry Dixon, and Frederick Kelly, all ardent junior college advocates (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994), the Truman Commission (1948) recommended “that the number of community colleges be increased and that their activities be multiplied” (p. 67). The institution envisioned by the Commission was a local or regional college similar to existing junior colleges. However, the new colleges would not only offer the first two years of a traditional, college liberal arts program but they would also expand their mission to provide broader access to higher education in the United States (Townsend & Bragg, 2006). While the Truman Commission did not invent community colleges, it established their role as “a keystone of national educational policy” (Witt, Wattenbarger, Gollattscheck, & Suppiger, 1994, p. 132), opening the door to higher education wider than before.

The growth experienced by community colleges over the past sixty years has been
fueled primarily by an interest in serving new and neglected groups such as immigrants, displaced homemakers, ethnic minorities and older adults (Callan, 1997). Community colleges have been able to increase access to higher education (Townsend & Bragg, 2006) by implementing new and innovative educational services to accommodate the educational needs of these underrepresented groups.

As a result, half of the students earning a baccalaureate degree in the United States studied at a community college and a majority of African-American and Hispanic undergraduate students attend community colleges (American Association of Colleges, 2010). A majority of students earning associate’s degrees and credentials in the United States are women and the percentage of awards granted students from underrepresented racial/ethnic groups are proportional to their overall population in the United States (Horn & Li, 2009).

Like President Truman before him, President Obama has identified community colleges as playing a critical role in providing access to higher education and training. His administration has promoted legislation to fund community colleges so more students can obtain the high-demand skills and education necessary to succeed in the 21st century’s emerging industries (White House, President Barack Obama, n.d.). The following sections consider specific public policy issues related to community colleges’ emerging role in higher education in the United States.

**Public Policy and the High Cost of Textbooks**

Although access to higher education is of broad public policy interest, the public policy issue that has galvanized college students is the high cost of textbooks which makes it increasingly difficult to afford college. According to the Student PIRGs, students spend $900 per year on textbooks with costs rising four times faster than the rate of inflation (Student
PIRGs, n.d.). In 2004, the California Student Public Interest Research Group released a study called *Rip-Off 101: How the Current Trends of the Textbook Industry Drive-up the Cost of College Textbooks*. Looking at a sample of widely assigned college textbooks at nine public universities and one community college located in Oregon and California, the report concluded textbooks are expensive and students and faculty would be in favor of less expensive alternatives provided quality could be maintained (Fairchild, 2004).

An audit conducted by the California State Auditor calculated that the cost of the 27 most popular textbooks sold at nine California college campuses, averaged a 10% increase from the 2004-2005 school year to the 2005-2006 school year. By the 2007-2008 school year, retail prices for textbooks increased 28%. Furthermore, the audit found that 59% of the costs of attending a California community college during the 2007-2008 school year was attributable to textbook costs (California State Auditor, 2008). The Student PIRGs assert that the cost of textbooks can be a ‘tipping point’ between students being able to afford going to college or not (The Student PIRGs, n.d.).

Although the price of textbooks was a concern prior to the release of the *Rip-Off 101*, the report’s focus on the cost of textbooks helped create a sense of urgency (Kingdon, 2003) and mobilized students, legislators and other stakeholders to find a solution to the problem. These groups demanded new policies to force change in the pricing and production of textbooks (Fairchild, 2004). *Rip-off 101’s* findings even influenced Congressman David Wu (D-Ore) to ask the General Accounting Office to investigate textbook prices in greater detail (Shuffler, 2006). Since then, textbook affordability has continued to receive attention at both the state and federal level.

At the federal level, legislation included in *The Higher Education Opportunity Act of*
2008 (HEOA) addressed a number of student concerns related to the high cost of textbooks. As a result, federal law now dictates that:

1. Publishers disclose information about textbook prices and revisions to faculty when marketing textbooks,
2. Publishers offer unbundled versions of textbooks so students have the option to buy only those parts of a bundle required by their instructors, and
3. Colleges provide students with a list of required textbooks when registering for classes so they have time to shop for the best deals before classes begin (Student PIRGs, 2010).

In addition to supporting legislation designed to reduce the cost of textbooks, the Student PIRGs are promoting the use of open textbooks which offer free digital access and low cost printing options to students as an alternative to traditional textbooks (The Student PIRGs, 2010). Open textbooks are available online for no cost and licensed in such a way that faculty can customize them to fit their curriculum. Students can read open textbooks online, download and print them or purchase them in an affordable paper-based format (The Student PIRGs, n.d.).

Legislators at the state and national level are also supporting the use of open textbooks in college classrooms. For example, in 2009, the Washington State Legislature passed Second Substitute House Bill 1025 (RCW 28B.10.590), which asks faculty to consider adopting the least costly course material, including free, open textbooks when selecting course material. At the federal level, Senator Dick Durbin (D-IL) introduced the Open College Textbook Act (S. 1714) in 2009 while Congressman David Wu sponsored an identical bill in the house, the Open College Textbook Act of 2010, (H.R.4575). If enacted, these bills would establish a
competitive grant program supporting proposals to (a) write or update open textbooks or (b) adapt existing textbooks into open formats for use in postsecondary classrooms (Congressional Research Service, 2010).

Sharing Educational Resources Created with Public Funds

Recognizing the investments that state and federal governments as well as private foundations have made in support of higher education within the community and technical college system, the SBCTC adopted a resolution in June 2010, which requires any digital software, educational resources and knowledge created with funds obtained from competitive grants administered by the Board be given a Creative Commons Attribution License (State Board for Community and Technical Colleges, 2010, June 17a). According to the resolution’s policy brief, obtaining licenses for the material produced as a result of competitive grant projects maximizes the return on the investment made by these grants as it ensures that the products created with grant funds can be accessed and reused easily by other students, faculty and staff (Washington State Board for Community and Technical Colleges, 2010, June 17b).

The federal government is beginning to require that the results of some federally funded research be posted online in open access repositories where it can be freely accessed (Goetsch, 2010). For example, the Federal Research Public Access Act of 2009 was introduced in both the U. S. Senate (S.1373) and House (H.R.5253) in 2010. If enacted, the Act requires federal agencies that expend $100 million or more each year in extramural projects to develop a public access policy that is consistent with and advances the purposes of the agency. Similarly, the United States Department of Education has proposed updating its priorities for grant seekers to include a provision that favors grant projects which improve
productivity and take advantage of the power of technology to improve learning outcomes such as those that use open educational resources (United States, 2010, August 5).

OER have caught the attention of public policy makers as well as faculty and students who believe openness in education can further individual goals of obtaining an education as well as policy makers interested in ensuring the nation has the skilled workers necessary to remain competitive in a changing world. The next section reviews literature showing how technology enabled the OER movement to develop.

Technology and Open Educational Resources

A second area of literature relevant to the development of the OER movement considers the use of digital technologies to expand education beyond the boundaries of college campuses. Distance learning literature documents the development of the OER movement while also considering issues related to open access, intellectual property rights, copyright, sustainability, and reuse of resources. Copyright and alternate licensing options provide an essential key to understanding the OER movement. Bissell (2009), for example, states that open licensing is a necessary element to reusing resources in education, one of the central tenants of OERs.

Technology decreases the cost required to reproduce and distribute courses (Caswell, Henson, Jensen & Wiley, 2008). Wiley (2010) asserts that although technology has a role to play in the future of education, it can only fulfill its promise in an open educational environment. This understanding underlies the philosophy supporting the OER movement which is based on the belief that educational content should be licensed so it can be used openly and freely. The release of Creative Commons copyright licenses in 2002, provides the means for content producers to share their material without giving up their rights (Caswell,
Henson, Jensen, & Wiley, 2008; Creative Commons, n.d.). Creative Commons licenses, in conjunction with Internet technology, make it possible to share resources easily and have allowed the OER movement to flourish.

**History of Distance Education Initiatives**

For many community colleges, distance education has provided an opportunity to meet the educational needs of many who otherwise would have found it impossible to attend college, thereby fulfilling their open access mission. According to Moore and Kearsley (2005), distance education “is both a cause and a result of significant changes in our understanding of the very meaning of education itself” (p. 19) and provides access to more people, more easily.

The earliest example of using technology to extend the reach of higher education came in the form of correspondence courses. In the nineteen century, the postal service allowed the Chautauqua College of Liberal Arts to award correspondence-based diplomas and degrees (Moore & Kearsley, 2005). Later, educators experimented with radio and television technologies in an attempt to expand beyond college walls. Although radio did not prove to be an effective instructional medium, by the mid-1980s, almost 200 college level television courses, called ‘telecourses,’ had been produced and made available for adoption by community colleges and universities (Moore & Kearsley, 2005). Television-based instruction became the most common format for delivering distance education with 60% of community colleges in the United States offering televised instruction by the early 1990s (Cohen & Brawer, 2008).

The advent of the Internet offered higher education with a new and more interactive tool for providing distance education. The Internet, unlike other instructional technologies,
offers a “seemingly magical system that [allows] a document to be accessed by different computers, separated by any distance” (Moore & Kearsley, 2005, p. 43). As a result, Internet-based courses are currently the primary technology used to deliver distance education in community colleges (Cohen & Brawe, 2008).

This “magical system” not only makes the Internet an ideal medium for delivering distance education, but it also makes the Open Educational Resources (OER) movement possible. The OER movement, where “digitized materials [are] offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research” (OECD, 2007, p. 30.) would not be possible without the technology provided by the Internet.

Great Britain’s Open University (OU), founded in 1969 with a mission of “expanding access to higher education and offering a chance to those who might have missed out on university to continue their educations without necessarily suspending their careers” (McAndrew, Scanlon, & Clow, 2010, p. 2), provides a model of how open educational practices meet the needs of students that more traditional institutions cannot by utilizing the Internet and OERs.

Like community colleges in the United States, the OU has an open admissions policy and most students enroll on a part time basis (The Open University, 2010b). OU’s distance education program, which began by broadcasting courses on television, has moved to an open education, Internet-based distance program. The Open University is a leader in the OER movement, with course materials published on iTunesU, YouTube and the OU’s own OpenLearn web site (The Open University, 2010a). Consequently, the OU enrolled over 250,000 students in 2008-2009 (The Open University, n.d.).

The following section shows how distance learning practices and the Internet has
allowed the OER movement to grow and develop to the point where it is now an innovation of interest to many educators.

**Innovation and Distance Learning in Higher Education**

Like the OU, community colleges take pride in their willingness to innovate and find new solutions to meet the needs of their students. Innovation, along with the open-door philosophy and student centeredness, are defining characteristics for community colleges (O’Banion, 1997a). However, the open door mission of the community college is threatened by a number of challenges, among them geographic accessibility, demographic shifts, and fiscal constraints (Shannon & Smith, 2006). One of the ways community colleges respond to these challenges is to innovate and adopt educational technologies that make education more accessible as well as more efficient and effective for teaching and learning (Cohen & Brawer, 2008; O’Banion, 1997b).

Cohen and Brawer (2008) assert that instruction “is the foundation of all schools, colleges, and universities” (p. 183) and although they recognize that most teaching in community colleges emphasize traditional classroom instruction, with one teacher working with a number of students in a classroom, educational technology offers alternatives to traditional instructional design. While educational technology can be utilized in traditional classrooms, it is especially useful for providing distance education opportunities, where students and teachers are in different places for some or all of the time the class is being conducted (Moore & Kearsley, 2005). Technology eliminates the time and place barriers faced by many students, creating opportunities to learn at the student’s convenience.

O’Banion (1997a), foreseeing the positive impact technology could have in moving education from a time and place-bound framework to a more open one, noted that “if the
student is to be freed for more powerful learning experiences and the teacher is to be freed to facilitate that learning in a more powerful way, then the walls must crumble, the boundaries made limitless” (p. 12). Additionally, he stated that technology has the value of being “ism-free,” writing “technology is free of racism, sexism, and ageism. A computer cannot tell if a student is black or white, male or female, young or old, fat or thin, ugly or pretty, tall or short, dirty or clean, passive or aggressive, or funny or somber” (O’Banion, 1997b, p. 72), traits that can have a negative influence on teachers working with students in traditional classrooms.

O’Banion (1997a) predicted that new educational technology would be embraced by students and faculty eager to transcend the barriers of time and place in their desire to learn and the growth and development of distance education in community colleges validates his prediction.

New educational technology may also help transcend barriers that disabled students face in traditional college classrooms. During the 2007-2008 school year, almost 11% of all college undergraduates in the United States reported they had one or more disabilities. Disabilities included visual, hearing and speech disabilities as well as orthopedic handicaps and specific learning disabilities. (U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2009).

Civil rights legislation in the United States mandates colleges and universities “to provide equitable access to all learning materials and activities, digital or otherwise” (National Center on Accessible Instructional Materials, 2011, para. 4) required in an academic program. The Open Educational Resources (OER) movement embraces the use of technology to overcome barriers to accessing education and promises to support the learning needs of all students regardless of their special needs or circumstances. The following sections describe
the Open Educational Resources (OER) movement and its commitment to expanding access to learning for everyone (Organisation for Economic Co-Operation and Development, Centre for Educational Research and Innovation, 2007).

**Open Educational Resources (OER)**

OER proponents believe that openness in general and the OER movement in particular will change the nature of teaching and learning. “My view,” writes Charles Vest (2006), President Emeritus of the Massachusetts Institute of Technology:

> Is that in the open-access movement, we are seeing the early emergence of a *meta-university*—a transcendent, accessible, empowering, dynamic, communally constructed framework of open materials and platforms on which much of higher education worldwide can be constructed or enhanced. The Internet and the Web will provide the communication infrastructure, and the open-access movement and its derivatives will provide much of the knowledge and information infrastructure (p. 30).

The following sections review the history of the Open Educational Resources (OER) movement and the factors which support their creation and use.

**History of the Open Educational Resources (OER) Movement**

Smith and Casserly (2006) state that “many prestigious American universities originally applied a capitalist model to the Web, imagining that they would make a great deal of money by selling some part of their knowledge through Internet-based delivery systems” (p. 10). However, by 2001, with no evidence to support such a vision and “with the specter of riches growing dim” (Smith & Casserly, 2006, p. 10), interest turned instead to the possibility of providing free and open access to educational resources (Smith & Casserly, 2006; OECD, 2007).
The Massachusetts Institute of Technology’s OpenCourseWare (OCW) initiative, a project designed to make course material freely available to the public via the Internet (Caswell, Henson, Jensen & Wiley, 2008), is one of the earliest examples of an OER. Launched in 2002, the pilot OCW project at MIT made 50 complete courses freely available online. As of June 2010, the project has grown to point that 71 million individuals living in virtually every country around the world have accessed one or more of the 2,000 courses currently available (Massachusetts Institute of Technology, 2010).

According to Caswell, Henson, Jensen and Wiley (2008), MIT’s OCW project was inspired by the free software movement in general and the GNU project in particular. The GNU project, founded by Richard Stallman at the Massachusetts Institute of Technology’s Artificial Intelligence Lab, set out to develop a software system upward-compatible with Unix. Software developers were invited to use and adapt the resulting software as desired and by 1990, an almost complete operating system had been created (Free Software Foundation, 2009). Linus Torvald, the developer of Linux, provided the final code and the Free Software Foundation (2009) estimates that tens of millions of people use some version of the resulting GNU/Linux operating system. More importantly, perhaps, is that the open software movement precipitated by the GNU project inspired the creation of the OER movement (Caswell, Henson, Jensen & Wiley, 2008; Wiley & Gurrell, 2009), an inspiration that has led proponents of the OER movement to declare that OERs have the power to transform education.

**Defining Open Educational Resources (OER)**

Open Educational Resources (OER) are commonly defined as “digitized materials offered freely and openly for educators, students and self-learners to use and re-use for
teaching, learning and research” (OECD, 2007, p. 30). OERs

- are sources of services that do not diminish their ability to produce services when enjoyed;
- provide non-discriminatory access to the resource; and
- can be adjusted, amended and shared (OECD, 2007, p. 37).

Lane (2009) states unequivocally that OERs are dependent on the existence of open licenses that support the use of educational resources so that

- users do not need to pay for access;
- resources can be copied freely;
- resources can be re-used without the need to obtain permission first; and
- derivative works based on the original resources can be created.

At a minimum, OER possess at least three elements, (a) learning content, (b) the tools required to support the development and sharing of learning content, and (c) implementation resources such as intellectual property licenses that support the sharing and re-use of learning content (OECD, 2007). Figure 1 illustrates the relationship between each of these elements and provides examples of each type of resource.

**Sustainability of Open Educational Resources (OER)**

The OER movement struggles financially in spite of the promise it brings to education. As Downes (2007) points out in his comprehensive review of the OER movement, “It is commonly pointed out that even though a resource may be free for the consumer, it does not follow that the resource is free in the sense that it nonetheless costs something in funding or services to create and distribute a resource” (p. 32). History shows that funding for OER initiatives is less than certain. For example, Utah State University closed its
OpenCourseWare project in September 2009, when it ran out of funds and was unable to secure state or foundation funding to maintain the project (Parry, 2009).

Even MIT’s OpenCourseWare (OCW) project, has run into financial difficulty. Although MIT is a prominent member of the OER movement, the university has reduced its financial support for the OCW project by $500,000 and developed a number of fundraising strategies in order to become more self-sustaining. Ironically, one of the methods MIT uses to raise money to support OCW is a partnership deal with Amazon.com. MIT receives funds for each commercial textbook purchased by students using a referral link from MIT to Amazon.com (OpenCourseWare cash woes drive search for new revenue sources, 2009, November 13).

The OER movement is young and innovative and has strong support from a cadre of committed educators. Its future is not assured, however. Unless the OER movement becomes
‘mainstream’ and widely adopted by educators, its future is uncertain. The next section examines Rogers’ (2003) theory of the diffusion of innovations, a theory that provides insight into how the innovation known as OER might become more widely developed, or diffused.

**Theoretical Basis for Study**

Rogers (1983) writes that “one reason why there is so much interest in the diffusion of innovations is because getting a new idea adopted, even when it has obvious advantages, is often very difficult” (p. 1). The OCL project, with its emphasis on creating open courses using OERs in order to increase the accessibility of higher education, is introducing many Washington state community and technical college faculty to the OER movement. As the preceding section noted, the OER movement is a relatively recent development which has not been widely adopted. Therefore, the OCL project provides an ideal environment to study the adoption of a new curricular innovation through the lens of Rogers’ theory of the diffusion of innovations.

Educational researchers are often interested in looking at change, innovation and adaptation in educational settings. This dissertation study focuses on the decision making process that takes place when an individual or group decides to adopt or reject an innovation. “The innovation-decision process is the process through which an individual learns about an innovation, forms an attitude, adopts or rejects, implements the new idea, and confirms the decision to do so” (Yates, 2001, “Time and the Innovation-Decision Process,” para. 1). This study is designed to understand how faculty choose to implement a new curricular innovation as they redesign a course.

**Rogers and the Diffusion of Innovations**

Diffusion, according to Rogers (2003), is a “process in which an innovation is
communicated through certain channels over time among the members of a social system” (p. 5). The communications taking place between individuals engaged in the diffusion process are centered on a new idea and the diffusion of that idea results in some kind of social change.

Rogers (2003) indicates some writers differentiate diffusion from dissemination, believing that diffusion is related to spontaneous and unplanned change while dissemination is directed and planned change. However, Rogers says he uses the term ‘diffusion’ for both planned and unplanned change. He says four criteria are required for the diffusion of innovations to occur: (a) the presence of an innovation, (b) communication about the innovation, (c) time to adopt the innovation, and (d) a social system which encourages the adoption on an innovation. The criteria are introduced in the following sections.

**Innovation**

The first criterion in the diffusion process is the presence of an innovation. An innovation does not have to be newly invented to be considered ‘new,’ according to Rogers (2003), but an individual must be encountering the innovation for the first time, or if already aware of it, must not have developed a favorable or unfavorable opinion about it. Innovations are not necessarily beneficial as some innovations lead to the adoption of harmful or uneconomical practices. Likewise, some innovations may be more appropriate for some individuals than for others. For example, people with short daily commutes may find that buying an innovative, all-electric car is highly advantageous and appropriate compared to buying a standard gas-guzzling vehicle while other commuters find no advantage to adopting an all-electric car.

Innovations have a number of attributes, including their (a) relative advantage, or the degree to which they are perceived as being better than the idea they are replacing, (b)
compatibility with existing values, past experiences and the needs of potential adopters, (c) complexity, or how difficult the innovation is to understand and use, (d) trialability, or the degree to which the innovation can be ‘tried out’ before fully adopted, and (e) observability, or the how easily others can see the benefits of adopting the innovation (Rogers, 2003; Elliot, Foster & Stinson, 2003). According to Rogers (2003), innovations are most likely to be adopted if they are perceived to be highly advantageous and compatible with existing values, not very complex, and easy to experiment with and observe others who are using the innovation.

Communication

Communication is the second element present in the diffusion process. Rogers (2003) says that diffusion is a type of communication where the content of a message exchanged between two parties concerns a new idea. Communication flows from the party having knowledge of the new idea, or innovation, to the party that does not have knowledge or experience with the innovation. Rogers (1976; 2003) states that most people adopt an innovation based on a subjective evaluation of the innovation by individuals who have already adopted the innovation and who are similar to themselves.

One of the dilemmas Rogers (2003) identifies with the diffusion of innovations is that individuals who adopt innovations early are not similar to those who do not adopt at an early stage. This can make communication between the two ineffective. Furthermore, groups in which all the members are alike can act as a barrier to the acceptance of new ideas or innovations (Rogers, 1976). Rogers (2003) suggests that communication is most effective when those in communication with each other share traits such as educational background and socioeconomic standing, differing only on whether they have adopted the innovation or not.
Rogers (2003) also notes that while interpersonal communication may be an effective communication channel, early adopters are more likely to be influenced by mass media channels, saying “they possess a more venturesome orientation, and the mass media message stimulus is enough to move them over the mental threshold to adoption. But the less change-oriented later adopters require a stronger and more immediate influence, such as that from interpersonal networks and especially from peers” (Rogers, 2003, p. 212).

Time

The time required for an innovation to be adopted is the fourth element present in the diffusion of innovation process. Rogers’ (2003) innovation-decision model describes the process used to assess the time required for an innovation to become adopted, reinvented, modified, or rejected by an individual or other decision-making group (Perry, 1992).

The innovation-decision process consists of five steps: (a) knowledge, or the time when an individual becomes aware of, or knowledgeable about, an innovation; (b) persuasion, when an individual forms a positive or negative impression about the innovation; (c) decision, where a choice is made to adopt or reject the innovation; (d) implementation, when the innovation is put into use; and (e) confirmation, when the individual reaffirms their decision to adopt the innovation, adapt a modified form of the innovation, or reverse their decision and reject the innovation (Rogers, 2003). The rate of adoption is typically considered the amount of time it takes a certain percentage of specified group, or social system, to adopt an innovation. The rate of adoption varies depending on the group involved and the perceived benefit of the innovation (Rogers, 2003).

Social system

“A social system is a set of interrelated units that are engaged in joint problem solving
to accomplish a common goal” (Rogers, 2003, p. 37). Social systems can be made up of individuals, informal groups, organizations and/or subsystems, but regardless of the makeup, each social system has norms that control behavior. These norms may encourage or discourage the diffusion of innovation (Rogers, 2003) and innovations found to be incompatible with existing values may be resisted (Katz, Levin, & Hamilton, 1963). Various individuals within a social system may work as opinion leaders and these individuals influence the attitudes and behavior of others within the system.

**Development of the Theory of the Diffusion of Innovations**

Reviewing the history of diffusion research, Rogers (2003) examines the contributions of a number of early twentieth century Europeans. In particular, he notes the work of Gabriel Tarde, a French lawyer and judge, who observed that the rate of adoption the ideas or inventions follows an S-shaped curve. As opinion leaders adopt a new idea, imitators are more likely to adopt the idea as well (Rogers, 2003). Figure 2 provides an example of an S-Shaped Adoption curve.

![S-Shaped Curve](image)

**Figure 2. S-Shaped Curve showing rate of adoption**

Rural sociologists were among the earliest researchers to study innovation diffusion using empirical research (Perry, 1992; Rogers 2003). The classic diffusion study was conducted by Ryan and Gross in 1943, and was concerned with the process by which Iowa farmers adopted hybrid corn seed (Perry, 1992; Rogers, 2003).

Ryan and Gross developed a research methodology for their study which was based on retrospective survey interviews where they asked respondents to describe (a) when they adopted an innovation, (b) how they learned about the innovation, and (c) what the consequences of the innovation were (Rogers, 2003). Other researchers, including Everett M. Rogers, a young doctoral student studying sociology and statistics at the University of Iowa in the 1950s, adopted their research techniques (Rogers, 2003).

As Rogers was writing his doctoral dissertation on the diffusion of agricultural innovations in the rural community of Collins, Iowa, he uncovered diffusion studies that had been conducted in a wide variety of fields, including education, public health and agriculture (Rogers, 2003). Each of these studies revealed a common pattern related to the adoption of an innovation over time. This discovery, led to Rogers’ (2003) epiphany that diffusion is a general process, noting that he “was convinced that the diffusion of innovations was a kind of universal process of social change” (p. xvi).

Rogers used this insight to develop models that explain how innovations are diffused (Perry, 1992). As a result, Rogers’ (2003) theory of the diffusion of innovations has been adopted by researchers interested in communications, advertising, anthropology, sociology, economic development, public health, and geography among others fields (Rogers, 1976; Perry, 1992). At the time of his death in 2004, Rogers’ influence was widely acknowledged, with his work cited over 1000 times in journals and proceedings (In memory of Everett M.
Rogers, 2005). Figure 3 provides a conceptual model of Rogers’ (2003) theory of the diffusion of innovations.

**Using the Theory of Diffusion of Innovations in Educational Research**

Looking at the time it takes innovations to be accepted by school systems has interested educational researchers since the early days of the twentieth century (Katz, Levin, & Hamilton, 1963). One notable early proponent of this type of research was Dr. Paul Mort, a professor at Columbia University’s Teacher’s College. Mort conducted a number of studies focused on how and why schools in Pennsylvania adopted new educational practices during in the first decades of the twentieth century. During this time, a number of innovations were being introduced into public schools, including special classes for the mentally handicapped, kindergartens, and integrated curriculum (Mort & Cornell, 1941), innovations Mort and his colleagues found public schools slow to adopt. Diffusion research

![Figure 3. Diffusion of Innovations: Innovation-Decision Process Model. Adapted from *Diffusion of Innovations*, 5th ed., by E. Rogers, 2003. Copyright 2003 by E. Rogers.](image)
completed since then has found some educational innovations, such as the adoption of modern math, adopted more quickly while others are slow to find acceptance by educators working in public schools (Rogers, 2003).

According to Rogers (2003), few diffusion studies were being conducted in the field of education in the early years of the twenty-first century. In spite of this apparent lack of interest, he notes that educational researchers have the opportunity to make exciting contributions to the diffusion of innovations theory as “teachers, unlike farmers and consumers, work in organizations [which are] inevitably involved in education adoption decisions” (p. 61).

**Limitations Affecting the Theory of Diffusion of Innovations**

Rogers (2003) identifies three significant limitations that are inherent to the theory of diffusion of innovations. The most important limitation is that the theory has a bias towards change and is tilted towards a belief that all innovations are good and should be widely adopted (Rogers, 1976; Straub, 2009). The second limitation is that the diffusion of innovations theory is biased towards change agents promoting innovation rather than potential adopters. A third limitation is that diffusion is a process that takes place over time and studies rely on respondents to recall the timing of past events related to their adoption of an innovation in an accurate manner. Finally, diffusion research may not be appropriate in developing nations as innovation may increase socioeconomic gaps (Rogers, 2003).

Rogers (1976) admits that diffusion research design and concepts are stereotyped and that all studies tended to look alike. Although Rogers (1976) writes that this tendency makes it easy to compare diffusion studies with each other, he also acknowledges such uniformity limits deeper understanding of the factors involved in the adoption of an innovation. In spite
of these limitations, many researchers find Rogers’ theory helpful in understanding why some innovations are adopted quickly while others are not. Rogers’ (2003) theory of the diffusion of innovations contributes a useful lens for the study as it allows a researcher to focus on the elements that may encourage or discourage faculty from adopting useful curricular innovations.

The next chapter discusses the study’s methodology and how Rogers’ theory of the diffusion of innovations is utilized to understand better how faculty decide to adopt a curricular innovation like OERs.
CHAPTER THREE

METHODOLOGY

The purpose of this study is to look at how faculty redesign community college curriculum using an innovation known as Open Educational Resources (OER) in order to improve access and student success as well as to reduce textbook costs. This chapter describes the study’s design and methodology including measures taken to validate the data and the limitations of the study.

The study focused on faculty participating in the first phase of the Washington State Board for Community and Technical Colleges’ (SBCTC) Open Course Library (OCL) project, a competitive grant project funded by the Bill and Melinda Gates Foundation and the Washington State Legislature. The OCL grant supports SBCTC’s interested in encouraging the adoption of OER throughout the state system of community and technical colleges as a way to expand access to 81 high-enrollment courses while also lowering textbook costs and providing new resources for faculty. The ultimate goal of the OCL grant project, though, is to improve course completion rates (Washington State Student Completion Initiative, n.d.).

Specifically, the study was designed to address the following questions:

1. How do faculty approach innovation?
2. How do faculty adopt and change curriculum in light of new resource and delivery options?
3. How do Open Educational Resources (OER) influence curricular redesign?
4. What resources do faculty use in redesigning their curriculum for the Open Course Library?

The study addressed these questions by interviewing ten Washington state community
and technical college faculty who received grants to redesign one or more courses for the Open Course Library (OCL) project. Faculty interviews consisted of asking each participant the same set of open ended questions. The questions asked faculty about the process they used to identify and select textbooks and educational resources for their OCL courses. The study also included a document analysis with course documents from eight OCL courses examined and scored according to an “openness” rubric designed to assess the degree to which each course incorporated the principles of the Open Educational Resources movement.

As a librarian committed to the concept of providing free and open access to information for all, I support the aims of the Open Educational Resources movement as well as the use of technology to expand educational opportunities. In my current position as an instructional dean at a community college, I am responsible for library and e-Learning activities which gives me an opportunity to support faculty interested in incorporating OER into curriculum. I chose to undertake this study as I believe it is important to understand the process faculty go through when they select materials to support their course curriculum in order to assist them effectively.

Methodology

The study is based on a descriptive qualitative methodology. Qualitative data is derived from words and symbols (Stage & Manning, 2003) and qualitative methods are used to explore and understand the meaning given to a social or human problem (Creswell, 2009). Since processes and meanings are emphasized in qualitative research rather than measurements (Labuschagne, 2003), this methodology is ideal for investigating the process faculty go through as they integrate innovative ideas like OER into their curriculum.
Theoretical Framework: Rogers’ Theory of the Diffusion of Innovations

Theories provide a way to understand or illuminate the nature of some event or phenomena and “explain why things happen as they do” (LeCompte & Preissle, 2001). Researchers use theories to help (a) design research questions, (b) select relevant data and interpret it, and (c) propose explanations of the underlying causes or influences of observed phenomena (Reeves, Albert, Kuper, and Hodges, 2008). The theory that supports the research is Rogers’ (2003) theory of the diffusion of innovations.

Rogers (2003) states that new ideas, even if they have obvious advantages, are hard to get adopted, saying “when new ideas are invented, diffused, and adopted or rejected, leading to certain consequences, social change occurs” (p. 6) and not everyone is interested in adopting innovations that promote change. Speeding up the diffusion of new, advantageous ideas is of interest to many, however, and Rogers’ (2003) theory of the diffusion of innovations provides insight into how this process works. Although Rogers’ (2003) theory considers a number of parameters that influence the diffusion of innovations including the rate of adoption, the role of the change agent, and categories of adopters, it is Rogers’ innovation-decision process model that describes how one moves from learning about an innovation to actually implementing it and confirming a decision to continue utilizing the innovation.

Rogers’ innovation-decision process model provides an appropriate framework for understanding how faculty adopt a curriculum reform like OER.

Using the stages outlined in Rogers’ innovation-decision process model within the context of the OCL project, I investigated how faculty (a) learn about a curricular reform innovation, (b) form a favorable or unfavorable impression about it, (c) take steps to adopt or reject the innovation, (d) implement the innovation if they have decided to accept it, and (e)
confirm that the innovation warrants continued support.

**Sample**

The context for the study is provided by the SBCTC’s OCL grant project. Faculty involved in phase one of the OCL project were invited to participate in the study. Additionally, documents from eight OCL courses created by study participants were analyzed to obtain additional data for the study.

A purposeful sample of ten faculty members working on solo grants comprised the faculty interview sample. Although some OCL grants were awarded to teams of faculty working collaboratively on course redesign work, teams were not considered for this study as faculty working together may not resemble faculty working individually to adopt curriculum innovations.

Document analysis provided the means to determine the extent to which the faculty actually incorporated OER principles into their redesigned courses and was used to validate the findings derived from faculty interview data. A convenience sample of eight OCL courses was selected for the document analysis. The documents from each course selected for the analysis were cataloged and analyzed to determine their degree of openness. The following section describes how the interviews and document analysis were conducted.

**Methods**

Rogers (1983) notes: “Data-gathering methods in process research are usually less structured and the data are typically more qualitative in nature than they are in variance research. Seldom are statistical methods used to analyze the data in process research” (p. 194). The study, looking at the process faculty use to identify and incorporate Open Educational Resources (OER) into their courses, utilized two different qualitative research
methods, interviews based on open-ended questions and document analysis, to obtain data.

Faculty members invited to participate in the study were selected from the list of grantees working on the first phase of the OCL project. Forty one grants were awarded to faculty to redesign courses in the first phase of the project. The project also awarded additional grants to librarians, instructional designers, and other support staff. Twenty seven of the 41 grants for course redesign work were awarded to single faculty while 14 were awarded to teams consisting of two or more faculty members. Since some grantees were awarded grants to develop two and three courses during phase one of the OCL project, the purposeful sample of 10 individuals was drawn from a pool of 21 eligible faculty members.

Invitations were sent to 12 faculty members via email and interviews were scheduled with 10 who indicated they were interested in participating in the study. The sample included faculty teaching in a variety of disciplines, including the humanities, social sciences, science, mathematics, and business, at eight public community and technical colleges located throughout Washington state. Faculty participants were associated with community and technical colleges located throughout the state of Washington. Of these colleges, seven were located on the west side of the state and three on the east side and ranged from small colleges serving approximately 2,000 full time equivalent (FTE) students to large colleges serving over 9,000 FTE. Both part-time and full-time, tenured faculty were invited to participate in the study; three faculty involved in the study have part time appointments at one or more colleges while seven participants hold tenured positions. All faculty who participated in the study were experienced teachers, having served anywhere from five to thirty years in the classroom.

**Study Protocol**

The study uses an open-ended interview protocol (Patton, 2002) to conduct the
interviews. According to Patton (2002), when researchers use a semi-structured and open-ended interview process, the exact wording and sequence of questions is determined prior to commencing the study. Completely open-ended questions are written for the interview guide and each study participant is asked the same questions in the same order.

Interviews were conducted in the participants’ offices. Eight interviews were conducted in October 2010, and the final two interviews were completed in January 2011. The interview guide devised for the study ensured each participant was asked the same set of questions. The interview questions investigated the participants’ experience with the OCL project using the lens provided by Rogers’ (2003) five stage innovation-decision process model.

Following a series of questions designed to become familiar with the participant’s community college teaching experience, the interview questions probed into areas designed to provide understanding about the process each faculty member went through to complete their OCL project in relation to Rogers (2003) five stage innovation-decision process model. For example, participants were asked “Can you tell me about how you came to learn about the OCL project?” to obtain data about how they heard about the OCL project as learning about an innovation is the first stage of the innovation-decision process (Rogers, 2003). Other questions asked how easy or difficult it was to find appropriate OER, how satisfied faculty were with the resources ultimately selected for their OCL course and whether or not they would encourage colleagues to adopt OER in the future. The complete interview guide is included in Appendix A.

**Study Participants**

Washington state supports 34 public community and technical colleges, funded to
educate over 140,000 full time equivalent (FTE) students each year (D. Graham, personal communication, May 26, 2011). Ten faculty members working at eight different community and technical colleges, located in urban and suburban areas of the state, participated in the study. Participants have teaching appointments in technical / career education as well as in general education fields of study. Two participants worked at colleges that offer applied baccalaureate degrees as well as associate and applied associate degree programs.

Just as the colleges represented in the study have unique characteristics, so do the faculty who participated in the study. Their teaching experience and educational background, employment status, and teaching philosophies were diverse. Even so, their interest in the OCL project provided a common link between each participant in the study. The study participants include:

- **Lexie**, a tenured instructor with five years of teaching experience. She teaches transfer courses in business and accounting at a larger urban community college specializing in transfer education.

- **Ryan**, who teaches science courses using problem-based learning pedagogy. A graduate of a community college who went on to earn a doctoral degree, Ryan is a tenured instructor with five years of full time teaching experience.

- **Michael**, a full time, tenured humanities instructor with over ten years of experience in his field of study. Having earned a doctoral degree in his field, he not only shares his expertise in the classroom, but he is also engaged in creative endeavors outside the classroom.

- **Angela**, a tenured instructor with fourteen years of teaching experience in business-related courses. Angela is not only a published author, but she also has prior
experience creating open source educational material.

- Robert, a tenured instructor with other thirty years of experience in the classroom. Teaching in one of the STEM (science, technology, engineering, and mathematics) fields, Robert had previously written a textbook he shared openly with his colleagues.

- Ian, another STEM instructor, currently working in a part time position following a successful career as a tenured university professor.

- Lauren, a social scientist with more than six years of teaching experience. She holds a tenured appointment at her college.

- Margaret, a part time faculty member who taught STEM-related courses for over twenty years at a variety of colleges. She had extensive experience with open source educational material produced by governmental agencies as a result of previous positions.

- Adam, a part time faculty member at several colleges, who teaches courses in the humanities.

- Gary, after a long and varied career in education, currently holds a tenured appointment with more than eight years of classroom teaching experience in the humanities.

Table 1 summarizes the study participants’ characteristics.

**Interview Analysis**

Interviews for the study were conducted according to ethical guidelines. Participants were provided an explanation of the study and a description of any potential risks. In reviewing the Consent Form with each participant, I emphasized that I would adhere to the confidentiality clause outlined in the Consent Form and avoid identifying study participants to
the best of my ability by replacing their names with pseudonyms. I also pointed out, however, that given the widespread attention the OCL project has received over the past two years, as well as the small number of faculty involved in the project, confidentiality couldn’t be absolutely guaranteed. Having been provided this information, each participant signed the research study Consent Form prior to the beginning of the actual interview. A copy of the Consent Form is found in Appendix C.

Interviews were recorded, transcribed and coded. Coding the data required (a) finding themes and concepts present in the transcripts, (b) deciding how to label them, and (c) determining whether or not any relationships between the codes needed to be identified (Rubin & Rubin, 2005). Rogers’ (2003) theory of the diffusion of innovations provided the lens for analyzing the data.

The dissertation study design incorporated triangulation with document analysis used to validate the data collected from faculty interviews. Documents associated with eight OCL courses completed by faculty study participants were analyzed to determine whether or not the faculty’s characterization of their use of open textbooks and OERs, the curricular innovation of interest in the study, was congruent with the degree of openness present in their OCL course curriculum.

**Document Analysis**

Documents provide researchers with a “rich source of information, contextually relevant, and grounded in the contexts they represent” (Stage & Manning, 2003, p. 86). Document analysis also has the advantage of providing qualitative researchers with an unobtrusive data collection method (Patton, 2002). Mason (1996) notes however, that while documents analysis methods are widely used in social research, it is important for researchers
to first consider why they want to use data generated from text-based material. She suggests four possible reasons why researchers should consider using document analysis:

- An ontological position that suggests documents and related material are relevant to understanding the social world along with an epistemological position that suggests
the documentary material provides evidence of these ontological properties.

- No alternative data sources are available to help explain a phenomenon.
- Relevant documents or visual data exist and are easily accessible.
- Document analysis can verify, contextualize or clarify data derived from interviews and observations.

In the case of this study, I choose to incorporate document analysis to verify and contextualize the information derived from faculty interviews. Document analysis provides a means for comparing data derived from faculty interviews about their adoption of OER with their actual practice. The document analysis in the study consisted of a systemic analysis of the digital documents associated with courses developed for the OCL project by eight of the faculty previously interviewed for the study. A rubric, designed specifically for the study, was used to collect and record data collected from the document analysis. The process used to construct the rubric and complete the document analysis is outlined in the following sections.

**The Openness Scorecard: A Document Analysis Rubric**

Mason (1996) urges researchers to establish a clear set of principles prior to working with print-based material and she recommends that they develop techniques to ensure that data is recorded in a consistent and systematic manner. Recognizing the need to record data from the document analysis is a consistent and systematic way, I created a rubric-based scorecard to record the data derived from analyzing OER course material. The rubric, named the *Openness Scorecard*, is based on the work of Hilton, Wiley, Stein, and Johnson (2010) which describes key parameters associated with OER. The authors assert that while “the construct of openness is rich and multidimensional” (p. 38) broadly speaking, they consider
openness from a legal and a technical point of view. They describe four ways educational resources can be legally licensed in order to increase openness as well as four technical considerations that affect openness.

From a legal licensing standpoint, Hilton, Wiley, Stein, and Johnson (2010) indicate that the creators of educational resources can license material so others can

- reuse the resource in its entirety;
- redistribute copies of the original work;
- revise or modify the work in some manner; or
- remix two or more individual resources to create a new, derivative work.

Although openness is assured when educational resources are licensed to be reused freely, allowing others to redistribute resources increases openness and “allowing others to remix and revise the work further enhances openness, and provides opportunities for new OER to be created” (p. 40).

Hilton, Wiley, Stein, and Johnson (2010) contend, however, that technical factors also impact the openness of an OER, especially for OER that allow others to revise and/or remix the original resource. As they note, “if producers of OERs give people permission to use their resources, they should also consider giving them the technical keys to unlock the OERs so that they can adapt the OER to their needs” (p. 41). According to the authors, the technical considerations that need to be considered in determining the openness of an OER include:

- access to editing tools and software;
- the level of expertise or skill required to revise or remix the resource;
- the extent to which the resource can be edited in a meaningful way; and
- whether or not the resource includes access to any required source-files.
Hilton, Wiley, Stein, and Johnson (2010) recommend that instructional designers consider these legal and technical parameters as they construct new OER to ensure their resources provide the degree of openness they wish to provide. The framework outlined by Hilton, Wiley, Stein, and Johnson (2010) also provides an ideal model for assessing the degree of openness of present in the OCL courses redesigned for the Open Course Library project and I used these parameters to construct the Openness Scorecard, a rubric used to analyze the relative degree of openness of eight OCL courses. Figure 4 shows how the Openness Scorecard was constructed using these parameters and the following section explains how it was used to conduct the document analysis portion of the study.

**Openness Scorecard : OVERALL COURSE SCORE IS _ % ( _ POINTS OUT OF A POSSIBLE _ POINTS)**

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<th>ALMS</th>
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<td>Open source tools</td>
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<td>Course documents</td>
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<tr>
<td>Links</td>
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<tr>
<td>OCL courses</td>
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Note. 1 = category exhibits trait; 0 = category does not exhibit trait

**Figure 4: Openness Scorecard**

**Analyzing Course Documents**

The OCL grant allows faculty to design courses to be used with their preferred teaching modality. Consequently, faculty designed courses to be taught online, hybrid or face-to-face format, depending on their personal preference. However, the OCL grant required faculty to submit all course material developed for the project in a digital format,
regardless of how the instructor planned to offer the course. This factor makes it possible to conduct a document analysis as all OCL course curriculum was designed to be shared digitally.

Because the document analysis was conducted prior to the completion of the first phase of the OCL project, only a few courses were posted on the OCL Preview list and available for public access. However, two courses developed by faculty participants in the study were posted on this web site. These courses, along with six additional courses that faculty interviewed for the study agreed to let me access, became the sample for the document analysis portion of the study. The document analysis took place in March, 2011. Although the courses were still undergoing revision at the time the document analysis was conducted, the data derived from the analysis provided insight into how each faculty member initially incorporated OER into their courses. Using the Openness Scorecard to collect data from the analysis, I was able to scrutinize and categorize each document found within the courses and make a determination as to the overall openness of the eight courses analyzed. The data collected for each course are summarized in Table 2 through Table 9, located in Chapter Five, pages 103-109.

Course resources, ranging from syllabi to textbooks and links to streaming media and other web-based resources, received a numerical score which assessed the relative openness of the resource. Low scores indicated a resource was less open than resources receiving higher scores. Once the course document inventory was completed for each course, the results for each course were compared to the others to determine the relative degree of openness present in each course. The following section describes how data was derived from interviews and the document analysis ensured that the study’s findings were valid.
Validation of Study Findings

Maxwell (1992) suggests that validity in qualitative research is “simply a shorthand way of referring to the validity of the data or accounts derived from that method” (p. 284). Credibility in qualitative research, however, requires researchers to approach their work with rigor.

One way to ensure the rigor of research methods and support the validity of research findings is to use more than one method to collect and / or analyze data. According to Patton (2002), studies that use only one data collection method are subject to errors and lack credibility because they don’t provide diverse ways of looking at the phenomena being studied. He recommends that qualitative researchers use multiple data collection techniques when studying the same setting, issue, or program. He calls this technique ‘triangulation,’ a word used in land surveying which brings “to mind the world’s strongest geometric shape—the triangle” (p. 555) saying that “the logic of triangulation is based on the premise that no single method ever adequately solves the problem of rival explanations” (p. 555).

Triangulation is used in the study to ensure that the data collected is trustworthy. In addition to the interview data, which used member checking to ensure the accuracy of the interview transcripts, documents analysis included a review the redesigned course curriculum to determine whether or not each participant’s characterization of their use of OER, the curricular innovation of interest in this study, corresponds with the degree of openness found in their course documents and resources. Triangulation ensures that the data derived from interviews and document analysis is creditable and valid and that the findings provide insight into the process faculty used to adopt OER. The next section considers the study’s limitations.
Limitations of the Study

Qualitative studies by themselves cannot provide definitive answers to a research question. Instead, as Fauste (2007) characterizes the qualitative research process, it is one of “joining the conversation” rather than “having the last word” (para. 40). Although the findings of this qualitative study may not be generalizable to all faculty adopting curricular innovations, they represent an important conversation about how faculty adopt innovations like OER. The findings, therefore, while specific to the faculty involved in the study, provide insight into the process higher education faculty go through to adopt innovative practices.

Another limitation present in this study is related to the timing of the study as data was collected during the course of the project rather than at its conclusion. Given that the study was conducted during the formative stage of the project, replicating it at a different stage of the grant cycle might result in a different set of findings or findings with greater depth and richness. This limitation can be easily addressed, however, with future research designed to expand our understanding of how faculty adopt curricular innovations as they update and redesign their curriculum.

Summary

This chapter describes the study’s methodology and provides detail on how the study was designed and carried out. Employing a descriptive qualitative study methodology, the study obtained data through the use of interviews with ten faculty members involved in the OCL grant project. Additional data was obtained from a document analysis of the course materials associated with eight of the courses study participants developed for the OCL project. The interview protocol was based on an interview guide consisting of open ended questions designed to elicit information about the participants’ experience with the OCL
project. The Openness Scorecard was used to compile and record information derived from the document analysis and provide an assessment of each course’s relative degree of openness. Working in tandem, the two research methods supported the validity of research findings. Although the study was limited by the timing of the data collection, which was conducted prior to the OCL grant’s conclusion, future study can continue to expand understanding of how faculty adopt curricular innovations.

In the following two chapters, findings emerge along two lines related to the interview data and document analysis. The findings provided initial answers to my research questions which asked how community college access can be broadened through curricular innovations like OER. The interview findings are discussed in Chapter Four while the document analysis is covered in Chapter Five.
CHAPTER FOUR

FINDINGS FROM FACULTY INTERVIEWS

The study is designed to describe how faculty might go about using Open Educational Resources (OER), a curriculum innovation designed to broaden access to higher education and lower the cost of essential textbooks, to redesign courses they teach. OER are a recent innovation made possible by the development of the internet and supported by educators who believe in sharing educational resources freely. Fundamentally, OER are based on a belief “that knowledge should be disseminated and shared freely through the Internet for the benefit of society as a whole” (Yuan, MacNeill, & Kraan, 2008).

The Washington State Board for Community and Technical Colleges’ (SBCTC) Open Course Library (OCL) grant project provided an ideal setting for learning more about the process faculty go through to adopt OER and integrate these resources into course curriculum. The goals of the OCL grant are to redesign curriculum for 81 high enrollment courses and:

- reduce textbook costs for students by limiting costs to $30 or less;
- provide new OER for faculty to use in their courses;
- engage in the global open educational resources discussion; and
- improve course completion rates with well-designed, affordable courses (Open Course Library, 2011b).

Emerging Themes

The OCL project goals are lofty and important given the soaring cost of higher education and the drive to improve completion rates. The study was designed to describe how faculty supported the OCL project’s goals to increase access and lower student costs for textbooks in order to increase student success by using OER to redesign courses they teach.
The ten faculty members interviewed for the study approached the OCL project in their own distinct way. In spite of the individual approaches taken to complete the grant project, five major themes emerged from the data which provide a foundation for gaining insight into the process faculty use to adopt OER to redesign course curriculum. The themes include (a) the use of OER to increase accessibility, (b) faculty attitudes about the cost of commercial textbooks compared to OER, (c) the role incentives play in encouraging faculty to apply for an OCL grant, (d) barriers faculty encounter when infusing OER into course curriculum, and (e) the role of support staff in adopting curricular innovations.

**Five Themes**

Each of the faculty interviewed for this study approached the OCL grant project according to their own set of motivations and expectations. The next section of this chapter explores these motivations and expectations by considering them within the framework of the five themes introduced in this chapter. The first theme examines the idea of accessibility which is related to the OCL grant’s goal to “improve access and completion of higher education for low income young adults in Washington State” (Washington State Student Completion Initiative, n.d., p. 1).

**Theme One: Enhancing Course Accessibility**

Even though Washington state community colleges provide an open door to higher education, barriers exist which prevent many students from accomplishing their educational goals. For some students, the cost of textbooks is a barrier. Students unable to purchase textbooks in a timely manner often find it difficult to complete their courses successfully. The OCL project is designed to increase higher education accessibility by driving “down the cost of attending a higher education institution” (Redd, 2011) by testing whether or not
affordable textbooks costs can improve student course completion rates (Open Course Library, 2011b).

Making college accessible, however, goes beyond simply making higher education more affordable. The OCL project, recognizing that some disabled students face insurmountable barriers when they need to access educational resources which are physically inaccessible, requires faculty to employ universal design in instruction principles in their redesigned curriculum to ensure that all students can access course material. This is important as almost 11% of all college undergraduates attending a college during the 2007-2008 school year reported they had one or more disabilities (U. S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, 2009).

Interviewed by Stacy Redd, Tom Caswell, the Open Program Manager for the Washington State Board for Community and Technical Colleges, described the OCL project as being intentional about creating accessible material for the OCL, saying:

We’ve hired an accessibility specialist and all the materials that are being created are created with accessibility in mind. For example, we’re adding captions to all the videos we use in our courses and making those transcripts available. We’re of course adding alt tags so that screen readers can read all the course materials. If there are images, all of those images are required to be described using alt attributes. The other big thing is for any text materials we’re asking our entire faculty to use headings so that screen readers can easily jump from chapter to chapter (Redd, 2011).

The OCL project, then, was conceived as a means for making college more accessible by creating open courses available for anyone to use. The OCL grant requires faculty to (a) develop affordable courses in order to reduce the cost of required student materials and
textbooks, and (b) integrate universal design features to make the course accessible to students using adaptive technologies such as screen readers. As Lexie shared:

I think that there’s a way to make college more accessible for everyone. And I think open resources has made this conversation [possible]. There’s a lot of things that I’m aware of with the books that I wouldn’t have been aware of without this project. And I think community college really is the gateway to education for everyone.

The following sections examine faculty perceptions about the OCL project’s goals related to reducing textbooks costs and creating accessible courses in order to keep the door to higher education open to all.

**More affordable courses.** Gary, speaking philosophically, reflected that “to me, education and learning should be free! Financially free and logistically free.” While higher education is unlikely to achieve this lofty goal in the near future, the OCL project is working to make college more affordable and accessible by reducing the student textbook costs.

Lauren told me that she really believed in the OCL project’s goal to make higher education more affordable and accessible, saying:

So, having the open door access and being able to provide open access materials to help defray those college cost is, I think, a huge benefit and I think it's going to be particularly helpful for, like, single parents, you know, who have to find child care for their kids while they're at school. It's just going to really help defray those costs quite a bit and maybe even allow more people to come to school if they don't have the burden of, you know, $500 in texts every quarter.

Adam’s comments showed agreement with Lauren as he remarked:

That, because of the lower costs that are involved with Open Course Library and the
cost savings is significant to students. That by itself allows more access to college itself. Because the whole idea is to, is to get – is to offer more access to more students at the community college level.

Speaking from a practical standpoint, Angela simply noted that:
If we can get rid of the textbook costs, that’s huge, right? And this particular course, because a lot of students don't buy the textbook [laugh], it might not be as relevant but definitely when you're talking about the sciences, right, when they're paying $200 a book.

As these comments indicate, the cost of textbooks is a concern to the many of the faculty interviewed for this study. The faculty expressed less awareness of the need to design courses to be accessible to students using adaptive technologies prior to becoming involved in the OCL project, however. The next section discusses how faculty approached the task of making their courses accessible to all students including those with disabilities.

**Accessibility through universal design.** As Tom Caswell, the OCL Grant Project Manager, stated in an interview with *Education Insider News* reporter Stacey Redd, creating accessible courses upfront:

> Ends up saving quite a bit of money as well, because retrofitting anything after the fact means you have to go do dig back into the content, and you have to figure out how to get back into it many times. When you are retrofitting, you’re usually just adapting it for one person and then it never makes it into the actual course. So many times retrofitting happens over and over again. By adding accessibility features upfront, it’s there for everyone and it really helps make it that much more useful to more people (Redd, 2011).
By requiring faculty to design their courses using universal design principles, the OCL project gave study participants a new understanding of the importance of accessibility for disabled students. For many, this awareness was new and a little foreign. Adam, for example, shared that he thought “that one disadvantage may be – and I haven’t experienced it yet, but I know it’s out there – is how Open Course Library or open source material is accessible to people with disabilities.” Ryan had a similar viewpoint, relating:

I also think it’s great that there is an effort in this project to push for accessibility in the materials although that, that in the end could be one of the most difficult steps is to, to get the materials as accessible as we’d like them to be.

Lauren’s experience with the OCL project helped her develop a new understanding of how she could make her courses more accessible for students. She also found, however, that adding accessible content to her course entailed a lot of additional work. She told me she had spent considerable time transcribing videos for her course in order to provide access to this material for students with hearing disabilities, saying:

So now open access is a lot different and plus the disability access has really made me think differently about the materials that I'm putting together. And, you know, it's a pain! [laugh] … it's not easy … and that has really changed a lot for me.

She went on to say:

I was really kinda thinking, oh I'll just be able to upload a lot of the stuff that I already have, and it won't be a problem but then again, starting thinking about copyright, disability access, and, I mean those two things right there I really, I mean, they're hard! [laugh].

Making higher education accessible is important as earning a degree or certificate
from institutions of higher education is widely viewed as a key to future prosperity. However, “for too many low-income students the door to higher education is only partially open because financial constraints limit their choices of where and how they attend college” (Tinto, 2008). Other students struggle to adapt to traditional higher education learning environments due to disabilities or other factors (Shaw, 2011). The OCL project, recognizing that access to higher education requires more than an open door, invited faculty to redesign 81 high enrollment courses using affordable textbooks and accessible course designs. The goal of this work was to meet the needs of all students and enhance student success and course completion.

Reducing the cost of textbooks was a key element in this effort. Although the OCL project did not require faculty to use open source textbooks in their redesigned courses, it did require them to provide students with textbook options that cost $30 or less. The second theme identified in the study findings, namely the extent to which faculty are concerned with the high cost of textbooks and their views on the viability of replacing commercial textbooks with OER is explored in the next section.

**Theme Two: Faculty Attitudes Related to Textbooks and Open Source Material**

Textbooks have long provided instructors with a means of organizing curriculum (Lattuca & Stark, 2009). However, as the price of textbooks has increased and students routinely question the need to purchase them, some higher education faculty are moving to adopt open source textbooks to reduce student costs (Petrides, Jimes, Middleton-Detzner, Walling & Weiss, 2011). More than 2,500 higher education faculty working across the United States have signed the Student PIRGs’ (2011) Faculty Statement on Open Textbooks, signaling their interest in the issue. However, many faculty express skepticism at the idea that
affordable and/or open source textbooks are also high quality textbooks (Harley, Lawrence, Acord, & Dixson, 2010).

Early indications are, however, that courses based on OER and open textbooks not only promote active learning but they also increase student engagement and lead to improved student success (Educause, 2011). Additionally, some faculty report that adopting open textbooks enhances student success as all students can afford to obtain required textbooks prior to the first day of class (Petrides, Jimes, Middleton-Detzner, Walling & Weiss, 2011).

Since the OCL project seeks to reduce the cost of textbooks and increase student success, understanding faculty attitudes about OER in general and open textbooks in particular provides insight into the reasons faculty chose to participate in OER projects. Although each of the ten faculty interviewed for the study embrace the OCL project’s to develop open courses, many did not find it easy to abandon commercial textbooks. Study data related to faculty concerns and attitudes about open source textbooks are examined in the following sections.

**Faculty views about replacing textbooks with OER.** Angela, a tenured faculty member teaching in a pre-professional transfer program, was vehement in her rejection of commercial textbooks in spite of the fact that she is a published textbook author. According to Angela, the textbooks available in her field are not only expensive, they are out-of-date as soon as they are published. As Angela told me:

I just thought, how I can make students pay 120 bucks for a book that’s out of date and wrong? . . . Things were wrong in [topic], the stress was wrong, the focus was wrong, you know, what’s most important was wrong! … So I had gone a long time away from that and just kinda done my own thing ‘cause I didn’t want them to pay [laugh] for the
textbook. It was ridiculous!

She also noted her students:

Weren’t cracking them [the textbooks] open anyways. I mean that was coming back in our student evals. ‘I never opened my book,’ you know, so they were just relying entirely on lectures and PowerPoint presentations in class to learn the material.

Given her experience with textbooks, Angela was enthusiastic about moving to a curriculum based wholly on open source material.

Lauren shared that she had been slowly developing more resources for her courses for a number of years “mainly because, you know textbook costs are just crazy and particularly for, you know, a lot of the community college students, that's really problematic.” She reported she was particularly interested in creating online material to supplement a low cost reader so she wouldn’t have to require students to purchase an expensive, comprehensive textbook, telling me this would allow her students to “actually kinda delve into some of the material. . .” rather than rely on a commercial textbook to acquire subject knowledge.

Faculty teaching in disciplines such as the arts and the sciences where new textbooks can cost $200 or more, were also sympathetic to the plight of students unable to afford textbooks. Adam, a part time humanities instructor, reported he was attracted to the OCL project in part because of its “focus on gaining access for students to college and lowering costs and completing or increasing completion rates. That’s very important because I see that every quarter. I see students that can’t afford the textbook.”

Another part time instructor, Ian, felt it was hard to justify the use of expensive textbooks in courses unless the textbook has a lasting value to the student. As he put it, textbooks in his field are:
A teaching tool and they’re so much step-by-step that if you have to look up something, it’s really a lot of a hassle. It’s not efficient…And the only, maybe they have a nice wrap up at the end, but gee, you’re paying 180 bucks for six pages? I mean, that doesn’t work!

Other faculty, however, were more favorably disposed towards using commercial textbooks as the basis for their redesigned OCL course. Robert, a tenured faculty member with a long history of developing and sharing educational resources including a textbook, indicated that he was skeptical that expensive textbooks prevent anyone from accessing higher education. According to Robert:

The Open Course Library was initially sold . . . to a lot of people on the premise that textbooks are too expensive . . . textbook costs are one of the hurdles students need to overcome. I truly do not believe that. I know textbooks cost a lot of money, but if you’re already committing these hundreds and hundreds of hours to the study of a single course and you’re paying, you know, several hundred dollars or thousand dollars of tuition, even a $100 [subject] book or a $200 [subject] book is a small part of what’s going on. I don’t think anybody really drops out of college because the price of the textbook.

Further, he noted that “everyone loves to hate publishers. They’re, I think they provide this wonderful service to us that they have historically. I mean they try to deliver what we ask for and they’ve gotten totally hammered by the national used market.”

Lexie, echoed Robert’s comments, noting “Our publishers have been amazing for us and… I would like to see them as a partner in the situation rather than as the evil giant.” Her experience with the OCL project led her to conclude:
That we could make college more open by making the books less expensive. I think that one of the things that I’ve realized really quickly is there’s certain things that the publishers do that I need and there are certain things they do that I don’t.

Michael, who adopted a commercial textbook for his OCL course, also expressed some skepticism about substituting textbooks with open source material. He stated:

I just see the problem and the issues of, of how good stuff, good quality content, gets into that domain [the OER domain], you know. Where is the motivation for experts and scholars to do that? Where is the motivation to get a PhD, to have that kind of a quality or a level of [expertise], you know, if, if nobody’s paying for it?

Choosing a textbook is considered a faculty prerogative and while faculty may consider cost when selecting a text, issues of quality, reliability and accuracy assume greater importance in their decision-making (Harley, Lawrence, Acord, & Dixson, 2010). Although faculty in the study appeared empathetic to student concerns about textbook costs and several incorporated open source texts into their redesigned OCL courses, others remained committed to the use of commercial textbooks. In some cases, faculty suggested they would have adopted an open source textbook if they could have identified a suitable alternative to the commercial textbook they ultimately selected.

In general, the study’s data indicated that while the faculty were aware of the high cost of textbooks and the burden these costs place on students, concern about textbook costs alone did not motivate faculty to adopt open source textbooks for their OCL courses. This finding is congruent with the findings of a 2009 study examining faculty perceptions about textbook affordability and the use of open textbooks. In this study, researchers found faculty sympathetic to concerns about textbook affordability and interested in having a diversity of
textbook options made available to them as long as no one solution was dictated (Harley, Lawrence, Acord, & Dixson, 2010). Harley, Lawrence, Acord, and Dixson (2009) also found that while faculty might complain about publishers, they also felt publishers provided important services which were deserving of adequate compensation. These findings are largely replicated by the present study.

Making education more accessible by reducing the cost of textbooks and other education materials was a major goal of the OCL project. Beyond making education more financially accessible, though, the OCL project also encourages faculty to create digital courses accessible to students of varying abilities and cultural backgrounds. The following section looks at the role incentives played in motivating and encouraging faculty to adopt curricular innovations like OER which enhance accessibility and student success.

**Theme Three: OER and the Role of Incentives**

*Giving Knowledge for Free*, a report sponsored by the Organisation for Economic Co-operation and Development’s Centre for Educational Research and Innovation (2007), suggests that a number of complex and multi-faceted incentives motivate individual faculty to participate in OER initiatives. Yuan, MacNeill, and Kraan (2008) agree with this conclusion, writing that a combination of motivations and incentives appear to influence faculty to provide, produce and use OER with several “likely to be in play simultaneously, [including] both altruistic motives and economic incentives” (p. 14).

Research has identified four incentives, however, that seem most likely to motivate faculty to become active participants in the OER movement. These incentives can be summarized as (a) altruism, which supports the traditional academic value of sharing knowledge, (b) personal non-monetary gain such as publicity and / or enhancing one’s
reputation, (c) sharing freely to enhance the future commercial value of educational material one has created, and (d) a recognition that the effort required to obtain copyright or patent protection isn’t worth the time and trouble (OECD, 2007; Yuan, MacNeill, & Kraan, 2008; Hodgkinson-Williams 2010).

These four incentives appear to have played a role in motivating study participants to become involved in the OCL grant project. In spite of the OCL project’s financial incentives, the faculty involved in the study indicated other incentives played a significant role in motivating them to participate in the grant project. Altruism proved to be an especially powerful motivator in encouraging faculty to apply for an OCL grant. Altruism, or selflessness where one is “helpful to other people with little or no interest in being rewarded for one's efforts” (Wordiq.com, 2010) is compatible with academic values as “educators around the world have a natural propensity to collaborate” (Chow, 2010, p. 1).

A number of participants reported that the OCL project’s emphasis on collaborating and sharing educational resources provided an important incentive to participate in the project. Several faculty also noted that the OCL grants provided them with an opportunity to share material they had developed previously without the hassle of dealing with copyright restrictions and /or traditional publishers. Study participants who had worked with commercial publishers earlier appeared especially appreciative of sharing their educational materials openly as a result of participating in the OCL grant project. Finally, financial gain, an incentive found to be of limited importance in previous studies (OECD, 2007), played a significant if secondary role in motivating faculty to apply for an OCL grant and redesign curriculum using OER. The following sections examine the role these incentives played in encouraging faculty to participate in the OCL Project.
Altruistic incentives. The grant’s goal to create open course materials to be shared freely resonated with many of the study participants. Altruism, then, factored in many faculty members’ decision to participate in the OCL grant project. For example, Gary shared:

How I decided to apply was, it seemed to be exactly the kind of thing that I believe in. I also thought it would be a way for me to learn a lot of new things. So, it seemed its . . . If I were going to make, write a grant for myself to do something, it would be to do exactly what this grant enables me to do.

Ryan was similarly motivated to apply for an OCL grant, saying: “I do, I do like the goals of the project. I think, I think that is the main reason why I jumped on board.” He also shared: “I see a real benefit in things that are open. It does require that people jump on board and make use of them in order to improve them, but, but I see a real benefit to it.”

Lauren and Adam both mentioned that the OCL grant’s goal to reduce textbook costs appealed to them and provided them with motivation to apply for a grant. As Adam said:

The focus on gaining access for students to [go to] college and lowering costs, and completing or increasing completion rates. That’s very important because I see that every quarter. I see students that can’t afford the textbook.

Lauren echoed this sentiment:

Textbook costs are just crazy and particularly for, you know, a lot of the community college students, that's really problematic. . . . So when this came up, I was like, ‘Wow! This will then allow me to actually really concentrate on doing that.’

Associated with altruism is the incentive of collaborating and sharing knowledge with others. As the next section reports, the OCL project was motivational for some participants because it provided opportunities to collaborate with others.
Incentives to collaborate and share educational resources. Collaborating and sharing is an academic value (d’Antoni, 2009) and faculty may be motivated to participate in an OER initiative such as the OCL project simply to enjoy “the pleasure of sharing with peers” (OECD, 2007, p. 58). Among the ten faculty interviewed for the study, Angela appeared most motivated by the possibility of developing relationships with other faculty as a result of working on her OCL grant project. When asked how she came to apply for an OCL grant, Angela replied:

Well, I was really interested in the collaboration part of it [the OCL grant project]. I have collaborated with faculty across the state on some things before, and, and I was really interested to see if any other colleges had any, you know, had technology to do with the overhead of learning, you know, whether they had kinda of solved some of the things that I, you know, that takes, not even struggle with, it just takes a lot of time to do a lot of stuff.

According to Angela, the most important aspect of the OCL project was not to collect and create OER. Rather, it was the opportunity to collaborate with others in order to improve teachers’ skills that mattered. She noted:

It's really funny how we kinda latch onto things. Like technology. Like online. And then the main thing is that we have to have better teachers, you know, I mean, it’s so basic, right? . . . so any of these distractions, if it makes us collaborate more, right, then it's good. But it's just a way for us to collaborate. If we could find a way just to tell everybody ‘Let's collaborate,’ it'd be a lot faster!

She was emphatic in her assertion that collaboration was an essential part of being a successful instructor, stating:
You can, you can open access all you want. You can technology all you want. But I truly believe that there's nothing that can beat a good instructor. So, the important thing is to get instructors to talk to each other so we can all get better. [Laugh] That's the only way we're gonna get better. Otherwise we're just going to do our own thing 'cause it's comfortable, it's easy, it's sufficient, and nobody complains.

Gary also indicated that collaborating and sharing with others was important to him, telling me:

If we are serious about our mission as educators, then I think we have to presume that sharing what we do is the best way to improve. But if we're, if we're serious about wanting to improve, we have to be open to letting other people see what, what we do and we have to have access to what other to what other people are doing.

Robert shared that he took pleasure from his connection to other instructors teaching in institutions across the country, saying he’d both contributed to a number of projects over the and borrowed teaching materials from others, noting:

Yeah, I mean, I'm, I'm very much into let's share these ideas. If things work, cool, let's share them. If things don't work, tell me you tried it and I'll avoid trying it. I mean, so, I mean, I, I like being part of a [subject] community.

Sharing and collaborating with peers is a value that many faculty share and it is a central tenet of the OER movement in general and the Open Course Library in particular. By supporting collaboration and sharing among faculty, the OCL project provides an important incentive to a number of study participants.

Some faculty also suggested that the OCL grant provided them with an opportunity to share educational material they had previously created with a wider audience without going
through the process of working with commercial publishers. This incentive, the ability to share education resources easily and openly, is covered in the following section.

**Incentives to share resources openly.** Writing textbooks and developing educational resources is a labor intensive process and faculty with novel or “radically innovative” (deLespinasse, 2008, February 15, p. 2) approaches to their subject matter may have a difficult time finding a commercial publisher willing to publish their work. Open educational models, however, provide faculty with avenues to share their educational resources without relying on traditional publishers. Publishing and sharing material openly is motivating for many faculty especially if they are acknowledged as the author of the work and if they have a mechanism for knowing who is using their resources and how the material is being revised and reused (OECD, 2007).

Many experienced faculty routinely develop resources to supplement or replace the commercial textbooks used in their courses. Several faculty participating in the study had a long history of creating such materials. Some had even published commercial textbooks in the past. For these participants, the OCL project provided an opportunity to share resources with a large audience. Finding a forum where he could share his education material was particularly motivating to Robert. He mused:

> Why will people create open source material? Because there are a few nut cases like me who are willing to, you know, put in tons of hours and have reached a point in my career where I really don’t care about money. I mean, if they give me some, that’s wonderful. I’m more interested in getting it [the resources] out there.

As he told me, “I had been working, developing materials now for at least, oh fifteen, eighteen years, so I had a lot of stuff that was ready, in some sense, and looking for an outlet.”
Angela shared that she had written and published a commercial textbook and when the publisher “gave me back the rights . . . I put it on the web, open source.” She was motivated to apply for an OCL grant, she said “because I had developed a lot of books and wrote books and stuff like that before so I didn’t think it would be that hard.”

As Gary, the author of a self-published textbook confided:

Other people don’t jump at it [his textbook] and so, it, it was used at one college for a while and it’s used, I, I use it myself, but if I were doing it over again, maybe I would go to a regular publisher. Well, not now because I want it to be open source. So after this printing sells out, I’ll just put it all in Creative Commons, I think.

Although some research indicates that financial compensation is of limited importance to faculty creating OER (OECD, 2007), when I asked faculty how they came to apply for an OCL grant, the financial compensation offered to grantees was mentioned frequently. The following section explores the role that OCL grant funding played in encouraging faculty to become involved in the OCL project.

**Financial incentives.** There is little doubt that the availability of grant funds played at least a minor role in motivating faculty to apply for an OCL grant. Being paid to redesign curriculum, a task typically considered part of their regular job assignment, was motivating for at least eight of the ten study participants, even if it wasn’t the primary reason they applied for an OCL grant. Adam related that, as “an Associate Faculty and a freeway flyer, I was trying to find a way where I might be able to make some money, you know, in the work that I do.” However, he also noted that while the availability of funding was “really exciting,” it was the grant’s focus on increasing access to higher education that made participation in the project meaningful to him. Still, Adam said:
Instructors and people in this business that are committed to getting to that goal of better access and completion rates and lower costs – they’re not going to work for free but they’re certainly willing to be resources for anything they can within reasonable means to help.

Margaret, another part time instructor, had similar feelings about OCL grant funding, sharing:

And I appreciated, I did, I really appreciated that for the first time ever I was going to get paid for developing course material [Laugh]. Because it’s just – you just assume that, ‘OK, we’re going to ask [name] to teach such and such a course and she’s going to either have her materials already developed or she’s going to develop them. And then we start paying her when the students show up.’ That’s just the way it’s always been.

Like part time faculty, full time tenured faculty also appreciated the grant’s financial support. As Robert stated, “I’m glad it [OCL] exists. I’m glad they’re giving me money to motivate, to polish, to put it all together.” Angela concurred with Robert, telling me:

Yeah, it [the OCL project] looked like a good opportunity to get, you know, to get the work I was already doing funded and, and to collaborate and find out what was going on in the rest of the state.

Likewise, Lauren told me she was trying to develop more digital course resources for her courses, and “when this [the OCL grant project] came up, I was like, Wow! This will then allow me to actually really concentrate on doing that and actually get paid for it instead of just doing it on my own time!”

Gary, tenured at a small technical college, used his grant funds to buy release time
from his teaching schedule so he could focus his time and attention on the OCL project. He shared that OCL funding allowed him to “have release time this quarter. Totally. To work on this grant.” He went on to say that he “insisted upon that. I did not want to do. . . Most people I think are taking 5 hours per quarter. I could, I could not work that way.”

On the other hand, Ryan applied for an OCL grant primarily because he “saw an opportunity to redesign my [course] in a way that I felt was better for student learning.” Even so, he also acknowledged that grant funds were a plus, telling me “it’s time consuming to make those changes and it was nice to, to have funds to actually buy out some of that time and, and to pay for some of the effort.”

Grant funding, however, was not an important incentive for everyone interviewed for the study. For example, Lexie reported she applied for an OCL grant because she was concerned about the long term impact OCL courses might have on her department. She felt that if she wanted to influence the process and have a say in how the OCL curriculum for her field of study was designed, she needed to get involved in the project. She told me “it’s kinda like the election. If you want to have a voice, jump in and get involved. Or shut up!” She went on to declare “I never did it [applied for an OCL grant] for the money. I did it to protect the integrity of my industry, I guess, and, and my colleagues, but, it’s, it’s a lot of work.”

Redesigning curriculum to integrate OER requires a significant investment of time and effort. Although several studies have indicated that altruism is a significant motivational factor for many faculty who have become involved in OER initiatives, Yuan, MacNeill and Kraan (2008) suggest faculty have little incentive to develop and refine OER without institutional or peer recognition or encouragement. The OCL grant project was designed to provide faculty with institutional recognition and encouragement and the study’s findings
indicate that faculty participating in the study were primarily motivated to redesign their course curriculum using open educational practices due to (a) altruistic motives, (b) the ability to collaborate and share resources with other faculty, and (c) financial compensation. These result are congruent with research that shows faculty are motivated to become involved in OER projects for a combination of reasons, both for altruistic and financial reasons as well as other more personal and complex reasons (OECD, 2007; Yuan, MacNeill, & Kraan, 2008).

Even though faculty were motivated to develop course curriculum based on open educational practices, they encountered a number of barriers as they worked to integrate OER into their courses. The fourth theme that emerged from the study’s finding is related to the impact these barriers had on faculty adopting OER. The next section looks at the barriers faculty encountered as they redesigned their curriculum for the Open Course Library project.

**Theme Four: Barriers to Adopting Open Educational Resources (OER)**

Making a decision to redesign curriculum using OER is only the first of many steps involved in implementing the innovation. Like other projects that involve the use of innovations, adopting OER requires faculty to overcome barriers that may not only impede progress but which may ultimately derail their efforts. Each of the faculty interviewed for the study reported they encountered at least one barrier as they worked on their OCL project. The barriers encountered most frequently were (a) the unexpected amount of time required to convert a courses to an OER-based format, (b) difficulty in finding high quality OER suitable for their courses, and (c) the $30 limit on student resources including required textbooks. This section shares how the faculty participating in the study dealt with these barriers as they worked on their OCL projects.
Time. Developing and updating curriculum is a time consuming endeavor, especially if faculty are moving from a traditional course format to one that is more student centered (Fraser & Bosanquet, 2006). A major concern of faculty thinking about implementing OER into their courses is the time required to create and adapt educational resources into a form suitable for open distribution (Albright, 2009). In a survey conducted by the Organisation for Economic Co-Operation and Development in 2006, faculty already involved in the use and creation of OER were asked to rank nine possible barriers that might keep their colleagues from using OER. According to the respondents, over 60% felt that a lack of time was the greatest barrier (OECD, 2007). Faculty at the University of Exeter where an OER initiative was introduced in 2009, echoed this finding, reporting they struggled “to find the time to adapt existing material for OER in an environment in which they were already struggling to fulfill their teaching obligations” (Browne, Holding, Howell & Rodway-Dyer, 2010, p. 10).

Faculty interviewed for the study indicated the OCL grant project required more time than they had anticipated. Lexie shared, “I didn’t expect there to be a lot of resources out there. But I also don’t think I realized how much work it was going to cost me from a, from a work standpoint.” Margaret related that one of the disadvantages of redesigning her OCL course was that the project was so time-consuming, saying:

Well, I guess the easiest answer is the major disadvantage is it [using OER] takes a lot of time. It’s a real time sink. First, there’s the search. How broad is your search going to be? How narrow is it going to be? Are you alone doing that search (as I used to be)? Do you have help (as I now have)? So, even when somebody says, ‘Hey here’s a great website and it’s, you know, it’s public domain materials.’ That means it is totally free to you to use. All the images. Dah, dah, dah, dah, dah. All the data.
You’ve still got to sit down, you know, put your teacher head in gear and make it work for your students. That’s time consuming. . . At least for me it’s time consuming.

Michael also reported that searching for OER took a tremendous amount of time, saying “Yeah, a lot of time, yeah, just searching up, you know, stuff to link to that's interesting, you know. Then you have to maintain those links, of course, which I don’t like doing personally.”

Beyond the time spent searching for suitable OER, Robert emphasized his frustration with the amount of time required to evaluate potential course material, saying:

When I find stuff on the web, I have to do a lot more looking to see, to determine what is the quality level which takes up a lot more of my time that I'd rather spend doing other things. And part of it is just the, the quality varies tremendously on the web and it takes a lot of time to figure out the quality. If you find pieces here and there to put together a whole course, you can't have blanks. And in some cases, it's pretty much easier to create the whole thing with a singular voice than to try and mesh a whole bunch of different voices.

Gary echoed Robert’s concern, noting:

Well, it can take quite a bit of time to find something really, really good. You may have a lot of redundancy. If you're, if you're trying to look at a lot of stuff, not all of it's going to be equally good and equally valid. So, it takes time to get through it.

As Lauren summarized the situation, “So, so, there's just, there's, there's simply not enough time to do this project in, in the months that they've allotted us.”

As the faculty note in their comments, one of primary barriers faculty encountered in their OCL course redesign work was the amount of time required to find suitable OER. Not
only were faculty challenged by the amount of time required to identify OER but they were also challenged by the amount of time they spent evaluating OER to find the best resources available. Some faculty, however, found that even after they spent an extensive amount of time searching and evaluating OER, they were unable to find high quality OER that met their needs. The lack of quality standards for OER has been identified as a barrier to their adoption. It is also a barrier which makes it difficult to convince faculty of the value of OER (Frydenberg & Matkin, 2007). The following section considers faculty views regarding quality standards and OER.

**Quality of OER.** Finding relevant, high quality OER is a critical issue for faculty interested in adopting open source material (OECD, 2007; Yuan, MacNeill, & Kraan, 2008.) Faculty perceptions about quality, particularly for open source textbooks, are derived in a variety of ways, including (a) recommendations from trusted colleagues, (b) first-hand review of the material, (c) having a personal relationship with the author, and (d) knowledge that the material has been peer-reviewed (Petrides, Jimes, Middleton-Detzner, Walling, & Weiss, 2011).

Peer review provides a well-established means for ensuring the quality of an educational resource and the OER movement has adopted and adapted this technique for assessing the quality of open source material. For example, extending the concept of peer-review, some OER material is reviewed using an open process where individuals review, rate or otherwise provide commentary on the usefulness and quality of an OER based on their use of the resource (Yuan, MacNeill, & Kraan, 2008) much like Amazon.com offers readers the opportunity to easily share their opinions about books and other goods.

Browne, Holding, Howell and Rodway-Dyer (2010) suggest faculty consider using an
alternative peer-review process where peers review OER using a sliding scale to assess the quality of an OER, so “the resources can be regarded as ‘useful’ without having to be ‘exemplar’” (p. 9). However, they acknowledge this approach is not likely to be popular, writing “‘high quality’ [is] insisted upon even by the contributing academic and indeed the institution would not wish to be associated with material that endangered its own sense of self-regard” (p. 9). Although some peer review processes are in place to help faculty locate and evaluate OER, finding high quality, peer reviewed resources proved difficulty for some study participants.

For example, Lexie, who teaches in a technical field where students acquire skills by completing rigorous daily homework assignments, was not able to find an open source textbook with a suitable homework module for her OCL course. Lexie related that she:

Talked to publishers. I looked at a lot of YouTube videos. I actually reviewed three textbooks for the Open Course advocates ‘cause I thought, okay, well, I’m looking at them anyway. They were not good. So, I did a lot of that—basically someone else found the sources and I went and looked at them. . . And then evaluated them. And they’re lacking. Sadly.

Gary and Angela had a completely different experience, however, when they evaluated OER for their courses. Both teach in areas where OER are readily available and Angela reported that she had access to numerous open source material appropriate for her courses. “The nice thing about it,” she said:

Is that there’s a lot of open source videos and stuff that had [been] developed that explain [subject] really, really well. There’s a lot of documentaries and stuff that people can buy really inexpensively and show in their classes, right, that explain it for
a layman. That’s what I really love about it.

Even so, Gary remarked that having large quantities of OER didn’t necessarily make it easier to identify resources suitable for his class, noting “it can take quite a bit of time to find something really, really good. You may have a lot of redundancy.”

Robert, whose students are required to complete daily homework assignments, related he was very pleased with the quality of the OER he was integrating into his OCL course, including the homework module. This may be due to the fact that he created most of the material himself. He shared:

I have taught out of my materials many times before this. Therefore, and, I mean I'm pleased. I have good student evaluations. They are pleased. So there’s not a whole lot different this time. It's not a big reach.

The cliché “You get what you pay for” was implicit in comments shared by several faculty interviewed for this study. Several instructors also mentioned explicitly that they believed cost and quality are inseparable when it comes to textbooks and other educational materials. Robert was direct in his comments about this connection, saying:

I think at some level, people attach a value to something based on what they paid for it. And if it’s free, well, it must not be of as good a quality. And very often, that's true [laugh]. I mean part of the prob-, publishers serve the role of a gateway, that a [discipline] book that comes out may not, in [subject], may not be the style I want, but I feel fairly confident of a certain level of professionalism if it's coming from Thompson or Addison-Wesley, or whatever. When I find stuff on the web, I have to do a lot more looking to see, to determine what is the quality level which takes up a lot more of my time that I'd rather spend doing other things.
Furthermore, as Michael pointed out, essential material in some disciplines is copyrighted and unavailable in open formats. He remarked:

So that really cuts into the quality and content of what I can offer because then I'm limited to stuff that, you, you know, fits the OCL guidelines for creative licensing and, and so, so we're, you know, that, there's no money for, you know, purchasing licensing for copyrighted materials usually considered the best materials, you know, because obviously, you know, somebody thought they were good and bought the copyright.

Michael also said that the quality of OER in his field “isn't as competitive with peer reviewed resources that are copyrighted, generally speaking. Now, that could change. But then, what's the motivation for people to create that? Out of the goodness of their hearts?”

Ryan faced a similar problem when he looked for OER. In his field, when faculty adopt a textbook, they gain access to supplementary materials that helps explicate the subject material with models and images making abstract concepts more understandable to new learners. Ryan shared:

So if you can get animations that sort of demonstrate how these processes happen and students can visualize it, that’s great. That’s the part that I’m going to miss in this OCL project is that many of those animations are no longer available to me. I mean, there are things in YouTube, but they can be hit and miss.

Ryan did allow that he had alternatives to commercially produced images, though, saying:

I can find [resources] by searching the web to a large degree, but in order to be able to incorporate into these materials, that, that becomes difficult so it, it may come down to my drawing skills? [laugh] in, in several cases.
Although many OER advocates believe that high quality, comprehensive OER collections will continue to grow as authors of OER continue to create and share high quality educational resources, Michael was concerned this might not be the case, speculating:

Well, you provide those people that are going to produce the content with motivation, you know, and, and if the only and if, the carrot is going to be, do it out of the kindness of your heart, well I think you can kind of put two and two together and see that yeah, okay you might get some good things in there, one out of a thousand, or two out of a thousand. I don't know.

Robert had a similar observation, asking me “Why will people create open source material?” He answered his own question, noting:

Because there are a few nut cases like me who are willing to, you know, put in tons of hours and have reached a point in my career where I really don't care about money. I mean, if they give me some, that's wonderful. I'm more interested in getting it out there. But that's how you keep getting good stuff created.

Although Michael and Robert appear skeptical that many faculty will create and share high quality OER without financial compensation, they also appear to affirm Hodgkinson-Williams’ (2010) contention that faculty are motivated to participate in the OER movement because doing so (a) enhances their reputation, (b) fosters connections with colleagues working around the world, and (c) allows them to leave a legacy to those following in their teaching footsteps. As Michael suggests, some faculty do appear motivated to create high quality OER “out of the goodness of their hearts” or to get their material “out there,” as Robert stated.

According to the faculty in the study, the quantity and quality of OER available in
their academic disciplines varied according to the discipline. In any case, given that not every resource, high quality or not, can be used effectively in every instructional environment (Albright, 2009), faculty perceptions of quality may be related more to contextual factors than to the actual quality of the resources.

Regardless, faculty unable to find high quality OER for their OCL courses were still required to meet the grant’s $30 limit on textbook costs. The following section describes how faculty worked within the grant’s textbook costs requirement and identified affordable textbook alternatives for their students.

**Meeting the OCL grant’s $30 textbook limit.** One of the goals of the Open Course Library grant project is to lower student textbook costs. Although faculty awarded OCL grants are not mandated to use open source textbooks, they are required to identify an affordable textbook option for students. This means that faculty redesigning OCL courses must provide students with at least one textbook option that costs $30 or less per course.

Open textbooks are not necessarily electronic textbooks. E-textbooks are typically offered as an alternative format to the printed textbooks produced by commercial publishers. Typically, when students select the e-version of a textbook, they only purchase access to the digital version of a textbook for a limited period of time. Additionally, students are rarely given permission to print pages of their e-text. Open textbooks, on the other hand, are usually published digitally with an open copyright license which allows students to download and print them free of charge (North Carolina State University, Library, n.d.).

Originally, authors wrote open textbooks without any expectation of remuneration. Instead, as volunteer authors participating in a gift economy, they gained recognition and social capital instead (Frith, 2009). However, with the advent of publishers like Flat World
Knowledge, a new publishing model has evolved where authors of openly licensed textbooks are financially compensated for their work. Flat World Knowledge publishes textbooks that are peer-reviewed, professionally edited, and published under a Creative Commons license which makes it possible for faculty to customize the texts to meet the needs of their students (Flat World Knowledge, 2011).

Open textbooks hold the promise of being more up-to-date and tailored to the needs of individual students and instructors (Fairchild, 2004). They also offer the promise of reducing the overall cost of textbooks. However, finding and using open textbooks may be difficult for faculty members accustomed to the traditional textbook marketplace. This is because open textbooks are hosted on many different platforms and are rarely reviewed for quality. Furthermore, open textbooks may disappear with no advanced warning.

While the OCL grant’s $30 textbook requirement was met easily by some faculty interviewed for the study, others struggled to find acceptable alternatives. Of the study participants, four adopted open source textbooks and / or wrote their own, original course material while six adopted commercial print textbooks most of which cost more than $30.

Lauren, one of the study participants who adopted a commercial textbook, found her early concerns about the $30 textbook limit unfounded, relating:

Fortunately the reader that I'm using--actually they already have an electronic version of it and it’s little under $30--So for me, that was really nice. I was like ‘Yes, that works!’ and that's the only book I've been having my students buy anyways, so that wasn't a problem for me.

Robert, who wrote all his OCL course material, was not affected by the $30 textbook limit either. He shared that:
Basically, my resources are totally free! If they want to buy a printed copy at [College Bookstore], it'll cost them 22 bucks. . . Yeah, I mean, basically, totally free. A student who wants to, could download this stuff from the web onto their laptop or iPad and run with it. A student who doesn't want to go through the [College Bookstore] could download onto a flash drive. Take it to Kinkos. I don't know what it would cost at Kinkos.

Lexie however, had a difficult time finding an affordable textbook option that met her course needs. She stated:

$50 would have been much more doable for me. I would have had a lot more choices for my students. Because what is more important? The quality of the education or the cost? Because it is, you get what you pay for and what the publishers are willing to give me for $30 . . . and what I need is not necessarily the same. I’m going to have a great product when I’m done, but it’s required a lot of work on my part. I mean a lot more work than I had bargained for.

Ryan took a unique approach to solving the problem of finding an affordable textbook for his OCL course. Knowing that many introductory textbooks in his discipline cover essentially the same content, he explained that his solution to dealing with the $30 limit was to let his students select and buy whatever textbook they want, within certain parameters. He lists some recommended texts in his syllabus, saying “as long as the textbook that they buy has the content I’ve listed in the syllabus, it’s fine.” Even though Ryan acknowledged “there are probably several students who will be taking my course that are going to be using what I would consider a sub-par textbook” he also thought it would be an advantage for students to have a variety of textbooks in the classroom. Ryan utilizes a problem-based learning teaching
methodology where student teams work together to solve problems. They acquire subject matter expertise as they discover the answers to the problems and Ryan believes his solution works as it will “be beneficial if students within a group do have different textbooks because they’re bringing in different things.”

Research conducted by the Student Public Interest Groups found that using open textbooks could reduce the amount spent on textbooks by 80% percent per year (Allen, 2010). Although the number of open textbooks available for adoption is currently limited and faculty may question the quality of resources lacking “the imprimatur of a traditional publishing company” (Educause, 2011, p.2), open textbooks hold promise for reducing students’ textbooks expenses. The data from this study indicate however, that faculty face significant challenges in their efforts to adopt open textbooks. Although four of the faculty interviewed for this study redesigned their courses without relying on commercial textbooks, six incorporated commercial texts as they were unable to locate suitable OER replacements.

One of the ways faculty were able to address and overcome barriers they encountered as they integrated OER into their redesigned OCL courses was with the help of specialists assigned to assist them. The next section examines the fifth theme identified in the study, namely, how the OCL grant utilized specialists to assist faculty so they could more easily overcome barriers they encountered while designing open courses.

**Theme Five: Supporting Faculty Involved in OER Initiatives**

Faculty may be interested in using OER in their courses, but lack the time and skills necessary to complete the work (Hylén, 2009; Joyce, 2009; OECD, 2007). A study conducted by the Organisation for Economic Co-operation and Development (2007) supports this contention as more than 60% of the participants reported that a lack of necessary skills
presented one of the most significant barriers for faculty interested in creating OER. The University of Exeter found that staffing to support faculty involved in an OER initiative was a critical element in sustaining the project (Browne, Holding, Howell, & Rodway-Dyer, 2010). In order to reduce the impact presented by a lack of skills and time, the OCL grant provided faculty with extensive support in the form of instructional designers, disability support specialists, and librarians as well as a multicultural specialist. The next sections explore the role these specialists played in the OCL project and how they helped faculty overcome the barriers they encountered as they redesigned their OCL grant courses.

**Support roles in the OCL project.** In addition to awarding grants to faculty tasked with redesigning courses using OER, the OCL grant also solicited proposals from college staff and specialists to support the faculty as they worked on their courses. Supporting roles included:

- instructional designers who guided faculty to develop student centered learning outcomes and formative assessments while also providing guidance on how to effective course design;
- ADA disability specialists who assessed the accessibility of courses for students with disabilities;
- librarians who helped faculty locate and evaluate OER suitable for their courses, integrated information literacy modules and assignments into courses as appropriate, and helped obtain copyright clearances when necessary; and a
- multicultural specialist who worked with faculty to integrate global citizenship and themes into course content as appropriate.

Although study participants had not worked with each of the specialists assigned to
help them at the time they were interviewed, most were pleased with the support offered. However, some faculty found working with the specialists more helpful than others did. For example, Margaret was pleased with the support provided by the specialists assigned to assist her, remarking that she:

Really appreciated that there was that attention to, to our needs as course developers as much as we are teachers. I also appreciated that there would be the kind of oversight from the instructional designers and the assistance by the librarians. That was really exciting actually and I was really encouraged to work as closely as I could with both of those individuals.

Ryan, however, noted he had not:

Made use of my librarian resource like I should and I think to a large degree that’s, that’s my fault because I’m not sure how to take full advantage of it. So I haven’t taken full advantage of that resource and that’s, that’s not necessarily the project’s fault, that’s not her fault, it’s, it’s just that I, I don’t know how to take full advantage of the resource.

At the time the study was conducted, the faculty appeared to have interacted most often with OCL project librarians and instructional designers. This may have been the result of timing as the interviews took place mid-way through the project, when the study participants may not have had much interaction with the disability or multicultural specialists. The following sections examine how faculty worked with instructional designers and librarians to create high quality courses for the OCL project.

**Working with instructional designers.** The OCL project required faculty to consult with an instructional designer as they constructed their course to ensure that the final course
design complied with good curriculum design practices. Some faculty found their course design improved as a result of working with the course designer while others found the process less helpful. Michael was one of the study participants who found working with the instructional designer helpful, remarking:

Well, actually, you know, running this, running all this through our course designers is kind of an interesting feedback experience, which I think certainly helps. You know, in terms of the delivery, not in terms of necessarily the content, you know, but in the way the course is delivered. Things that I haven't considered in the past, I'm considering now. So, I find that useful and I think making the course organized and logical and all the details there for the students to kinda approach it without having to, you know, figure out how it's organized is, you know, is a good thing for the students of course. So I think that's been beneficial.

Alternatively, Ryan found the experience of working with the instructional designers somewhat difficult. He shared that “It seems like, faculty are being sort of micro-managed by the designers in the process, setting deadlines for specific things that need to be done and frankly being done in a sequence that I wouldn’t have used otherwise.”

Barone (2005) states that instructional designers have traditionally worked within the limits set by faculty, unable to see themselves as strategic leaders in teaching and learning. However, she suggests instructional designers can help faculty move in new directions that result in significant changes in the way courses are constructed, ultimately affecting how faculty teach and students learn (Barone, 2005). The OCL project provided instructional designers with an opportunity to collaborate with faculty as they redesigned courses. This process also provided them with an opening to teach faculty how to construct their courses in
ways that enhance student learning.

While many faculty may never consult an instructional designer as they create curriculum, they often work with college librarians to infuse information literacy into their courses, and frequently ask librarians to purchase books and media to support their curriculum and their research interests. The next section explains how faculty expanded their relationship with librarians as a result of participating in the OCL project.

**Working with librarians.** Academic librarians typically work with faculty to identify and select library resources to support college curriculum and to infuse information literacy into programs and courses. The OCL project adopted this model of collaboration, assigning at least one librarian to work with each faculty member awarded an OCL grant. Most of the faculty interviewed for the study found the support provided by librarians helpful. Gary was particularly delighted with the assistance provided by the librarian assigned to work with him, telling me:

> When I heard that . . . I would have a librarian assigned to me, I was just in, in rapture. I've always loved working with librarians. They are so relentlessly helpful . . . everything I've asked, I've got almost an instant answer.

Lauren also found working with a librarian beneficial and shared:

> Well, I mean, I'm finding it a little bit easier in the context of this project only because there is some support [laugh]. So that has been beneficial. The librarian I'm working with is from [college], and, and she has been really beneficial. She's helping me right now find, for the kinds of assignments that I want students to do, because I don't think just because it’s open course that, that the rigor of the things we post should be any less. I would hope.
Lexie was satisfied with the experience she had working with a librarian as well. According to Lexie, “my course librarian actually did my work for me and she was amazing. She would send me links, she would send me sources.” Lexie shared that “my librarian and I are kinda putting them all together and mixing them and rewriting them to have a case study.”

Not all the faculty involved in this study had fruitful experiences working with librarians, however. Michael felt the librarian assigned to his course wasn’t as helpful as he would have liked. He was counting on the librarian to assist with copyright clearances, but at the time he was interviewed, he related:

I’m not really getting help there, you know. She's got all the, I mean I'm expecting she'll get back to me, it's just, you know, it sounds like she's got a lot on her plate, but, you know. I mean, I'm kind of waiting to see if all the [subject] examples I intend to use for my content are going to be usable based on the licensing agreement, you know.

Robert was also unimpressed with the assistance provided by the librarian although he allowed that “There isn't a lot of good stuff out there to find. And, since she is not in [subject], she is not in a position to make any kind of value judgment.”

One way to help mitigate the time and effort required to convert a course from one based on commercial, proprietary resources to one utilizing OER is to have expert assistance to help locate and evaluate resources. For the faculty involved in this study, having a librarian who met or exceeded their expectations proved beneficial. For those without the level of support they expected, the support appeared to be less helpful.

The goal of the OCL project was to redesign 81 high enrollment courses in order to reduce the cost of textbooks for students and to improve course completion rates. Another goal was to encourage faculty to become active participants in the Open Educational
Resources movement. Recognizing this effort required time and skills that each faculty member might not have, the OCL grant project intentionally integrated support specialists into the project to assist faculty as they redesigned their courses. Although not all partnerships between specialists and faculty meet everyone’s expectations, overall, faculty appeared to find the support beneficial.

**Summary**

Faculty in the study appear committed to the goals of the OCL project. They devoted considerable time and effort in the project in order to comply with the grant’s requirements. Study participants were motivated to participate in the OCL grant project and redesigned their course curriculum due to a combination of (a) altruism, (b) financial incentives provided by the grant, and (c) an underlying interest in redesigning and updating their course curriculum.

Study participants were surprised at the amount of time they spent trying to locate high quality OER for their courses, however. Several reported they had access to a wide variety of high quality OER while others found little that met their needs. While the quantity of high quality OER may be increasing rapidly, it still remains difficult to locate and evaluate OER suitable for specific curricular requirements according to several study participants. As a result, some faculty incorporated commercial texts and other proprietary material into their OCL courses while others ended up writing their own material when they were unable to find suitable OER. According to many study participants, having support specialists assigned to help locate, evaluate and organize OER into well designed courses was helpful.

Findings from the study’s interview data will be more fully considered in light of Rogers (2003) theory of the diffusion of innovations in Chapter Six while Chapter Five considers the relative degree of openness exhibited by eight OCL courses redesigned by study
participants. Chapter Five presents data from the study’s document analysis and provides insight into the relative degree of openness present in each of the courses examined for the study. Although the courses were still in development at the time the document analysis was conducted, faculty had piloted the material in a classroom at least one quarter and had the opportunity to see how well the course materials met the need of their students.
CHAPTER FIVE

FINDINGS FROM THE DOCUMENT ANALYSIS

In addition to interviews with faculty who participated in the Open Course Library (OCL) grant project, I also analyzed data obtained from a document analysis of curricular material associated with eight OCL courses. Since all OCL course materials are required to be produced in a digital format, they lend themselves to document analysis techniques. More importantly, data derived from examining the course documents can corroborate findings based on interview data and provide contextual information about the process faculty used to adopt OER (Mason, 1996).

The document analysis was conducted in March, 2011, when I obtained access to the curriculum created for eight OCL courses developed by study participants. Although I did not receive permission to access course material from two study participants, I felt that the data obtained from the eight courses available for the document analysis provided a sample adequate for corroborating the data obtained from faculty interviews.

The OCL courses analyzed for the study were still in development when the document analysis was completed but faculty had tested the curriculum in the classroom. Although many faculty were still refining their OCL curriculum at the time the document analysis was completed, the data from the analysis provided insight into how faculty utilized OER as they redesigned their OCL courses.

Data from the document analysis was collected and recorded along two dimensions. The first dimension was an overall description of the documents in the context of how open they were. The second dimension borrowed from the work of Hilton, Wiley, Stein and Johnson (2010) and provided an overall “openness” score for each course using the Openness
Scorecard designed for the study.

The scorecard, consisting of a rubric based on eight parameters common to OER, provided a means to collect and record data in a consistent and systematic manner (Mason, 1996). The parameters included in the rubric were based on the work of Hilton, Wiley, Stein, and Johnson (2010) and consider licensing and technical elements that affect the future use of an OER. Licensing options range from granting others permission to reuse a work in its original form to granting others permission to remix a work to create an entirely new derivative of the original. Technical considerations include criteria to assess the technical skills needed to revise a resource, the accessibility of the software used to create the resource and how easy it is to edit the original resource.

The document analysis included an assessment of each course’s (a) textbook, (b) material such as syllabi, assignments and supplemental readings, (c) links to resources found on web sites, (d) video and streaming media, and (e) course assessments including quizzes and exams. The following sections of this chapter provide a brief overview of the findings derived from the document analysis followed by the Openness Scorecard completed for each course analyzed for the study. Each course is given an overall “openness” score based on the percentage of points it earned on the Open Scorecard Rubric compared to the number of points it could have earned. The percentage score calculated in this manner allowed me to determine the relative degree of openness present in each of eight courses analyzed.

Textbooks

One of the OCL project goals was to limit textbooks costs for students to see if significantly reducing textbooks costs helps student stay in school (Open Course Library, 2011b). This is an important goal as over 58% of 22 to 30 year olds with at least some post-
secondary education have reported that the cost of textbooks and other fees had a negative financial effect on them (Johnson, Rochkind, Ott, & DuPont, 2009). Although it is too early to determine the success of the OCL project with regard to its impact on completion rates, document analysis provides information about the options faculty used to reduce textbook costs in order to meet the grant’s requirement to limit student costs to $30 per course.

Of the eight courses analyzed for this study, four incorporated commercial textbooks and four used open source material, including original OER material created by the faculty. In at least two cases where faculty adopted commercial textbooks, the document analysis revealed that faculty had to negotiate a special deal with publishers to meet the $30 textbook requirement. In both cases, the $30 option turned out to be an online e-text version of the adopted commercial textbook.

Ryan, developing a course in one of the Science, Technology, Engineering, and Math (STEM) disciplines, fields where expensive textbooks are the norm, found a unique way to provide students with a $30 textbook option. As he told me when I interviewed him, rather than adopting one textbook, he gave his students the option of obtaining any textbook they could afford, provided it included certain content. He said students:

Can go to Amazon and buy a $5 [subject] textbook if they want because the content, if you look through the table of contents, is largely the same in just about every [subject] textbook. It’s just that the coverage within it and the way that it’s presented will look different. So I, in my syllabus, I’ve listed some recommended textbooks, but as long as the textbook that they buy has the content I’ve listed in the syllabus, it’s fine.

His syllabus included a list of seven suggested textbooks plus a list of criteria for students shopping for more affordable alternatives.
In four of the courses examined for the study, faculty incorporated existing OER or wrote their own texts rather than adopting a commercial textbook. As one syllabus in this group of courses informed students, “This course is designed to keep student costs as low as possible. To this end, all course content . . . are found within the course itself . . . These are available to you at no cost.”

Open source textbooks like the ones used in the OCL courses can be provided to students in a number of affordable formats. For example, one course examined for the study directed students to the college bookstore to purchase a printed copy of the course textbook for $25.35. Other classes provided access to open source textbooks which were available in an online digital format that students could access and print as needed, free of charge. One faculty member even offered students the option of obtaining all course material on a CD.

Data from the document analysis suggests that even though the number of open source textbooks is increasing, not enough options are currently available to meet the diverse needs of faculty and students, a conclusion supported by other research (Harley, Lawrence, Acord, & Dixson, 2010). Furthermore, there is some natural inertia that keeps faculty from moving away from familiar commercial textbooks to the adoption of open source material, particularly as replacing commercial textbooks with open source material often requires more time and effort to integrate into a course (Frydenberg & Matkin, 2007; Matkin, 2009).

**OCL Syllabi and Curricular Material**

The OCL grant project required faculty to develop a complete course package which included all the components necessary to teach the course. The grant required faculty to include a syllabus with clear learning outcomes, all course curriculum, and any required or supplemental instructional materials, including assessments, surveys, and a grading rubric.
Additionally, faculty were asked to provide a cover letter sharing tips and tricks addressed to instructors interested in reusing any portion of the OCL curriculum (Open Course Library, 2011e). Faculty were also encouraged to format their course content using common web page formats to make it easy for other faculty to acquire and reuse the course material (T. Caswell, personal communication, April 5, 2011). The following section categorizes and analyzes course elements reviewed during the document analysis.

**Syllabi and Course Material**

Although faculty were encouraged to create web-friendly course material, looking at a small sample of OCL courses in late March 2011, revealed that many course documents were produced using digital formats like Adobe’s Portable Document Format (PDF) and Microsoft’s Rich Text Format (RTF) instead of web-based formats. The course documents also provided evidence that faculty used Microsoft’s Word and PowerPoint software to share and distribute some course material.

In general, course documents included in the OCL courses were created in digital formats which allow others to reuse, revise, remix and redistribute their content provided they have the appropriate software. For example PDF documents require access to Adobe software in order to edit or adapt them (Hilton, Wiley, Stein & Johnson, 2010) and this software is not as readily available as word processing software. Recognizing this, the OCL project staff asked faculty to include a MS Word version of every PDF included in an OCL courses so others can edit or revise the documents more easily (T. Caswell, personal communication, April 5, 2011). Although the courses analyzed in March 2011 did not include duplicate version of PDF documents, the finished courses are likely to include them.
Links to Internet Web Sites

Five of the courses examined for this study direct students to a rich variety of relevant information resources found on the open internet. Although links to web pages can usually be reused and redistributed freely, two courses included links to articles found in databases licensed by their local college library. College libraries’ licensing agreements with database vendors typically require them to authenticate users before allowing access to resources. Since only authorized users can access these library resources, materials from licensed databases are not considered open source.

In his April 2011 email update to the OCL Team, Tom Caswell, the Open Education Program Manager at the Washington State Board for Community and Technical Colleges, wrote that he was concerned about the number of web links to proprietary materials found in many OCL courses. He asked faculty to clearly identify any proprietary material integrated in the courses and to work diligently to replace them with high quality OER content. In his email, Caswell wrote that if faculty could still not identify suitable OER after an expanded search, he would “put out a call to the wider OER community with a list of needed OER topics” (personal communication, April 5 2011) and if suitable OER were still not identified after this step was taken, he indicated a decision would be made that could result in creating new OER to fill the gap.

Videos and Streaming Media

Faculty integrate video and other multimedia formats into their courses as a way to present information visually to their students. Faculty who redesigned OCL courses included video-based resources in five of the eight courses analyzed for the study. A variety of video material was found in the course curriculum, ranging from professionally produced programs
to individual lectures recorded by the faculty member using lecture capture software and amateur videos posted on YouTube.com.

Many faculty incorporate video into their OCL course by simply providing links to videos posted on YouTube. YouTube videos are easy to reuse and redistribute via web links. Furthermore, as of June 2011, users can post videos to YouTube.com and license them with Creative Commons licenses so others are free to revise and remix the original material to make new derivatives. YouTube.com even provides users with a video editor to simplify editing tasks (YouTube, 2011).

Assessments

Quizzes, exams and other formative and summative assessments were included in most of the OCL courses analyzed for the study. Four of the courses examined were developed within an online Learning Management System (LMS) such as Blackboard’s Angel, which allow faculty to create assessments within an LMS which can then be exported so other instructors can use and revised them easily.

Each OCL course analyzed for the study has its own unique style and format with course material selected or created to fit the needs of the course and the instructor’s teaching style. Although the OCL grant required faculty to create digital courses complete with a syllabus, learning outcomes, curriculum, assessments and other standard course elements, using digital formats that allow each element to be freely and easily shared, faculty had considerable latitude to design material within the parameters of the grant. The next section examines each course’s findings as recorded on the Openness Scorecard, providing insight into the relative degree of openness present in the eight OCL courses analyzed for the study.
The Openness Scorecard

The Openness Scorecard, based on the work of Hilton, Wiley, Stein, and Johnson (2010), identifies the licensing and technical factors present in OER and facilitated a review of each course’s relative degree of openness. The eight parameters identified by Hilton, Wiley, Stein and Johnson (2010) are more fully described in Chapter Three and reviewed in this section. Figure 4, located in Chapter Three, provides an illustration of the Openness Scorecard. The scorecard has space to document the presence of eight parameters that affect the openness of a resource. Using the Openness Scorecard rubric, I was able to review, categorize and assess course material from eight OCL courses.

The parameters included in the scorecard are related to licensing and technical elements that affect future use of OER. Licensing options considered in the scorecard include such things as the ability to reuse a work in its original form and whether or not others have permission to take a work and use it to create a new derivative based on the original work. Technical considerations include criteria to assess the technical skills needed to revise a resource, the accessibility of the software used to create the resource and how easy it is to edit the original resource.

The scorecard provided a means to give each course an overall openness score. The overall course openness score was based on an assessment of the openness of each document present in the course’s curriculum and provides a basic impression of the entire course’s degree of openness. In order to determine the overall course openness score, individual course documents were first organized into categories, such as ‘syllabus,’ ‘video resources,’ or ‘web links,’ and then reviewed to determine if the documents within the category possessed each of the characteristics or traits identified on the Openness Scorecard. If the item had the
trait, it received a score of one (1). If the item did not have the trait, its score was zero (0).

For example, a course syllabus published in a PDF format could receive the following scores:²

- Reusable = 1
- Redistributable = 1
- Revisable = 1 (Provided the adopter has the software needed to revise the material)
- Remixable = 1 (Provided the adopter has the software needed to remix the material)
- Access to editing tools = 0 (Due to the need to obtain expensive, specialized software)
- Little expertise required to revise = 1 (Provided the adopter has the necessary software)
- Can edit in a meaningful way = 1 (Provided the adopter has the necessary software)
- Have access to source code = 0

Adding up the points using the Openness Scorecard shows that a course syllabus using Adobe’s Portable Document Format (.pdf) earns a total of six points out of a possible eight points.

The overall course scores were derived from a formula based on the total number of points a course could earn compared to the total number of points earned. This ratio was then converted into a percentage-based score for the course. An overall course score of 100% would indicate that a course is totally open and all the course’s resources possess the openness traits identified in the scorecard. On the other hand, a course with an openness score of 0% does not possess any of the openness traits. Courses with higher openness scores were considered relatively more open than those with lower scores.

² Scores are based on the understanding that original OCL course materials is licensed using a Creative Commons Attribution (CC BY) license which allows others to reuse, re-distribute, and build upon the original work as long the creator of the original work is credited.
Data derived from the Openness Scorecard rubrics were congruent with the data collected from faculty interviews. For example, when I interviewed Michael, he indicated that the best resources for his course were copyrighted and that suitable OER substitutes were not available. Not surprisingly, the openness traits present in his course documents reflect his viewpoint and his course scores showed the course to be the least open of the eight courses analyzed. On the other end of the scale, however, was Ian’s course which not only provided students with access to a free, digital open source textbook, but also suggested that students use open source office software to complete their course assignments in order to avoid purchasing expensive propriety software such as Microsoft’s Office suite. During his interview, Ian indicated he was strongly in favor of open source resources.

Given that the courses were still in development when the document analysis was completed, it is likely that the courses will continue to evolve and become more open over time. This is particularly true as faculty involved in the OCL project were encouraged to take steps to ensure that their course content was as open and easy to reuse as possible. In his April email update to OCL faculty, Tom Caswell, Open Education Program Manager for the SBCTC, suggested if faculty wanted to include resources in a PDF format, that they also include a Microsoft Word version so anyone adopting the resource could easily edit and reuse it (personal communication, April 5, 2011). According to Caswell, this practice was recommended because MS Word is compatible with OpenOffice, an open source suite of office productivity software, which makes Word-formatted documents more “open” than those formatted as PDFs which require expensive software to revise.

Following the processed described starting on page 110, I used the Openness Scorecard to record and summarize the information obtained from the document analysis.
The following section includes the Openness Scorecards for each course. They are presented in order, with the course receiving the highest openness score presented first and the course with the lowest score last. It is important to note that each course is considered open, even those with lower scores. It is also important to remember that the document analysis was conducted during the course of the project and later versions of the curriculum may exhibit greater or lesser degrees of openness.

**Openness and the Document Analysis**

Although the overall course scores provide an indication of the degree of openness present in each course, looking more closely at the data from the document analysis provides some hints as to why some courses appear to be more open than others. For example, courses using commercial textbooks tend to be less open than courses that do not utilize commercial textbooks. Other decisions made by faculty also affect a course’s relative degree of openness, as courses with many documents published using Adobe’s Portable Document Format (.pdf) appear to be less open than the courses that rely on the use of documents published in MS Word or formatted using hypertext markup language (HTML) on web pages.

Perhaps the most important finding that emerges from the document analysis is the recognition that faculty can make small, incremental changes in their curriculum that makes a positive impact on the overall openness of their courses. The diversity of resources adopted by faculty developing curriculum for the OCL project also shows there are many creative ways to approach the task of redesigning curriculum using OER. Although many faculty may not be ready to abandon traditional textbooks, the OCL project shows they may be willing to experiment with the use of more open source resources in their curriculum.
Table 2

Openness Scorecard for Ian’s OCL Course: OVERALL COURSE SCORE IS 79% (38 points out of a possible 48 Points)

<table>
<thead>
<tr>
<th>Resource</th>
<th>Price</th>
<th>Reusable</th>
<th>Redistributable</th>
<th>Revisable</th>
<th>Remixable</th>
<th>Access editing tools</th>
<th>Little expertise required to revise</th>
<th>Can edit in meaningful way</th>
<th>Have access to source code</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>$0.00</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td>Open source textbook; Syllabus indicates digital material is free but students may incur costs to print; The entire course is also available from the college bookstore on a CD</td>
</tr>
<tr>
<td>Open source tools</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>6</td>
<td>Students may use open source tools or proprietary software. Openness varies depending on option chosen; score based on open source choice</td>
</tr>
<tr>
<td>Syllabus</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>.html format</td>
</tr>
<tr>
<td>Course documents</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>A few assignments provided in .pdf format; most material presented in .html</td>
</tr>
<tr>
<td>Links</td>
<td></td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>Quizzes available on separate web site open to Washington state instructors; course requires proctored exams</td>
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<tr>
<td>Quizzes / Exams</td>
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<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Note. 1 = category exhibits trait; 0 = category does not exhibit trait
### Table 3

*Openness Scorecard for Adam's OCL Course:*  
OVERALL COURSE SCORE IS 66%  
(21 points out of a possible 32 points)

<table>
<thead>
<tr>
<th>Resource</th>
<th>Price</th>
<th>Reusable</th>
<th>Redistributable</th>
<th>Revisable</th>
<th>Remixable</th>
<th>Access editing tools</th>
<th>Little expertise required to revise</th>
<th>Can edit in meaningful way</th>
<th>Have access to source code</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>$0.00</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Open Textbook; all required course content (including illustrations) provided plain text within the Learning Management System</td>
</tr>
<tr>
<td>Syllabus</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>.pdf format</td>
</tr>
<tr>
<td>Links to web sites</td>
<td></td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Problems / Questions embedded into Learning Management System</td>
</tr>
<tr>
<td>Quizzes / Exams</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Note. 1 = category exhibits trait; 0 = category does not exhibit trait

### Table 4

*Openness Scorecard for Robert’s OCL Course:*  
OVERALL COURSE SCORE IS 65%  
(26 points out of a possible 40 points)

<table>
<thead>
<tr>
<th>Resource</th>
<th>Price</th>
<th>Reusable</th>
<th>Redistributable</th>
<th>Revisable</th>
<th>Remixable</th>
<th>Access editing tools</th>
<th>Little expertise required to revise</th>
<th>Can edit in meaningful way</th>
<th>Have access to source code</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>$0.00</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Open textbook written by course instructor; available as .pdf</td>
</tr>
<tr>
<td>Syllabus information</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>.pdf format</td>
</tr>
<tr>
<td>Supplemental course documents</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>.pdf format</td>
</tr>
<tr>
<td>Links to web sites</td>
<td></td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Problems / Questions embedded into Learning Management System</td>
</tr>
<tr>
<td>Quizzes / Exams</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Practice tests and problem answer sheets: .pdf format</td>
</tr>
</tbody>
</table>

Note. 1 = category exhibits trait; 0 = category does not exhibit trait
### Table 5

**Openness Scorecard for Gary's OCL Course:**  
OVERALL COURSE SCORE IS 58%  
(23 points out of a possible 40 points)

<table>
<thead>
<tr>
<th>Resource</th>
<th>Price</th>
<th>4 Rs</th>
<th>ALMS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>Primary textbook available new for $53.14; e-version available for $19.95. Secondary text available for $11.21</td>
<td>0</td>
<td>0</td>
<td>Little expertise required to revise</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>Can edit in meaningful way</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>Have access to source code</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>Score</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>Notes</td>
</tr>
<tr>
<td>Syllabus</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>MS Word format with CC BY license</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Course documents</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Documents created in MS Word, MS PowerPoint, plain text published on LMS pages, and .rtf formats. CC BY license indicated on many documents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Links to web sites</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>Includes links to public web pages as well as to a library database requiring authentication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Videos</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>YouTub videos, may be editable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. 1 = category exhibits trait; 0 = category does not exhibit trait
# Table 6

**Openness Scorecard for Lexie’s OCL Course:** 

**OVERALL COURSE SCORE IS 55%**  
**(22 points out of a possible 40 points)**

<table>
<thead>
<tr>
<th>Resource</th>
<th>Price</th>
<th>4 'R's</th>
<th>ALMS</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>$87.49 for print version; $30 for e-text version</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Syllabus</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Course documents</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Videos</td>
<td></td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Quizzes / Exams</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. 1 = category exhibits trait; 0 = category does not exhibit trait
Table 7

*Openness Scorecard for Ryan's OCL Course: OVERALL COURSE SCORE IS 55% (31 points out of a possible 56 points)*

<table>
<thead>
<tr>
<th>Resource</th>
<th>Price</th>
<th>Reusable</th>
<th>Redistributable</th>
<th>Revisable</th>
<th>Remixable</th>
<th>Access editing tools</th>
<th>Little expertise required to revise</th>
<th>Can edit in meaningful way</th>
<th>Have access to source code</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>varies according to selection</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Commercial textbook; cost depends on title / edition selected by student</td>
</tr>
<tr>
<td>Syllabus</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>.pdf format</td>
</tr>
<tr>
<td>Course documents</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td>.pdf format</td>
</tr>
<tr>
<td>Links to web sites</td>
<td></td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>Includes links to library database page which requires student authentication to access</td>
</tr>
<tr>
<td>Links to Open Learning Initiative course material</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>Video content accessed via YouTube have CC BY, NC, SA licenses; may be editable</td>
</tr>
<tr>
<td>Videos</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>7</td>
<td>Problems / questions embedded into Learning Management System</td>
</tr>
<tr>
<td>Quizzes / Exams</td>
<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Note: 1 = category exhibits trait; 0 = category does not exhibit trait
### Table 8

**Openness Scorecard for Angela’s OCL Course:**  
OVERALL COURSE SCORE IS 53%  
(21 points out of a possible 40 points)

<table>
<thead>
<tr>
<th>Resource</th>
<th>Price</th>
<th>4 'R's</th>
<th>ALMS</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Textbook</strong></td>
<td>$0.00 or $25.35 for printed copy available from bookstore</td>
<td>1 1 1 1</td>
<td>0 1 1 0</td>
<td>6</td>
<td>Open textbook includes assignments; syllabus directs students to purchase printed copy, also available as .pdf</td>
</tr>
<tr>
<td><strong>Syllabus</strong></td>
<td>1 1 1 1</td>
<td>0 1 1 0</td>
<td>6</td>
<td>pdf format</td>
<td></td>
</tr>
<tr>
<td><strong>Course readings</strong></td>
<td>1 1 0 0</td>
<td>1 0 0 0</td>
<td>3</td>
<td>Copyrighted material available free of cost; .html format</td>
<td></td>
</tr>
<tr>
<td><strong>Additional course material</strong></td>
<td>1 1 0 0</td>
<td>0 1 1 0</td>
<td>4</td>
<td>U.S. Government documents available online in .pdf format</td>
<td></td>
</tr>
<tr>
<td><strong>Videos</strong></td>
<td>1 1 0 0</td>
<td>0 0 0 0</td>
<td>2</td>
<td>Some video content is available free of charge online or can be purchased; additional video material posted on YouTube</td>
<td></td>
</tr>
</tbody>
</table>

Note. 1 = category exhibits trait; 0 = category does not exhibit trait
### Table 9

**Openness Scorecard for Michael’s OCL Course:**  
OVERALL COURSE SCORE IS 47%  
(30 points out of a possible 64 points)

<table>
<thead>
<tr>
<th>Resource</th>
<th>Price</th>
<th>4 ’R’s</th>
<th>ALMS</th>
<th>Score</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textbook</td>
<td>e-Text = $30; Print = $84.38</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Commercial textbook; $30 e-Text available to OCL students / faculty only</td>
</tr>
<tr>
<td>CD</td>
<td>$0.00 to use copy on Library reserve; also bundled with text; local</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>Course developer places copies of CD on reserve in local library for student use</td>
</tr>
<tr>
<td>Lectures/Syllabus/Miscellaneous course documents</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Course documents</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Pictures / Images</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Links to websites</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Videos</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Quizzes / Exams</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Note. 1 = category exhibits trait; 0 = category does not exhibit trait
Summary

The document analysis, which assessed the relative degree of openness of eight OCL courses, showed that faculty utilized a variety of approaches in order to satisfy the OCL grant project requirements. However, given the formative nature of the document analysis, where courses were analyzed while they were still under development, makes it difficult to draw conclusions about the ultimate degree of openness each course will have when in its final form. Two messages emerge from the document analysis:

1. OCL courses that adopt commercial textbooks are less open than courses using open source textbooks and other OER; and

2. although faculty can limit student textbook costs to $30 or less, faculty who adopt commercial textbooks have to negotiate special deals with publishers in order to do so.

The document analysis was two dimensional, with one dimension describing course documents in the context of openness criteria while the second dimension used a rubric called the Openness Scorecard to formulate an overall openness score for each analyzed course. Overall, the findings derived from the document analysis supported the findings that emerged from the faculty interviews.

The study’s findings, based on data obtained from faculty interviews and a document analysis of course resources, indicate that three of four goals set by the OCL grant have been achieved, as faculty

- limited student costs for course material, including textbooks, to $30 or less per course;
- collected and created high quality OER for their courses which can be shared freely with others; and
engaged in the global open educational resources discussion.

The study’s fourth goal, to improve course completion rates with well-designed, affordable courses, cannot be determined until the OCL project researchers have had an opportunity to collect and analyze course completion data.

The following chapter has three goals. The first is to look at how the study’s data, collected from interviews and document analysis, can be considered in the context of Rogers’ (2003) theory of the diffusion of innovations. The second goal is to reflect on the research questions in light of study findings. Finally, the third goal of Chapter Six is to present recommendations for future study related to the use of OER in higher education.
CHAPTER SIX

ANALYSIS, DISCUSSION, AND RECOMMENDATIONS

Community colleges take great pride in their open door mission. Flexible and responsive to the educational needs of their communities, community colleges play an important role in higher education, allowing many students to earn degrees and credentials they might otherwise never have had the opportunity to obtain. The Open Course Library (OCL) grant project is designed to improve access and college completions rates in Washington state, especially for low-income young adults.

The OCL is essentially a curriculum reform project. Using a competitive grant process, the OCL project goals are to redesign 81 high enrollment gatekeeper courses using Open Educational Resources (OER) as appropriate and lower textbook costs for students. When complete, the OCL project should result in new curricular resources for faculty and improved course completion rates.

Cohen and Brawer (2008) write that “the innovation and flexibility so prized by community college spokespersons derive less from educational philosophy than from the fact that the curriculum is without a rudder. One instructor’s whim will change the pattern emphasis, and direction of a course, and hence a curriculum” (p. 362). The end result, they state, is that community colleges instructors develop curriculum under the influence of the textbooks they select, conference presentations they attend, and any new information they may pick up on their own. The Open Course Library (OCL) grant project is an attempt to reform the “chaotic, directionless” (Cohen & Brawer, 2008, p. 363) curriculum development process typical of higher education with one that leads to “improve course completion rates through good design and affordability” (Open Course Library, 2011b) with the adoption of
Open Educational Resources (OER), a curriculum innovation.

The purpose of the study is to find out how faculty approach innovation and adopt and change curriculum in light of new, innovative resource and delivery options in order to improve (a) access, (b) student success, and (c) reduce student costs related to higher education. In particular, the study examines the process participants in the Open Course Library (OCL) project utilize to locate, evaluate and integrate Open Educational Resources (OER) into their redesigned courses.

Using a descriptive qualitative methodology, the study relies on data collected from interviews with ten Washington state community and technical college faculty who received OCL grant funds to redesign high-enrollment courses. An interview guide consisting of open-ended questions ensured that each study participant was asked the same questions. Findings that emerged from the study data were that:

- most faculty study participants were very positive about the goals of the OCL project and excited at integrating OER into their courses;
- financial and altruistic incentives played an important role in encouraging faculty to participate in the OCL project;
- study participants were aware of the high cost of textbooks and open to the idea of using OER to reduce costs provided they could identify OER that met their quality standards;
- enhancing course accessibility required faculty to not only reduce textbook costs but also to add specific design elements to meet the needs of students with disabilities, an issue many study participants did not appreciate fully prior to becoming involved in the OCL project;
• faculty faced a number of barriers when they decided to adopt OER; and
• support from experts like instructional designers and librarians helped mitigate the impact of any barriers encountered while in the process of adopting OER.

This chapter examines the study’s findings through the lens of Rogers’ (2003) theory of the diffusion of innovations and looks at how likely the OCL project is to encourage faculty to adopt OER and provide students with affordable textbook choices in the future. The study identified elements that appear to encourage faculty to think differently about their curriculum and consider adopting curricular innovations like OER that enhance accessibility. These insights provide the basis for making recommendations for future practice. The following section uses the lens provided by Rogers’ (2003) theory of the diffusion of innovations in light of study findings.

**Diffusion of Innovations and Curriculum Reform**

One of the challenges of adopting OER “is to understand to what extent academics and tutors have an ultimate concern about sharing knowledge and how this ultimate concern can be realized in an enabling environment that encourages and supports rather than constrains and inhibits the practices of sharing” (Hodgkinson-Williams, 2010, p. 7). Rogers’ (2003) theory of the diffusion of innovations suggests that the “enabling environment [develops out of a] process in which an innovation is communicated through certain channels over time among the members of a social system” (p. 5). An enabling environment requires the presence of four elements, according to Rogers (2003), namely:

• knowledge of the innovation;
• communication about the innovation between those with knowledge of the innovation and those who do not;
time to adopt the innovation; and

- a social system that supports the adoption of the innovation.

When I look at the study’s findings, I see that the OCL grant created an enabling environment conducive to encouraging the adoption of Open Educational Resources as there is evidence that all four of the element described by Rogers were present in the project. The following sections describe how these environmental elements manifested themselves in the grant project.

Knowledge of the Innovation

Rogers (2003) says that knowledge occurs when one is exposed to the existence of an innovation and understands how it works. One of the goals of the OCL project was to encourage members of the Washington state community and technical college system to become engaged in the global OER conversation (Open Course Library, 2011b). As a result, the OCL project provided information about the OER innovation throughout the Washington state system of community and technical colleges.

Participants in the OCL project also had many opportunities to learn about various OER initiatives as they participated in project meetings, worked with support staff with expertise in OER, received email and other communication about OER from OCL project staff, and accessed background material compiled for the use of grant participants such as the Open Educational Resources page found on the Open Course Library website (Open Course Library, 2011a).

The OCL project ensured that information about OER was widely disbursed, so that all members of the Washington state community and technical college system had the opportunity to gain knowledge about the innovation. Even so, Rogers (2003) suggests that
individuals make decisions about the worthiness of an innovation based on subjective
evaluations provided by peers and colleagues who have experience with the innovation. The
following section discussion the role of communication channels used by the OCL project for
participants to share information about their experiences with OER and the OCL project.

Communication about the Innovation

Rogers (2003) writes that “interpersonal channels are more effective in persuading an
individual to accept a new idea, especially if the interpersonal channel links two or more
individuals who are similar. . .” (p. 18). The OCL grant supports communication between
project participants in a number of ways. Social media tools make it easy to share knowledge
and information about OER between OCL grant participants and other interested parties. The
social media tools used to communicate information about OER and the OCL include the
Open Course Library Blog, Twitter, and a Facebook page. OCL also supports
communication between grant participants with the use of a Ning-based social website that
allows grant participants to communicate with each other and share information about their
OER experiences as they work on OCL grant projects.

Although social media can be highly effective in linking people together and allowing them to communicate freely, it does not replace face-to-face communication. Therefore communication between faculty working OCL grants was also facilitated by the use of travel funds that allowed grant participants working at a distance from each other to meet and work face-to-face on collaborative efforts related to the development of OCL courses. Time, the third element identified by Rogers in the diffusion process, is discussed in the next section.

---

3 The Open Course Library Blog is found at http://blog.ocl.sbctc.edu/, the OCL Twitter feed is found at http://twitter.com/ #!/opencourselib, and the OCL Facebook page is at http://www.facebook.com/pages/Open-Course-Library/180140402017397
4 The Open Course Library’s Ning website is found at http://opencourselibrary.ning.com/
Time to Adopt the Innovation

One way that Rogers (2003) measures the element of time in the diffusion process is how long it takes for an individual to learn about an innovation, implement it and decide to either adopt or reject it. For the OCL project, the time to adopt the OER innovation was dictated by the grant’s timeline. Faculty who received grants had to deliver their project according to a schedule established by the grant. Given the grant’s role in establishing an adoption timeline, it will be more important to see if the OCL grant project influences faculty not involved in the project to adopt OER and create more open courses for their students.

The diffusion element that may influence how quickly OER are adopted by faculty not associated with the OCL grant project is the social system element. The role of a supportive social system in the diffusion of an innovation is considered in the next section.

A Supportive Social System

The final element Rogers (2003) suggests is necessary to encourage the adoption of an innovation is a social system which supports adoption. Social systems have norms, which Rogers (2003) defines as “the established behavior patterns for the members of a social system” (p.37). Changing established behavior patterns is difficult and the OCL grant was not well received by many Washington state community and technical college faculty who feared the grant project would result in a mandate to adopt OCL course curriculum (Wu, 2009).

Countering faculty concerns about being forced to adopt curricular innovations like OER, the State Board for Community and Technical Colleges is playing an active role as a change agent, supporting OER initiatives through the OCL grant and emphasizing the message that the OCL grant project will not result in mandates that force faculty to adopt curriculum. It will take some time to determine if the State Board’s leadership will result in
greater diffusion of the OER innovation or not.

Rogers (2003) notes that “the rate of adoption in a system… [is] usually measured by the number of members of the system who adopt the innovation in a given time period” (p. 20). The Innovation-Decision Process describes the steps involved in adopting an innovation and is described in the next section.

**The Innovation-Decision Process Model**

Rogers (2003) conceptualizes the Innovation-Decision Process as a series of five steps which takes an individual from the point of learning about an innovation to making a decision to adopt or reject an innovation. The five steps Rogers (2003) describes in his model are:

1. knowledge, where one obtains knowledge about an innovation,
2. persuasion, where one forms either a favorable or unfavorable opinion about the innovation,
3. decision, where one moves towards making a choice to adopt or reject the innovation,
4. implementation, when actually puts an innovation into use, and
5. confirmation, where a decision is made to either continue using the innovation or abandon it.

When I reflect on the findings obtained from interviewing faculty and conducting the document analysis of OCL course material through the lens provided by Rogers’ (2003) theory of the diffusion of innovations and the Innovation-Decision Process model, I can begin formulating responses to each of the research questions posed by the study and suggest some conclusions based on the study’s findings. My conclusions are presented in the next section.

**Research Questions**

The purpose of this qualitative study was to determine how community college access
can be broadened through curriculum innovations such as OER which promise to reduce textbook costs and make higher education more affordable. The study posed four research questions. Each question is discussed here using the Innovation-Decision Process described by Rogers (2003), the model which describes all the decisions and activities involved in the decision to adopt an innovation. Rogers (2003) writes that “an individual’s decision about an innovation is not an instantaneous act. Rather, it is a process that occurs over time and consists of a series of different actions” (p. 169). The Innovation-Decision Process model frames the following discussion and is used as a tool for analysis.

**How do faculty approach innovation?**

According to Rogers (2003), the first step in the Innovation-Development Process begins with the recognition that a problem exists. By the fall of 2009, when the OCL project was first announced, Washington state college and technical faculty and administrators had begun to recognize the negative impact expensive textbooks were having on students. The Washington State Legislature passed the *Second Substitute House Bill 1025* (RCW 28B.10.590) that year, which asked faculty to consider adopting the least costly course material, including free, open textbooks, when selecting course material.

Even though they might have had some general knowledge about OERs and affordable textbook alternatives, when faculty participating in the study were asked what they knew about OER before they applied for an OCL grant, only three participants indicated they had extensive experience developing or using OER prior to becoming involved in project while the others indicated they had only limited knowledge. The OCL project, then, served as a catalyst to increase faculty knowledge about OER as each study participant reported they were far more knowledgeable about OER as a result of participating in the OCL project.
Based on the findings of the study and mindful of Rogers (2003) theory of the diffusion of innovations, I see that the OCL grant provided faculty with an environment that enabled them to (a) obtain knowledge about OER, (b) form positive impressions about OER, (c) make a decision to use the OER, and (d) find time to implement the OER innovation to design new course curriculum in alignment with OER principles. Additionally, the OCL project not only provided faculty with the means to learn about the OER innovation, but it also provided financial and altruistic incentives that motivated and encouraged them to participate in the project.

Incentives may be a key factor in encouraging faculty to implement an innovation once they learn about it. As Barnett and Coate (2005) write, “Small sums of money can go a long way in curriculum innovation” (p. 157), a conclusion supported by Rogers (2003) whose research found that the use of incentives increased the adoption rate of an innovation in its initial phases.

The study’s findings also concur with Rogers (2003) and Barnett and Coate (2005) in the role that incentives play in encouraging adoption of innovations. As Browne, Holding, Howell, and Rodway-Dyer (2010) write “There is no point in attempting to push academics into irrational behavior. Where are the career rewards in investing time into developing OER?” (p. 6). Any college interested in encouraging faculty to adopt curricular innovations, then, needs to be mindful of the need to inform faculty about beneficial innovations and consider the role that incentives, including financial compensation, can play in enhancing the adoption process.

The study’s second research question examines how faculty go about adopting innovations to change their curriculum. The next section considers this question in light of
the five attributes that Rogers (2003) says support the adoption of an innovation. The five attributes affect the perception that an innovation is beneficial, and include: (a) the relative advantage of the innovation compared to the idea it replaces, (b) how compatible the innovation is with the values, experiences, and needs of potential adopters, (c) how complex or difficult the innovation is to understand and use, (d) the degree to which the innovation can be tried out or experimented with, and (e) how easy it is to see the results of adopting the innovation.

How do faculty adopt and change curriculum in light of new resource and delivery options?

Although an “enabling environment” (Rogers, 2003) can nurture the adoption of innovations, such an environment can only go so far in encouraging the adoption of innovations. Even when the environment provides potential adopters with (a) knowledge of the innovation, (b) communication between those who know about the innovation and those who do not, (c) time to adopt the innovation, and (d) a social system that supports the adoption of an innovation, adoption is only likely to happen if the innovation is perceived to be beneficial or better than the idea it supersedes (Rogers, 2003). As described in the preceding section, potential adopters’ perception of an innovation’s benefits are measured according to five attributes, namely its (a) relative advantage, (b) compatibility, (c) complexity, (d) availability to experiment with, and (e) results.

One of the attributes that appears highly influential among faculty participating in the study is the relative cost advantage of OER compared to commercial textbooks. The costs associated with OER are perceived to be highly advantageous compared to the costs of commercially published educational material.
Another attribute that appears to encourage the adoption of OER among the study group was that the OCL grant project was perceived to be compatible with the participants’ professional values. Faculty who enjoy sharing educational resources with their peers found that the OER movement’s emphasis on freely and openly sharing educational material for teaching, learning and research highly compatible with their own values. Furthermore, the faculty interviewed for the study reported that they clearly understand the concepts and principles of the OER movement and supported them.

However, many also shared that it was more difficult to utilize OER than they expected. Their positive perception of OER was affected negatively by the fact that it took them more time to identify and integrate suitable OER into their courses than they had anticipated. In some cases, study participants were not able to locate usable OER which made it difficult for them to fully implement the OER innovation and undoubtedly affected their perceptions about OER.

Several faculty also faced significant challenges as they tried to comply with the OCL grant project’s $30 textbook limit. Many study participants found it difficult to identify high quality, affordable textbooks that met the grant’s requirements and faculty are unlikely to use educational material they feel is substandard. Faculty experiences related to their search for textbooks that fit the requirements of the OCL project may lead them to form negative perceptions about the relative advantage of OER, leading them to reject using OER and other curricular innovations in the future. As the OCL project evolves, project managers may want to consider alternatives to the inflexible $30 per course textbook limit in a way that is mindful of the need to provide students with affordable textbook alternatives and which also supports faculty perceptions that OER are beneficial.
It takes time and effort to adopt curricular innovations and faculty inertia or resistance can present significant barriers to adoption (Frydenberg & Matkin, 2007). Innovations like OER that are perceived to possess a relative advantage over other educational resources, may face less resistance to adoption as faculty are likely to be more receptive to adopting innovations they feel are beneficial. As Rogers (2003) generalizes, “the relative advantage of an innovation, as perceived by member of a social system, is positively related to its rate of adoption” (p. 233).

The study’s third research question looks at how Open Educational Resources (OER) influence curricular redesign. The next section addresses this question by examining the role that Rogers’ (2003) concept of relative advantage plays in predicting how quickly innovations like OER are adopted by faculty.

**How do Open Educational Resources (OER) influence curricular redesign?**

Rogers (2003) identifies five dimensions of relative advantage: (a) social prestige, (b) economic profit, (c) the immediacy of reward, (d) savings of time and effort, and (d) low initial cost. If the perceived costs associated with redesigning curriculum with OER are higher than the perceived benefits of adoption on one or more of these dimensions, Rogers (2003) suggests that faculty will not adopt the OER innovation.

The OER movement is growing and evolving and new resources are being made available every day. Still, the study findings suggest that locating OER for specific applications remains a difficult and time-consuming task for many faculty. According to the study participants, redesigning courses with OER takes more time than it does to adopt a commercial textbook. This fact alone may reduce OER’s relative advantage over commercial textbooks, and make widespread adoption of OER unlikely until it is easier to locate and
integrate high quality OER into course curriculum.

Rogers (2003) writes that the perceived relative advantage of an innovation is one of the strongest predictors of how quickly an innovation will be adopted. Although OER offer faculty the advantage of customizing course material to meet their unique course specifications and also provide students with more affordable textbook options, the time and effort required to infuse OER into courses may mitigate the relative advantage of adopting OER.

Complexity is another attribute associated with the relative benefit of adopting an innovation. Redesigning curriculum to take advantage of OER is a major undertaking. Recognizing the complexity of redesigning curriculum to be more open, the OCL grant project provided faculty with considerable assistance in the form of instructional designers and librarians and other support staff whose expertise helped reduce the complexity of the project.

Most faculty involved in the study, though, appear to perceive that the benefits of using OER outweigh the costs. This may be the result of other factors beyond the relative advantage of using OER. For example, the financial incentives associated with the OCL project as well as the social prestige of being a part of a project that has received national attention with stories about the project published by *Newsweek* (2011, January 25) and *The Chronicle of Higher Education* (Overland, 2011, January 9) may outweigh the costs of adopting OER. It will be interesting to see how OER influence curricular redesign once the OCL project is complete and the high level support provided by the project is no longer available to encourage adoption of OER. The study’s fourth research question looks at how faculty utilized the services provided by support staff as they redesigned their OCL
What resources do faculty use in redesigning their curriculum for the Open Course Library (OCL)?

Henry (2010), writing about the Georgia state Partnership for Reform in Science and Mathematics (PRISM) curriculum reform project, noted that PRISM’s success was partially due to the fact that the project provided faculty with support staff to help them design, implement and assess the results of their curricular changes. Encouraging faculty to integrate OER into curriculum is easier if they have staff support and adequate funding (Browne, Holding, Howell, & Rodway-Dyer, 2010).

The OCL grant project uses a curriculum reform model that not only provides faculty with financial incentives, but also assists them with support from librarians, instructional designers, accessibility specialists, and a multicultural expert. Working with these specialists, faculty working on the OCL project had access to experts who helped them:

- identify high quality, open instructional material;
- integrate information literacy skills;
- employ universal design in learning principles;
- include global citizenship themes; and
- apply best practices identified by the Quality Matters rubric into their redesigned courses (Open Course Library, 2011).

Rogers (2003) generalizes that “the complexity of an innovation, as perceived by members of a social system, is negatively related to its rate of adoption” (p. 257). The OCL project reduced the complexity associated with adopting the OER innovation by ensuring faculty had access to support services. Although study participants did not appear to find the
ideas behind OER complex or difficult to understand, many indicated they had difficulty searching for and finding OER suitable for their courses. “The abundance of OER can leave users spending a long time searching for a resource that fits their needs” (Educause, 2010, June, p. 2) and having support from librarians, instructional designers and other support staff reduced the time and complexity of the OCL course redesign work.

Mindful of Rogers’ (2003) belief that complexity reduces the perceived benefits of an innovation, faculty are likely to reject OER and similar innovations if they need outside expertise to help them adopt the innovation in an effective and time efficient manner. As mentioned earlier, faculty are particularly unlikely to adoption innovations like OER if doing so requires more time and effort than using traditional textbooks.

Although the first phase of the OCL project is still underway as this dissertation is being written, faculty interviewed for the study indicate they will continue to seek out OER as they revise and update their courses in the future. However, the actual extent of their commitment to the OER curricular innovation most likely depends on whether or not faculty continue to perceive that the OER innovation is more advantageous than other alternatives after the OCL incentives are no longer available. The next section makes recommendations for future practice that may encourage the ongoing adoption and use of OER even when the incentives provided by the OCL grant are no longer available.

**Recommendations for Future Practice**

Open Educational Resources (OER) promise to improve student access to higher education by reducing the cost of textbooks. In order to achieve the benefits promised by OER though, faculty have to adopt and integrate these open resources into their curriculum. Based on the findings of the study, I found three factors that seem likely to motivate faculty to
adopt OER: (a) using incentives to motivate faculty to adopt OER, (b) developing a quality assurance strategy to help faculty identify high quality OER, and (c) providing faculty with the assurance that OER will not replace the teaching role currently occupied by highly qualified faculty in colleges and universities. These factors are described more fully in the following sections.

Incentives

Based on my findings, I recommend that colleges use incentives to encourage and motivate faculty to adopt innovations like OER. Although financial incentives may be useful in motivating faculty to adopt innovations, the data from this study shows that faculty may find alternate incentives such as release time and peer recognition to be even more powerful.

Rogers (2003) describes incentives as “direct or indirect payments of cash or in kind that are given to an individual or a system in order to encourage behavioral change” (p.236). For higher education faculty, financial incentives can be useful but other nonmonetary incentives can also encourage adoption of a new innovation.

For example, Browne, Holding, Howell, and Rodway-Dyer (2010) argue that faculty need to see career rewards before they will invest time and energy into developing OER and suggest that higher education institutions interested in widespread adoption of OER consider how to reward faculty in a way that enhances their academic careers. Incentives are important because if institutions do not support and reward faculty who create and use OER, few faculty will choose to “pay the opportunity cost entailed in aspiring to their goal to create OER” (Hodgkinson-Williams, 2010, p. 16).

Institutions may find that peer recognition, tenure, promotion, travel awards, or release time from teaching responsibilities are just as powerful as financial incentives (d’Antoni &
Savage, 2009; Hodgkinson-Williams, 2010; Yuan, MacNeill, & Kraan, 2008) in motivating faculty to adopt OER. The incentive that may best serve to encourage the adoption of OER, though, is to make it “an integrated part of the scholarly endeavour that is useful, first and foremost, to a faculty member’s own teaching, scholarship and career” (Yuan, MacNeill, & Kraan, 2008).

**Quality Assurance of OER**

Quality assurance is an ongoing issue for faculty and the quality of OER at the present time can be uneven at best (Educause, 2010). Based on the findings of the study, I recommend that college librarians continue to develop expertise in identifying, evaluating and recommending OER to faculty in addition to more traditional library-based resources. Academic librarians have traditionally served as adjudicators of educational resources as they build library collections to serve the academic needs and interests of faculty and students. Extending librarians’ responsibilities to include the identification and acquisition of high quality of OER is consistent with the traditional role of academic librarians.

A number of strategies have been proposed to help locate and identify high quality OER easily, including: (a) the use of brands, where the reputation of a college or university assures users of the quality of OER made available under their name; (b) traditional peer review processes, and; (c) open user reviews like those used seen on Amazon.com, where users provide comments and /or ratings of OER (Yuan, MacNeill, & Kraan, 2008). College librarians, with their professional training in locating, evaluating and recommending information resources, can use these strategies to assist faculty in their efforts to identify high quality OER which meet the needs of their students.
OER and the Role of Faculty

Open Educational Resources (OER) provide new ways to envision the delivery of education and increase access to educational opportunities. Based on the findings of the study, though, I believe it is important to recognize that faculty play an essential role in higher education. Even in a future where self-learners can access an abundance of free, online OER to construct a course of study outside the existing boundaries of educational institutions (Educause, 2010) and may demand assessment and recognition of their learning outside formal educational institutions (OECD, 2007), teachers will still be integral to learning.

Pedagogy is likely to be affected by the availability of OER, however, as learners gain the ability to learn in environments unmediated by faculty. The role of faculty is already changing as the teacher’s role as the “supplier of teaching material and the only guide to knowledge” (OECD, 2007, p. 125) diminishes. For many faculty, though, it is unthinkable to consider a future where self-directed learners use OER to create their own learning activities without the active presence of an instructor. If faculty feel their teaching role is being marginalized as a result of OER initiatives, they are likely to see little relative advantage to developing or using OER regardless of their potential to increase access to higher education. OER have the potential to expand access to educational material for more learners and to address the rising costs of education, but in order to do so, faculty need to be convinced that OER improve teaching and learning, and help them become more effective in their instructional roles.

The OER movement provides education with a curricular innovation that has the potential to reduce the cost of higher education and to expand access to learning opportunities. However, it remains unclear if the promise of OER will be fully realized. It is of interest to
Conduct further research to determine the most effective way to develop and use OER in order to increase educational access. The following section suggests some areas future researchers may find fruitful to explore.

**Considerations for Future Research**

There are opportunities and a need for further research on the use of Open Educational Resources (OER), a recent educational innovation, in college curriculum. Few investigations have been conducted on topics related to the development, use, or effectiveness of OER and developing an OER research agenda is a topic of ongoing interest to many involved in the OER movement. Tucker and Bateman (2009) state that OER-related research would not only be useful for those faculty already involved in the OER movement, but it would also be useful to faculty new to the OER movement as research findings could “make their first steps more comfortable and assured” (p. 85).

Faculty interviewed for the study mentioned two areas of concern about the future of the OCL project and the general use of OER in the classroom that suggest future areas of research. One concern is related to the sustainability of OER over time and how OCL courses will be maintained. Another concern is the extent to which OCL curriculum may be adopted and used by others. These research areas and two others are considered in the following sections.

**Sustainability**

Sustainability is an issue of interest in the OER community as well as to several faculty interviewed for the study. Wiley (2006) defines sustainability “as an open educational resource project’s ongoing ability to meet its goals” (p. 5). Sustainability defined in this manner is concerned with the financial sustainability of an OER initiative rather than the
sustainability of individual resources. Faculty, however, may think of sustainability more in terms of the stability of individual resources they have adopted and integrated into their courses. Reliable access to OER is important to faculty.

Future studies can be conducted to track the use of OER and determine which factors are related to sustainability. Research to identify the traits found in OER that persist over time and which are updated to reflect current states of knowledge can help faculty identify sustainable high quality OER. Knowing how to identify the traits that stable OER share may encourage faculty to adopt OER by building their confidence in the reliability and quality of OER.

**Adoption of OCL courses**

One of the goals of the OCL project is to have the redesigned courses adopted by 20% of the total sections taught in Washington state community and technical colleges each quarter in the 2012-2013 academic year with adoptions increasing in subsequent academic years (Open Course Library, 2011b). Some faculty participants in this study expressed doubt that this goal is achievable, however.

Given the visibility of the OCL project, I believe further research should be conducted to determine which OCL courses and modules are most adoptable and to see if any generalizations can be made about the attributes of highly utilized OER. Longitudinal studies that not only track the number of times OCL course material is reused but also where it is being used, would also provide interesting data to show how the course material is being diffused and to determine which if any factors affect the adoption and reuse of OCL curriculum. Lastly, future research can be conducted to determine how well students working with OCL materials learn the course content compared with students exposed to
alternate curriculums and if participation in OCL courses is positively correlated with completion of degrees and certificates.

**Additional Research Considerations**

Several faculty interviewed for this study report that finding OER suitable for their courses required more time and effort than they anticipated. Tucker and Bateman (2009) suggest that research be conducted to find out how educators and learners access, identify and select OER to meet their needs. This information could be used to facilitate more efficient pathways for locating and reusing OER. I think it would be equally interesting to design a research project to identify faculty more likely to adopt new and promising innovations. With this knowledge, progressive institutions might be able to recruit and attract faculty likely to experiment with innovations on an ongoing basis.

A final suggestion for future research regarding the use of OER is to determine whether or not the use of open resources actually lowers textbook costs for students and increases access. Since one of the reasons the OCL grant was developed was to increase the affordability of attending college by reducing textbooks costs, this is an important question to answer.

**Conclusion**

The driving force behind the Open Educational Resources (OER) movement can be summarized with the statement “What you give, you receive back improved” (OECD, 2007). The OCL project is encouraging Washington state community and technical college faculty to join the OER movement and experience the benefits of creating and sharing Open Educational Resources.

OER promise to expand access to higher education, access that Atkins, Brown and
Hammond (2007) insist is sorely needed as “in most of the world, higher education is mired in a crisis of access, cost, and flexibility. The dominant forms of higher education in developed nations—campus based, high cost, limited use of technology—seems ill-suited to address global education needs of the billions of young people who will require it in the decades ahead” (p. 33).

The crisis of access, cost, and flexibility is not limited to the developing world, as higher education in Washington state is also facing the same crisis. The Open Course Library (OCL), a project based on the principles of the OER movement, provides one possible solution to the crisis as it promises to “improve course completion rates, lower textbook costs for students, provide new resources for faculty to consider using in their courses” (Open Course Library, 2011c). Although not a panacea, the OCL project may help mitigate the problems associated with access, cost and flexibility.

Although the OCL project is ongoing as the dissertation study is being written, the study provides an initial description of how faculty involved in the first phase of the OCL project used the OER innovation to redesign curriculum and improve access to higher education. As Ian commented when I spoke to him about the goals of the project, “OCL, it will be a brick in the construction of the wall. It may be a big brick, may be a small brick. We'll have to see how the good stuff we produce is actually going to be, but the way it's licensed, it's open for everyone.”

The Open Course Library project supports the community colleges’ mission to be open and accessible even as other forces threaten to limit access to higher education. Whether or not the OCL achieves its ambitious goals to increase access and reduce student costs remains to be seen. However, when I look at the study’s findings, I believe one of the most
important benefits of the OCL project is that it has encouraged faculty to become engaged in the OER culture of sharing educational resources freely and openly, thereby enhancing access to higher education.

Although institutions bear the responsibility of fulfilling their access mission and maintaining the open door to higher education, it is faculty who interact with students on a daily basis. Decisions faculty make about their course curriculum and textbooks have a direct and immediate impact on students and their ability to afford higher education. As the OCL project shows, community and technical college faculty hold one of the keys to higher education’s open door and they can use this key to increase accessibility to higher education by designing affordable, accessible courses, using innovations like OER. Findings from studies like the one supporting this dissertation provide colleges with clues about how they can support faculty in this work and maintain an open door policy that benefits students.
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Organisation for Economic Co-Operation and Development, Centre for Educational


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Appendix A: Interview Guide

Interview Questions for OCL Study

- **ICE BREAKERS**
  Tell me about your career and why you came to work in the community college system.
  How long have you been teaching at the community college?
  What courses do you prefer teaching?
  What is your preferred mode of instruction?

- **KNOWLEDGE**
  Can you tell me how you came to apply for an Open Course Library grant?
  What did you know about Open Educational Resources (OERs) prior to your involvement with the OCL grant?
  What were your impressions about OERs when you applied for the OCL grant?

- **PERSUASION**
  How do you feel about open educational resources now that you’ve been working on with the OCL project?
  In what way(s) has your attitude changed?
  What do you think are some of the advantages/disadvantages of using OERs?

- **DECISION**
  How easy or difficult was it to locate student resources for your course(s) given the $30 per student limit?
What can you tell me the resources you selected for your course? To what extent were you able to find suitable OERs for you course?

- **IMPLEMENTATION**

  What do you think about the OERs you selected for your course?

  To what extent did you adapt existing OERs to meet your specific needs?

- **CONFIRMATION**

  Overall, how satisfied are you with the resources you ultimately selected for your course, especially any OERs?

  How do you think you will use OERs in the future?

  To what extent do you think you will encourage your colleagues to utilize OERs in the future?

  What additional thoughts or comments do you have regarding the use of OERs in community college curriculum?
Appendix B: IRB e-Mail Letter to Solicit Study Participants

Dear ________________:

I am a graduate student seeking a Doctorate in Education degree (Ed.D.) from the College of Education at Washington State University.

As part of my degree requirements, I am conducting a qualitative research project to determine how community college access can be broadened through curriculum innovation. This question will be answered by interviewing faculty involved in the Washington State Board for Community and Technical Colleges' Open Course Library grant project questions about: (a) how they approach innovation, (b) how they adopt and change curriculum in light of new resource and delivery options, (c) how open educational resources influence curricular redesign, and (d) what resources are used in the curriculum redesigned as a result of the OCL project. Data gathered as a result of individual interviews will be analyzed according to Rogers' innovation-decision model.

You are being asked to participate in this study because you are involved in the OCL project.

I will call you in the next week to discuss your interest in participating in the study. Please know that you may choose not to participate in the study and even if you do volunteer to participate, you may decline later, without penalty.

If you do choose to participate, I will schedule a time to conduct the interview with you. The interview will take 30 to 40 minutes to complete and will consist of a number of open-ended questions related to your course redesign work. All your responses will be kept confidential within reasonable limits.

Thank you for considering this request,

Mary Ann Lund Goodwin
509.927.8013 (home)
509.999.8510 (cell)
Maryanng99037@gmail.com
Appendix C: Research Study Consent Form

WASHINGTON STATE UNIVERSITY
Higher Education Leadership, College of Education

Research Study Consent Form

Study Title: The Open Course Library: Using Open Educational Resources to Improve Community College Access

Researchers: Dr. Kelly Ward, Principle Investigator
Mary Ann Lund Goodwin, Co-Investigator

You are being asked to take part in a research study carried out by Dr. Kelly Ward and Mary Ann Lund Goodwin. This form explains the research study and your part in it if you decide to join the study. Please read the form carefully, taking as much time as you need. Ask the researcher to explain anything you don’t understand. You can decide not to join the study. If you join the study, you can change your mind later or quit at any time. There will be no penalty or loss of services or benefits if you decide to not take part in the study or quit later.

What is this study about?

This research study is being done to obtain information about how faculty redesign community college curriculum using an innovative known as Open Educational Resources (OERs) in order to improve access and student success as well as to reduce student costs related to attending higher education.

You are being asked to take part because you were identified as a faculty member participating in the Open Course Library grant project.

Taking part in the study will take about 40-60 minutes.
What will I be asked to do if I am in this study?

If you take part in the study, you will be asked to answer a series of open-ended questions about your experiences as a faculty member redesigning one or more courses for the Open Course Library. In particular, you will be asked about your understanding and use of Open Educational Resources (OERs). You may refuse to answer any question asked during the course of the interview. The interview will be tape recorded and transcribed.

Are there any benefits to me if I am in this study?

The potential benefits to you for taking part in this study are:

- If you take part in this study, you may help others understand how curricular reforms like OERs are adopted in higher education.

Are there any risks to me if I am in this study?

The potential risks from taking part in this study could include loss of confidentiality or sensitive information. Your name and identify characteristics will be protected to the extent possible through the use of pseudonyms. However, given that faculty participating in the OCL project have been identified publicly, individuals familiar with the project may be able to discern your identity.

Will my information be kept private?

The data for this study will be kept confidential to the extent allowed by federal and state law. No published reports will identify you, and your name will not be associated with the findings. Under certain circumstances, information that identifies you may be released for internal and external reviews of this project.

Participants in the study will be referred to by pseudonyms in all written work and any identifying information will not be provided.

Digital voice recordings of the interview will be made and transcribed. The recordings will be downloaded to only one computer which is password protected. The data for this study may be kept for 3 years.
Are there any costs or payments for being in this study?

There will be no costs to you for taking part in this study. You will not receive money or any other form of compensation for taking part in this study.

Who can I talk to if I have questions?

If you have questions about this study or the information in this form, please contact:

Mary Ann Lund Goodwin
509-927-8013
MaryAnnG99037@yahoo.com

What are my rights as a research study volunteer?

Your participation in this research study is completely voluntary. You may choose not to be a part of this study. There will be no penalty to you if you choose not to take part. You may choose not to answer specific questions or to stop participating at any time.

What does my signature on this consent form mean?

Your signature on this form means that:

- You understand the information given to you in this form
- You have been able to ask the researcher questions and state any concerns
- The researcher has responded to your questions and concerns
- You believe you understand the research study and the potential benefits and risks that are involved.
Statement of Consent

I give my voluntary consent to take part in this study. I will be given a copy of this consent document for my records.

__________________________________  _________________________
Signature of Participant                   Date

__________________________________
Printed Name of Participant

Statement of Person Obtaining Informed Consent

I have carefully explained to the person taking part in the study what he or she can expect.

I certify that when this person signs this form, to the best of my knowledge, he or she understands the purpose, procedures, potential benefits, and potential risks of participation.

I also certify that he or she:

• Speaks the language used to explain this research
• Reads well enough to understand this form or, if not, this person is able to hear and understand when the form is read to him or her
• Does not have any problems that could make it hard to understand what it means to take part in this research.

__________________________________  _________________________
Signature of Person Obtaining Consent                     Date

__________________________________
Printed Name of Person Obtaining Consent               Role in the Research Study
Appendix D: Coding Scheme Derived from Study Questions

1. How do faculty approach innovation?
   a. Motivation
      i. Money
      ii. Already involved in course redesign
      iii. Interesting project
      iv. Fit teaching style / interests

2. How do faculty adopt and change curriculum in light of new resource and delivery options?
   i. Update existing course
   ii. Lots of material to adapt to existing course
   iii. Recreate entire course with all new material

3. How do Open Educational Resources (OER) influence curricular redesign? and
   i. Already using OERs
   ii. New to OERs
   iii. ADA issues
   iv. Few existing OERs appropriate for course
   v. Creating new OERs

4. What resources do faculty use in redesigning their curriculum for the Open Course Library (OCL)?
   i. Librarians
   ii. ADA Specialists
   iii. Instructional Designers
   iv. Colleagues /
   v. Textbook publishers
   vi. Other

5. Issues identified (Positive / Negative)
   Sustainability
   Adoption / Reuse
   Accuracy / quality of OERs
   Time required
   Professional Development

6. Evidence of “Cosmopolitaness” present