



SCHOOL of
GRADUATE STUDIES
EAST TENNESSEE STATE UNIVERSITY

East Tennessee State University
Digital Commons @ East
Tennessee State University

Electronic Theses and Dissertations

Student Works

8-2015

Student Perceptions: Teaching and Learning with Open Educational Resources

Janet L. Rowell

East Tennessee State University

Follow this and additional works at: <https://dc.etsu.edu/etd>

 Part of the [Curriculum and Instruction Commons](#), and the [Educational Methods Commons](#)

Recommended Citation

Rowell, Janet L., "Student Perceptions: Teaching and Learning with Open Educational Resources" (2015). *Electronic Theses and Dissertations*. Paper 2545. <https://dc.etsu.edu/etd/2545>

This Dissertation - Open Access is brought to you for free and open access by the Student Works at Digital Commons @ East Tennessee State University. It has been accepted for inclusion in Electronic Theses and Dissertations by an authorized administrator of Digital Commons @ East Tennessee State University. For more information, please contact digilib@etsu.edu.

Student Perceptions: Teaching and Learning with Open Educational Resources

A dissertation

presented to

the faculty of the Department of Educational Leadership and Policy Analysis

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Doctor of Education in Educational Leadership

by

Janet L. Rowell

August 2015

Dr. Hal Knight, Chair

Dr. Lee Daniels

Dr. James Lampley

Dr. Cindy Smith

Keywords: Open Educational Resources, Educational Barriers, Curriculum Sharing

ABSTRACT

Student Perceptions: Teaching and Learning with Open Educational Resources

by

Janet L. Rowell

The purpose of this study was to analyze factors that may contribute to student perceptions of courses using Open Educational Resources (OER). Specifically, the 6 independent variables tested were the course discipline, age, gender, course delivery mode, enrollment status, and number of credit hours taken. The dependent variables were measured as mean scores of 6 OER perception dimensions: motivation to learn, quality of learning experience, value of OER, cognitive learning, affective learning, and course quality. A 27-item online survey was administered to gather data from students enrolled in a course that used OER in the fall semester, 2014. There was a 23% response rate with 80 completed surveys.

Independent-samples *t* tests were used to determine if significant differences existed between 5 of the 6 independent variables (the number of credit hours taken was tested using a different method) and each OER perception dimension mean. A Pearson product-moment correlation was used to determine whether there were significant relationships among the 6 dependent OER perception dimension means and the number of credit hours taken. The level of significance used was $< .05$.

The findings of the independent-samples *t* tests revealed that there were no significant differences between the independent variables and the 6 OER perception dimension means. The motivation to learn perception mean was highest at 3.97 on a 5-point Likert-type scale; the value of OER had the lowest perception dimension mean of 3.37. The Pearson product-moment correlation determined that there was a significant weak negative relationship between the number of credit hours taken and the level of perceived cognitive learning dimension. All other correlations were found to have no significant relationships.

It can be concluded from the findings of the study that students are highly motivated to learn. From the perception rating of 3.37 for the value of OER, it can be concluded that student perceptions of the value of OER are slightly positive. It can also be concluded that as the number of credit hours in which a student is enrolled increases they have a lower perception of their level of cognitive learning.

Copyright 2015 by Janet Rowell

All Rights Reserved

DEDICATION

To my husband Sammy who has sacrificed his life for me.

ACKNOWLEDGEMENTS

I can do all things through Christ who strengthens me.

Family who encouraged me: Sammy, Mom, Christopher and Melissa, Makayla, Samuel; Kacie and Hao, Kiên, Lành; Nicholas and Brittany, Arianna, Camden, Natalie; Anne and Mickey.

Mentors who supported me as members of my committee: Dr. Hal Knight, Chair; Dr. Lee Daniels, Dr. James Lampley, and Dr. Cindy Smith.

Educators who believed in me: Dr. Barbara Fuller, Dr. Ronnie Bartley, Dr. Richard Hudson, Ms. Margaret Dye, and Dr. Sexton Burkett.

TABLE OF CONTENTS

	Page
ABSTRACT	2
DEDICATION.....	5
ACKNOWLEDGEMENTS.....	6
LIST OF TABLES	11
Chapter	
1. INTRODUCTION.....	12
Statement of Purpose	14
Research Questions	15
Significance of the Study	16
Delimitations, Limitations, and Assumptions	17
Definitions.....	17
Overview.....	19
2. LITERATURE REVIEW	20
Historical Background	20
Potential Learning Benefits.....	26
Potential Cost Benefits	26
Other Potential Benefits.....	27
Sustaining Open Educational Resources (OER).....	28
Faculty Attitudes Toward Open Educational Resources (OER).....	29
Student Attitudes Toward Open Educational Resources (OER).....	31

Quality Assurance in Open Educational Resources (OER).....	32
Copyright and Licensing Issues in Open Educational Resources (OER).....	34
Related Research in Open Educational Resources (OER).....	36
Benefits.....	36
Educational Cost Factors.....	38
Learning Environment	40
Faculty.....	41
Students	44
Summary.....	47
3. RESEARCH METHODOLOGY	49
Research Questions and Null Hypotheses	49
Sample	56
Instrumentation.....	57
Data Collection.....	58
Data Analysis	59
Summary.....	60
4. RESULTS AND DATA ANALYSIS	61
Student Respondents.....	62
Student Demographic Characteristics	63
OER Course Discipline	63
Student Age	63
Student Gender	64
Course Delivery Mode	64

Enrollment Status.....	65
Credit Hours Taken.....	65
Dimensions of Learning.....	65
Motivation to Learn Dimension.....	66
Quality of Learning Dimension	66
Value of Open Educational Resources (OER) Dimension.....	67
Cognitive Learning Dimension.....	68
Affective Learning Dimension	69
Course Quality Dimension	70
Analyses of Perceptions of OER by Demographic Characteristics	70
OER Perceptions by Course Discipline (ITE or Non-ITE).....	71
OER Perceptions by Age.....	75
OER Perceptions by Gender	78
OER Perceptions by Course Delivery Mode.....	82
OER Perceptions by Enrollment Status	85
OER Perceptions Correlations by Number of Credit Hours	89
Summary	91
 5. SUMMARY, KEY FINDINGS, IMPLICATIONS FOR PRACTICE, RECOMMENDATIONS FOR FUTURE RESEARCH, AND CONCLUSION	
Summary	92
Key Findings	99
Implications for Practice	101
Recommendations for Future Research.....	103

Conclusion	104
REFERENCES	107
APPENDICES	121
Appendix A: Learning Without a Textbook Perception Survey	121
Appendix B: Perception Survey Items by Dimension.....	126
Appendix C: East Tennessee State University IRB Approval Letter.....	128
Appendix D: Combined Attestation and Permission Form	129
Appendix E: Student Email.....	130
Appendix F: Student Email Reminder.....	131
VITA	132

LIST OF TABLES

Table	Page
1. Motivation to Learn Dimension Item Means	65
2. Quality of Learning Dimension Item Means	66
3. Value of Open Educational Resources Dimension Item Means	67
4. Cognitive Learning Dimension Item Means	68
5. Affective Learning Dimension Item Means	69
6. Course Quality Dimension Item Means	69
7. OER Perception Dimension Mean Scores by Course Discipline.....	94
8. OER Perception Dimension Mean Scores by Age	95
9. OER Perception Dimension Mean Scores by Gender	96
10. OER Perception Dimension Mean Scores by Course Delivery Mode	97
11. OER Perception Dimension Mean Scores by Course Enrollment Status.....	98

CHAPTER 1

INTRODUCTION

Institutions of higher education are collectively an integral and essential element of modern society (Atkins et al., 2010). These institutions also impact individuals on a personal level. The pursuit of a college degree is an investment that has the capacity to greatly influence the future success of every person who desires to embark upon this goal-driven journey (The White House Office of the Press Secretary, 2013). As such it is vital that educators provide the highest quality teaching and learning environment possible for the students they serve (Crawford-Ferre & Weist, 2012).

It is important to recognize that national economic challenges can have an impact on the financial stability of institutions of higher education (Hull, 2010). Many times this influence makes it difficult to sustain equivalence within the teaching and learning environment (Dougherty, 2004). A substantial drop in public revenues often results in funding reductions for higher education including the federal financial aid program that is often used by qualifying students to purchase required textbooks and provide for payment of tuition (Hull, 2010). With less public funding for higher education, colleges and universities are being asked to plan for and incorporate strategic institutional cost-cutting measures to contend with adversity resulting from the loss of revenues (United States Government Accountability Office, 2013). Efforts to prevent a decline in the quality of instruction students receive is an obligation that higher education institutions must not neglect during the process (Hoosen, 2012). As a result educational resources openly available on the Internet are gaining the attention of higher education institutions as a practical solution aimed at both providing effective cost reduction for students and offering consistently high quality courses (Caswell, Henson, Jensen, & Wiley, 2008).

The desire for high quality educational opportunities is a perspective that is shared worldwide. The American Association of Community Colleges (AACC) holds a high regard for international cultural awareness and the building of educational partnerships on a global basis (American Association of Community and Junior Colleges, 1988). The term Open Educational Resources (OER) was first introduced in 2002 at the Forum on the Impact of Open Courseware for Higher Education in Developing Countries held by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) (2002). UNESCO, founded in 1945, is a specialized United Nations agency that promotes global relationships in the fields of education, science, and cultural diversity (United Nations Educational, Scientific and Cultural Organization (UNESCO), 2011).

The globalization of higher education promotes unique opportunities for the development of a wide-range of educational resources that provide educational opportunities among people on an international level (Brown & Adler, 2008). Within this innovative global educational atmosphere educators share the course materials they create as OER thereby removing barriers to education that many states and nations have previously experienced (Caswell et al., 2008). This trend to provide equal educational opportunities to all has given rise to the establishment of an ever increasing repository of educational resources that are freely available to faculty members and the worldwide population of people wanting to learn (Wiley, Green, & Soares, 2012).

As the vast array of OER continue to grow, research related to OER has not adequately addressed the perceptions that students have related to OER and the courses that incorporate these resources (Hilton, Gaudet, Clark, Robinson, & Wiley, 2013). Lindshield and Adhikari (2013) reaffirmed the notion that research is lacking to fully understand student perceptions of OER as alternatives to traditional textbooks.

Statement of Purpose

The purpose of this study was to analyze factors that may contribute to student perceptions of courses using OER. While the trend toward the use of OER has been influenced primarily by financial concerns, there is little research on its effectiveness and students' perceptions about its utility. Hilton, Wiley, and Bliss (2012) stated:

No existing research empirically validates the arguments that OER can save institutions money or that OER can promote deeper student learning. What's more, we know of no research that explores how students and teachers perceive the cost and quality of the OER they use. (p. 86)

Learners come from diverse backgrounds including age, gender, culture, or any of a multitude of factors that contribute to the individuality of the learner; understanding this diversity is helpful during the initial critical stage of the course development process (Atkins, Brown, & Hammond, 2007). Institutions of higher education provide students with instruction and opportunities to expand their understanding of a variety of subjects using resources and techniques that are in a constant state of transformation (Herman, Osmundson, & Dietel, 2010). It is important to develop courses using materials and resources that students can efficiently access and use effectively (Svihla et al., 2009).

This researcher gathered data related to student perceptions of courses incorporating OER to determine factors that can be taken into consideration when a new course is developed, as well as factors that identify students who are more likely to be satisfied taking a course that incorporates OER. As individuals, learners gain an understanding of unfamiliar information in their own way through a complex discernment process of determining their perceived value of new knowledge (Klymkowsky, 2007). The researcher gathered data to gain a better understanding of student perceptions of OER incorporated into courses offered at a community college in Virginia during the fall semester of 2014.

Research Questions

For the purpose of this study data were gathered in order to address each of the following six research questions:

Research Question 1: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

Research Question 2: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on age of participants?

Research Question 3: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on gender?

Research Question 4: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online)?

Research Question 5: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours)?

Research Question 6: Is there a significant relationship between the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on number of credit hours taken by participants?

Significance of the Study

The educational value and quality of OER incorporated into courses has not been extensively explored from the student perspective. The issue of student perspective has gained the interest of researchers as, “Increasingly, there is an awareness that we cannot continue to debate the nature of schooling without consulting the consequential stakeholders, the students themselves” (Groundwater-Smith, 2007, p. 113). Colleges and universities are faced with ongoing financial hardship due to economic conditions over which they have no control. Higher education administrators are aware of the financial burden that current students are experiencing. In an effort to reduce the cost of at least one aspect of attendance, college administrators have encouraged incorporation of OER as a valid alternative to costly textbooks for courses such as introductory computer concepts and applications, microcomputer applications, and introduction to business (VCCS Re-engineering Task Force II, 2013).

This study is significant in that its purpose was to analyze factors that may contribute to student perceptions of courses using OER. This researcher determined if relationships existed

between student demographic characteristics and student perspectives related to OER at a community college in Virginia. The results provide information that can be used to identify students who may be more likely to be satisfied taking a course that incorporates OER. The student perceptions discovered support continuous improvement of currently offered courses and support development of new courses. A deeper understanding of the factors that affect perceptions held by these students offers insight that may contribute to the development of future courses. Student perceptions of OER may also be used as a guide to identify aspects of OER that contribute to student satisfaction.

Delimitations, Limitations, and Assumptions

Several delimitations and limitations to this study should be noted as they may have influenced the results. The study population was limited to students enrolled in at least one course using OER at a community college in Virginia in the fall semester 2014. There was a lack of correspondence between the sample and the total student body in factors such as gender. The data gathered were not separated by course sections or instructor; therefore, variations in teaching style were not addressed. Analysis of study data did not take into consideration the teaching experience of each instructor or the types of OER used in the courses. Therefore, variations in OER materials were not addressed. The survey approach was used to gather data. In this method of data collection responses are open to subjectivity based on the participants' personal experiences and points of view. All of the courses included in the study had OER as required course material to reference. Therefore, it was assumed that study participants had used OER.

Definitions

For the purpose of this research, several terms used during the study are defined here:

Affective Learning – A dimension of learning that “represents the attitudes students develop about the course, the topic, and the instructor” (Russo & Benson, 2005, p. 56) measured by 5-point Likert scale items that were adapted from the Cognitive, Affective, and Psychomotor (CAP) Perceived Learning Scale (Rovai, Wighting, Baker, & Grooms, 2009). The questions used to measure this dimension include: (#6) I feel more self-reliant as a result of this course; (#21) I have changed my attitudes about the course subject matter as a result of this course; and (#23) I feel I am a more sophisticated thinker as a result of this course (see Appendix A).

Cognitive Learning – A dimension of learning that builds on previous knowledge or is created by new knowledge: as measured by 5-point Likert scale items that were adapted from the CAP Perceived Learning Scale (Rovai et al., 2009). The questions used to measure this dimension include: (#5) I can organize course material into a logical structure; (#11) I cannot produce an outline of the topics covered in this course for future students; and (#22) I can intelligently critique the open educational resources used in this course (see Appendix A).

Open Educational Resources (OER) – Atkins et al. (2007) define OER as:

teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others.³ Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge (p. 4)

Quality of Course Format – A 5-point Likert-type scale was used as a measure of perception in responses to questions adapted from the Survey of Opinions of Users of Synchronous Interactive Online Instruction (Ward, Peters, & Shelley, 2010). Examples of the survey items include (see Appendix A): (#24) I would like to take more courses that use open educational resources; (#25) I would recommend a course that incorporates open educational resources to others; (#26) Overall the learning experience in this course was positive; and (#27) Overall the quality of the open educational resources content of this course was excellent.

Quality of Learning Experience – The view of students in regard to their learning experience was measured using 5-point Likert-type scale items adapted from a student survey developed to determine student views on OER (National Union of Students, 2014). The items adapted were: (#4) If given a choice, I prefer learning using a textbook; (#9) If given a choice, I prefer learning using open educational resources; (#12) Open educational resources make me feel more engaged with my learning; (#13) Open educational resources directly improve the quality of my learning experience in this course; and (#14) There is a match between the open educational resources content and specific learning objectives of this course (see Appendix A).

Reusable Learning Objects – Educational resources that are usually digital and accessible via the Internet that allow broad access and reusability for multiple learning purposes (McGreal, 2004).

Overview

This quantitative research study is described in five chapters. Chapter 1 includes an introduction to the topic of the research study, the purpose and significance of the study, research questions that were addressed, the delimitations and limitations, study assumptions, and definitions of terms used in the study. Chapter 2 contains a review of literature that describes historical and current trends relative to the study. Chapter 3 provides a description of the research design, the null hypotheses, and the research methods used in the study. Chapter 4 conveys the research study findings and an explanation of the results. Chapter 5 provides a discussion of study findings, conclusions, suggestions for research in the future, and the researcher's recommendations for practice.

CHAPTER 2

LITERATURE REVIEW

Historical Background

The United Nations Education, Scientific, and Cultural Organization (UNESCO) (2002) recommended that OER be defined as, “The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes” (p. 24). The idea of sharing information and providing education through distance education is not a recent occurrence. In the 1840s the Phonographic Correspondence Society provided students lessons via postcards sent through the mail (Kende, 2014). Modern day technological advances have changed the means of educational resource delivery, whereas information sharing for the purpose of education remains strong (Andrade et al., 2011). As more people gain access to the Internet there are more opportunities to share educational resources not as postcards but as fully developed courses (Mossley, 2013). Although the term Open Educational Resources (OER) is commonly used to describe shared teaching and learning materials in all forms that are free to use without cost or license, the concepts and definitions related to OER have evolved with advances in technology (Mossley, 2013).

The underlying goal of the OER movement is to provide free educational materials to anyone, anywhere, for the purpose of sharing knowledge and providing education for little or no cost (The William and Flora Hewlett Foundation, 2010). OER were formally introduced in 2002 as an educational concept with transformative potential (Rossini, 2010). Another way to describe OER is, “Educational resources (including curriculum maps, course materials, textbooks, streaming videos, multimedia applications, podcasts, and any other materials that have been

designed for use in teaching and learning) that are openly available for use by educators and students” (Butcher, Kanwar, & Uvalic-Trumbic, 2011, p. 5). In contrast, Massive Open Online Courses (MOOCs) offered by organizations such as Udacity and Coursera, two for-profit education companies, are not OER; the use of the term *open* in the context of the courses these organizations offer has a completely different meaning.

The primary fallout of the brief, blindingly brilliant popularity of MOOCs was to persuade many people that, in the educational context, “open” means open entry to courses which are not only completely and fully copyrighted, but whose Terms of Use are more restrictive than that of the BBC or New York Times. (Wiley, 2014b, p. 2)

The administration of Georgia Institute of Technology (Georgia Tech) entered an agreement with Udacity to offer an online master’s degree in computer science (Onink, 2013). The negotiations were carried out very quickly; many faculty members did not find out about the arrangement until its official announcement was made (Rivard, 2013). The agreement process between Georgia Tech and Udacity was a seemingly isolated activity superficially concerned with sharing information (Rivard, 2013).

In contrast, changes in technology related to the storage and transmission of information have contributed significantly to the availability of electronic resources and the ability to share materials openly with the masses (Conole & Alevizou, 2010). The United States Census Bureau (2014) reported that in 1997 only 18% of US households used the Internet at home. In 2012, 75% of all US households reported to have Internet connectivity at home and 45% of individuals 25 or older were using smart phones (United States Census Bureau, 2014).

In the mid-1960s the United States Department of Defense awarded contracts to develop the Advanced Research Projects Agency Network (ARPANET). The ARPANET transformed the way information was electronically transmitted using a network of computers that eventually became the foundation for the modern day Internet (Hauben, 2000). Since the advent of the

Internet related technologies have evolved rapidly and the direction of this evolution is uncertain (Conole & Alevizou, 2010). In the 1980s the business sector began using computers to provide computer-based company training for employees (Learn.org, 2014). The future promises transformative changes in the ability to share information using a computer.

In 1990 Berners-Lee, a British computer scientist, invented Hypertext Markup Language (HTML) to describe the content of web page resources and the corresponding Uniform Resource Locator (URL) to identify the location of a resource stored on a computer (Griffin, 2000). With these developments, Berners-Lee (Berners-Lee & Fischetti, 1999) used the Internet to retrieve stored computer resources that could then be viewed through a browser he called the WorldWideWeb (WWW). The WWW can be thought of as a user-friendly interface to the Internet (Pallen, 1995). Berners-Lee's original intent was to make sharing resources through the Internet easier (Berners-Lee & Fischetti, 1999).

As the WWW was being used by an increasingly diverse audience, Wayne Hodges coined the term *learning object* in 1994 (Polsani, 2003) to refer to any educational resource that was digitally packaged and shared via the WWW for educational purposes (Mossley, 2013). A significant cost savings can be realized when using the Internet and the WWW to provide educational training to people in remote locations (Learn.org, 2014).

As the open movement progressed a need for licensing became apparent. This necessity led to the 1998 announcement of the Open Publication License as the first open content license (Caswell et al., 2008). In 2000 the GNU project of the Free Software Foundation introduced the GNU Free Documentation License as a template for individuals to use (Kreutzer, 2011). GNU is a recursive acronym that stands for a free computer operating system (Lee, 2010). GNU is not Unix; it is an operating system similar to Unix. Eventually, the ideas surrounding open content

licensing led to the establishment of the nonprofit organization Creative Commons in 2001 (Ferriter, 2010). Also in 2001 the Massachusetts Institute of Technology (MIT) introduced its Open Courseware (OCW) concept that provided free access to online courses and educational materials (Mossley, 2013).

Written as a cohesive statement of intent to embrace OER, the Cape Town Open Education Declaration (Open Society Institute, 2007) was composed in Cape Town, South Africa, by representatives from around the world who supported the ideals and beliefs that are characterized by OER. The Cape Town Open Education Declaration states:

We are on the cusp of a global revolution in teaching and learning. Educators worldwide are developing a vast pool of educational resources on the Internet, open and free for all to use. These educators are creating a world where each and every person on earth can access and contribute to the sum of all human knowledge. They are also planting the seeds of a new pedagogy where educators and learners create, shape and evolve knowledge together, deepening their skills and understanding as they go. (Open Society Institute, 2007, p. 1)

While addressing the topic of global access to OER the Cape Town Open Education Declaration (Open Society Institute, 2007) also called for openness of resources that were developed using government funds.

Prior to the sharing capabilities made possible by the Internet the cost of reproduction and distribution of educational materials via distance education modalities was prohibitive. With recent advances in technology these costs are almost nonexistent, making the idea of free education and unrestricted educational resources for everyone a viable possibility (Caswell et al., 2008). De Freitas and Conole (2010) identified trends in technology that may have a significant impact on the future of education, including global networked technologies, advances in adaptive devices, and increased use of simulation software. In addition to advances in technology, on-line course offerings have increased as well. According to a report from the Babson Survey Research

Group (Allen & Seaman, 2011), nearly one third of the students enrolled in higher education took at least one online course in 2011.

An effort to increase openness in the US federal government was addressed in the first Open Government National Action Plan (United States White House Office, 2011) and resulted in a modern-day method for citizens to express their concerns and opinions through *We the People* petitions available online. In response to a *We the People* petition signed by more than 65,000 people, the Office of Science and Technology Policy implemented regulations that required federal agencies to develop plans to publicly release research findings, placing focus on the importance of open access to data and resources developed using federal funds (Holdren, 2013).

In 2014 new initiatives promoting open education were added to the second Open Government National Action Plan (United States White House Office, 2013) that expanded the scope of openness to include the global educational community (United States White House Office, 2014). Three areas were added to promote the advancement of openness in education. The second Open Government National Action Plan addition states:

The United States is committed to open education and will:

- Raise open education awareness and identify new partnerships. ...will jointly host a workshop on challenges and opportunities in open education internationally with stakeholders from academia, industry, and government. The session will foster collaboration ... and will produce best practices to inform good policies in open education.
- Pilot new models for using open educational resources to [enhance and] support learning. ...use open educational resources to support learning in formal and informal learning contexts. The pilots' results, including best practices, will be made publicly available for interested educators.
- Launch an online skills academy. ...award \$25 million through competitive grants to launch an online skills academy... This academy will help students prepare for in-demand careers. (United States White House Office, 2014, p. 1)

In 2012 UNESCO made a historic plea for all governments to support the concept of OER on a global scale (Mossley, 2013); the White House responded accordingly with a plan that addressed issues related to postsecondary education attainment and affordability. Specific priorities included in the plan advocated the innovative development of educational resources that take advantage of technology to improve student access and reduce costs (The White House Office of the Press Secretary, 2013).

Mardis, Everhart, Smith, Newsum, and Baker (2010) found that a key issue related to creative innovation is high quality faculty development opportunities. Innovation has been realized at community colleges across the nation that have undertaken course redesign and redevelopment projects that require incorporation of technology to enhance learning. Similarly, through its education program, The William and Flora Hewlett Foundation (2010) promoted “OER as a catalyst for removing barriers” (p. 15) to greater student learning. These institutions reported increases in student success, improved course quality, and greater course accessibility (National Center for Academic Transformation, 2005).

On the state level, the Chancellor of the Virginia Community College System (VCCS) established grant funding to support faculty driven development of OER (Millard, 2014). Tidewater Community College was the first college in the nation to offer a degree – the Z-degree program – that can be earned taking only courses that do not require textbooks. All courses in the Z-degree program use OER exclusively (Tidewater Community College, 2013). The Chancellor of the VCCS allocated special grant funding to provide support to VCCS faculty in the development of a vast array of OER that are available for systemwide use (Sebastian, 2014).

Potential Learning Benefits

Enhanced learning experiences can provide student motivation and satisfaction (Russo & Benson, 2005). The attitudes students form about a course illustrate their affective learning (Russo & Benson, 2005). Course resources in the form of multimedia content have been found to promote student engagement that often results in a positive attitude toward the course (DeVaney, 2009). Most students use technology such as mobile devices and personal computers in their everyday lives (Thomas & Blackwood, 2010), so technology in the classroom is a way to extend the value of the tools that are already being used by students (Mardis et al., 2010). Rodriguez and Anicete (2010) found that students especially like having the ability to access course information and resources online at their convenience. A screen cast that captures a computer screen in video format along with audio narration to explain the process may enhance the learning experience of students (Sugar, Brown, & Luterbach, 2010). Bishop and Verleger (2013) found that short videos were the preferred type of multimedia content. In contrast, reading many pages of text on a computer screen was found to be an uncomfortable experience for some students (Baek & Monaghan, 2013).

Potential Cost Benefits

The National Center for Academic Transformation (2005) created an outcomes analysis report to determine the significance of changes made to courses in relation to cost savings. The report indicated a course redesigned incorporating technology can produce cost savings for both institutions and students. For instance, the University at Buffalo included online resources that were shared by other institutions in a redesigned introductory computer literacy course. As a result of the redesign the institution saved \$134 per student – a 54% reduction in cost (Alphonse, 2005). The University of Colorado at Boulder modified the structure of an introductory

astronomy course to include, among other technology related resources, links to current research topics in the field of astronomy. This course redesign contributed to an institutional savings of 35% (Duncan, 2001).

Students realize substantial savings when they are no longer required to purchase textbooks because OER is incorporated into courses (Bliss, Robinson, Hilton, & Wiley, 2013). Lumen Learning was cofounded in 2013 by Wiley and Thanos with the mission of providing freely available course materials to students who would otherwise be unable to attend college because of costs such as textbooks that are in addition to tuition (Wiley, 2013). Students have saved over \$1 million in textbook costs at higher education institutions that have entered a partnership with Lumen Learning (2013).

Other Potential Benefits

Faculty members and students may perceive the benefits of OER use in different ways as educational gains are realized (Arendt & Shelton, 2009). Ledden and Kalafatis (2010) wrote that the educational needs of a global society can be met through the flexibility of OER as each person interacting with OER will find a unique benefit and value. The challenge of OER implementation from the beginning has been the identification of perceived learning and benefits offered through these types of course content delivery modes (Ward et al., 2010). A benefit of the availability of OER in the public domain is directly related to helping faculty improve the quality of existing courses by adopting OER for course needs (Mtebe & Raisamo, 2014). This is especially true because students feel their educational experience and achievement can be enhanced by OER (National Union of Students, 2014).

As students discover the amount of information available through the Internet, as opposed to the limited information contained in textbooks, they can gain a depth of knowledge

never before imagined (Daugherty & Funke, 1998). Deep learning can lead to personal satisfaction as an understanding of interest in new topics is realized through study and inquiry (Biggs, Kember, & Leung, 2001). It is important that students have the ability to use their current knowledge as a step toward achievement of deeper learning while engaging in activities that promote self-evaluation and reflection (Fong & Kwen, 2007). A student's ability to self-evaluate is also an important element to consider when developing courses (Rovai et al., 2009). While an end of semester grade is a necessity of the educational system, often the grade does not reflect what the student has actually learned. Students' appraisals of the level of learning they attained in a particular course is a more appropriate measure of the internalized depth of knowledge (Rovai et al., 2009). That is, purposefully designed learning environments should provide activities for students to connect what they know to what they are trying to learn (Ward et al., 2010).

Sustaining Open Educational Resources (OER)

In what became known as MIT OpenCourseWare during the early stages of OER development, the Andrew W. Mellon Foundation and The William and Flora Hewlett Foundation provided substantial grant funding to MIT (2001) to design and deliver 500 online courses that were free of charge and the movement toward global openness of educational resources was in motion. While OER have been a topic of discussion for over a decade, the question of sustainability remains to be answered (Mulder, 2013).

OER developers who receive external funding often focus on the educational aspect of their project without giving much thought to sustaining the resources that are created once the funding diminishes (Dholakia, King, & Baraniuk, 2006). Funding awarded by private organizations has provided incentive to develop OER but such high investments are

unsustainable (McAndrew, Farrow, Elliot-Cirigottis, & Law, 2012). Many faculty members have been motivated by finances to use OER as the trend in OER development stems, in part, from financial incentives offered by philanthropic organizations (McGill, Falconer, Dempster, Littlejohn, & Beetham, 2013). The William and Flora Hewlett Foundation (2014) has supported 41 OER projects with more than \$15 million in grant awards.

The average lifetime of an OER project is less than 5 years with many projects existing fewer than 3 years when they are finished (Friesen, 2009). This amount of time corresponds with many of the funding timelines established for research and development activities (Friesen, 2009). There are costs associated with OER that must be paid even though the content may be freely available online (Harley, 2010). Nevertheless, College Open Textbooks (COT) is one example of a program that has formulated a financial plan that may be sustainable (College Open Textbooks, 2012). The COT program formed a partnership with a publishing company to print hardcopies of two online textbooks at a very low cost to students. The initial trial proved successful and COT plans to offer the hardcopy print option for other online textbooks to provide financial support for the program in the future (College Open Textbooks, 2012).

Faculty Attitudes Toward Open Educational Resources (OER)

In July, 1997 the University of California at Los Angeles (UCLA) announced a new Instructional Enhancement Initiative (IEI) whereby members of the faculty were required to create a Web presence for all of their courses and the university implemented a new fee for course materials to be paid by students (Lebo, 1997). Even with a cost advantage, faculty reluctance toward change is not a new phenomenon in institutions of higher education (Noble, 1998). According to Noble UCLA was the first to make use of computer technology mandatory

in an institution of higher education. UCLA faculty members had previously been encouraged to develop Web course materials, but ultimately the IEI directed them to do so (Lebo, 1997).

After nearly a decade had passed, faculty maintained an attitude of opposition toward change, as Bell and Rothery (2006) found that only 6% of the faculty members surveyed would be willing to share their educational resources openly with anyone; faculty members can be reluctant to share their course materials as OER (Creed-Dikeogu, 2009). In 2011 the Open Educational Quality (OPAL) Initiative found 34.9% ranked an “insufficient reward system for educational professionals devoting time and energy to OER development” (Andrade et al., 2011, p. 84) as a very important barrier to the use of OER. In 2012 the percentage of faculty willing to openly share their educational resources had increased to 12% (Rolfe, 2012). At Open University UK researchers identified lack of self-confidence and vulnerability as significant reasons for faculty hesitancy to share OER (Beaven, 2013).

On an international level Karunanayaka (2012) provided evidence that the number of faculty openly sharing course materials has grown to 58% at the Open University in Sri Lanka. The number of faculty sharing has increased as technology has advanced and become more readily available. Faculty members are also more likely to incorporate OER into an existing course rather than completely redesigning a course around OER, which would require a substantial investment of time (Charles & Rice, 2012). Another possible reason for the increase may be implementation of new policies that mandate or address open distribution of educational resources (Wiley & Green, 2012). In Canada McKerlich, Ives, and McGreal (2013) discovered that 29% of the faculty surveyed were creating and sharing OER. And a 2014 survey conducted in England found that 38% of faculty members share their materials online (Hassler, Hennessy, Knight, & Connolly, 2014).

Student Attitudes Toward Open Educational Resources (OER)

Masterman and Wild (2011) asked students at institutions of higher education in the United Kingdom to describe what OER meant to them. The institutions were characterized as being research intensive, art and design oriented, or open and distance learning universities that actively contributed to OER repositories, but the “students displayed little or no awareness of OER” (Masterman & Wild, 2011, p. 48) in their responses. Whereas student awareness of OER is not prevalent, institutional awareness of OER has grown and policy related to OER at the institutional level has increased (McAndrew et al., 2012).

Burkett, Compton, and Burkett (2001) studied the impact that a person’s attitude toward computers can have on their ability to gain new knowledge when using a computer. The researchers found that students reported needing to know more about computers even though they used computers regularly. Lizzio, Wilson, and Simmons (2002) found that student perceptions of their learning environment are related to overall achievement and satisfaction in a course. The researchers explained that students’ positive perceptions of their learning environment directly relates to greater satisfaction of the course and higher academic success. Batts (2008) suggested that an increase in student engagement and a positive perception of the learning environment are the result of an increase in student use of online resources to complete assignments. As student engagement increases, students tend to have a higher perception of the course quality (Batts, 2008). Similarly, Donat, Brandtweiner, and Kerschbaum (2009) found that people who have a positive attitude toward new technology are more likely to make use of it.

The degree of student preparedness for an online environment directly affects their perception of the learning experience (Ehiyazaryan, 2012). Burkett et al. (2001) concluded that a positive social and technical attitude indicates the tendency to have a positive attitude toward

technology. Students need appropriate levels of digital literacy to eliminate barriers that limit their successful use of OER (McGill, 2013). Some students indicate that studying technology related subjects is difficult. This attitude correlates to the student's level of digital literacy (Ardies, DeMaeyer, & Gijbels, 2013). For example, student motivation to learn when enrolled in a specific course can be positively affected by incorporating relevant, well organized video content into the course (Ljubojevic, Vaskovic, Stankovic, & Vaskovic, 2014).

Quality Assurance in Open Educational Resources (OER)

Computers and the Internet allow access to a vast amount of information that would otherwise be inaccessible (Kraut et al., 1998). Careful assessment and review of new technologies must be undertaken to avoid inclusion of OER that may undermine attainment of educational objectives (Bower, 2001). "The open architecture of the Internet and the World Wide Web means that an individual's Web site is in principle just as accessible as amazon.com" (Bolter, 2003, p. 23). Kelty, Burrus, and Baraniuk (2008) stated that "quality is not an intrinsic component of the *content* of a work but rather a feature of how that work is valuable to a specific community of users: its *context of use*" (p. 1004), stressing that there is not a standard measure that can be applied to determine quality. Bethard, Wetzer, Butcher, Martin, and Sumner (2009) identified dimensions and indicators of quality that can aid in determining the value of OER, including "Has sponsor... Has prestigious sponsor... Has instructions... Identifies learning goals...Identifies age range... Organized for learning goals... Content is appropriate for age range" (p. 225).

There is concern for quality when instruction is modified by technology; concern is expressed by both advocates and critics (Clements & Pawlowski, 2012). Although finding OER, let alone quality OER, among all of the information that is available on the Internet can prove to

be quite challenging (Brent, Gibbs, & Gruszczynska, 2012). Quality also assures that the needs of the learner are taken into consideration and are met through creative course delivery (Rolfe & Fowler, 2012). There is no adequate catalog of OER and it is difficult to search the Internet to find OER (Lindshield & Adhikari, 2013). Technology has the potential to enrich the student learning experience through increased communication and flexible access to resources (McGreal, 2013). Given the scale of the Internet, a challenge is presented when trying to find reliable OER that are relevant to a specific course or topic (Johnson et al., 2013). And students find it difficult to evaluate OER that are created by individuals rather than through an educational institution (National Union of Students, 2014).

Clear and accurate learner expectations were revealed as important dimensions of course content delivery that can influence student perceptions of overall course quality (Ward et al., 2010). OPAL conducted a survey of higher education administrators and learners to gather information related to their perceptions of many facets related to OER (Andrade et al., 2011). Overall, 68% of the OPAL survey participants reported that OER quality is an issue of concern. However, when considering barriers to OER use, quality was among the barriers participants rated as unimportant because, while there was a concern for high quality, OER of lower quality could provide useful information in self-directed exploration of a topic (Andrade et al., 2011). Another measure of quality that has been accepted when using search engines such as Google scholar is the number of citations a resource has received (Abeywardena, Raviraj, & Tham, 2012). A higher number indicates the resource is considered to be credible. But, most OER repositories do not have this kind of measure associated with sources or resources (Abeywardena et al., 2012).

Constructivist learning theory is often associated with OER because OER are freely available to study and new knowledge is often transferred through learner centered activities and choices (Martens, Bastiaens, & Kirschner, 2007). In the course development process it can be difficult to find activities that will motivate students. For the most part, this difficulty can be attributed to whether students engaged in the activity perceive it to be worthy of their attention. The fact that an activity may be helpful is unimportant if those participating in it do not perceive it to be helpful (Martens et al., 2007).

Copyright and Licensing Issues in Open Educational Resources (OER)

In an effort to eliminate barriers to OER Wiley (2007) pioneered an OER licensing concept when the notion of *the four Rs* was introduced. The Rs represented four licensing options that authors of OER could place on their works defined as:

- Reuse – Use the work verbatim, just exactly as you found it
- Rework – Alter or transform the work so that it better meets your needs
- Remix – Combine the (verbatim or altered) work with other works to better meet your needs
- Redistribute – Share the verbatim work, the reworked work, or the remixed work with others. (Wiley, 2007, p. 1)

A *fifth R* was introduced and the original *four Rs* were updated as follows:

- Retain – the right to make, own, and control copies of the content
- Reuse – the right to use the content in a wide range of ways (e.g., in a class, in a study group, on a website, in a video)
- Revise – the right to adapt, adjust, modify, or alter the content itself (e.g., translate the content into another language)
- Remix – the right to combine the original or revised content with other open content to create something new (e.g., incorporate the content into a mashup)
- Redistribute – the right to share copies of the original content, your revisions, or your remixes with others (e.g., give a copy of the content to a friend). (Wiley, 2014a, p. 2)

Plotkin (2010) summarized “the licenses provided by Creative Commons, which are electronically attached to each document, establish the ownership of those materials and enable

their authors to define the conditions under which they can be used by others” (p. 26). Licensing has been an issue of concern for many faculty members who use OER or are thinking about incorporating OER into their courses (Peter & Deimann, 2013). Creative Commons (CC) is an organization that provides licensing options for individuals who want to grant a particular set of permissions to others who use their materials (Creative Commons, 2014).

Lack of knowledge related to copyright concerns can be a barrier to the use of OER (Schrum, Ledesma, & Schrum, 2011). Faculty can become aware of the various copyright options but the task of incorporating materials that have different licenses into their courses can be difficult (Overland, 2011). It is important for faculty members to know that they can adapt OER that are appropriately licensed into their courses without fear of copyright law infringement (Wiley et al., 2012).

The CC organization (Creative Commons, 2014) offers six CC licenses that vary in the degree of openness as specified by the author. An author may use the least restrictive attribution – CC BY – to allow redistribution, commercial use, modification, and adaptations that can use any CC license, as long as credit is given to the original author’s work (Creative Commons, 2014). The most restrictive attribution licensing option – NonCommercial-NoDerivs – CC BY-NC-ND –allows redistribution with credit to the original author; no modification may be made, only noncommercial use is allowed, and the license must be the same as the original resource with credit given to the original work (Creative Commons, 2014). The remaining four CC license attributions, NoDerivs – CC BY-ND; NonCommercial-ShareAlike – CC BY-NC-SA; ShareAlike – CC BY-SA; and NonCommercial – CC BY-NC, have limitations that fall between the two described (Creative Commons, 2014).

Related Research in Open Educational Resources (OER)

Considerable research has been conducted in the last 15 years focusing on various aspects of OER use. Topics of this research include the benefits of OER, educational cost factors related to OER, and the learning environment when OER are used.

Benefits

Daugherty and Funke (1998) gathered data from faculty and students about their perceptions of the benefits of Web-based instruction. Many students responded that the ability to access course resources and information was beneficial and faculty members also identified convenience as a very positive benefit. Even though students were unfamiliar with Web-based instruction most were able to improve their technology skills enough to successfully complete the course. They also found that “63% of the graduate students and 55% of the undergraduate students were positive about the degree and quality of communication among classmates and with instructors while participating in online activities” (p. 36).

Russo and Benson (2005) studied how cognitive and affective learning are related to student perceptions of the presence of other students enrolled in an asynchronous course as part of a master’s degree program. To measure affective learning students provided their attitudes about satisfaction with their learning and the learning environment. Cognitive learning was measured by responses to questions about the amount the students perceived they learned and how much more they thought they could have learned if the environment had been optimal. The researchers found that student attitudes were positively and significantly correlated with the perceptions of instructor’s presence. Student satisfaction with the course was also positively and significantly correlated with the instructor’s presence. Student perceptions of their own presence in the class were positively and significantly correlated with their final instructor assigned grade.

They also determined that there is significance associated with the interactions that take place in the classroom and online between students and teachers and between students and other students.

Ehiyazaryan (2012) conducted research to understand the impact of embedding OER into existing research courses and determined that students like the flexibility that OER offer; educators across disciplines may incorporate the same OER for different purposes; and multi-media OER can be used to illustrate conceptually difficult topics. Student perceptions of video used in an online statistics course was the subject of research conducted by DeVaney (2009). He found that “90.8% of the students believed that the material was more easily understood by viewing the tutorials compared to the textbook and guidesheets” (p. 4). There were issues with technology related to viewing the video tutorials resulting in “approximately 25% of the students reported technical difficulty” (p. 4). Even though there were problems downloading the videos, “93.8% would recommend tutorials for other courses” (p. 4). Bishop and Verleger (2013) compiled research related to the flipped classroom concept. Among the many research studies the authors found that students had a common positive perception of the flipped classroom. Students were better prepared for the classroom activities when video material was incorporated into the course. It was noted that this may be because students may not read their textbook but will watch a video.

Masterman and Wild (2011) used the mixed methods research approach to gather data from three higher education institutions about benefits that may be realized when OER are used. The researchers also asked both educators and students about their general attitude toward OER. Through in-depth interviews the researchers found that most teachers believed part of their responsibility as teachers was to help students develop self-directed learning skills. The teachers felt these skills would provide a foundation for life-long learning. Students who can critically

assess all of the educational resources freely available to them will have great opportunities to acquire up-to-date information and facts. The teachers used OER they thought would help students better understand topics that are difficult to convey. Animations were identified as a very useful form of OER. The researchers found that while there was a high regard for quality OER, teachers were willing to compromise when there were no alternatives that would fit the need. Survey responses indicated that half of the teachers incorporated more than 20% OER into their courses and half incorporated less than 20% (Masterman & Wild, 2011). They indicated that finding OER was a time consuming task that many times yielded few results. In regards to student perceptions of OER the researchers found that few of the students were aware of OER. The students had a preference for online journal articles and videos that explained difficult concepts. Students also preferred the online format because the information presented would be updated frequently. When asked how they felt about taking a course that extensively used OER from other institutions that were freely available online, many of the students had negative attitudes. They questioned why a student would pay tuition to use freely available learning resources from other institutions.

Educational Cost Factors

Arendt and Shelton (2009) surveyed Utah residents to collect information about the reasons they would choose to use or choose not use OCW. The researchers defined OCW as course resources that are freely available. The researchers reported the three highest ranking incentives: 1) “no cost for materials, 98.57%”...; 2) “improving my understanding of particular topics, 97.14%”...; and 3) “available at any time, 96.43%” (Arendt & Shelton, 2009, p. 7). They also reported the three highest ranking disincentives: 1) “lack of professional support provided by subject tutors or experts, 73.19%”...; 2) “it does not cover my topic of interest in the depth I

desire, 69.85%”...; and 3) “lack of guidance provide[d] by support specialists, 69.57%” (Arendt & Shelton, 2009, p. 8).

Jaggars and Bailey (2010) evaluated a meta-analysis of research that was conducted by the US Department of Education (Means, Toyama, Murphy, Bakia, & Jones, 2010) to determine the validity of the generalizations presented related to online education. The researchers found a lack of evidence to support the broad generalizations made by the US Department of Education related to the superiority of online education. The researchers considered differences in student populations from well-prepared and advanced students to low-income and underprepared students. Likewise, low-income and underprepared students were considered in research conducted by Johnson and Rochkind (2009) who found that approximately 35% of respondents who had dropped out of school said that a lower cost to attend college would encourage them to return. Jaggars and Bailey (2010) agreed that cost reductions in both tuition and access to technology such as the Internet would benefit many students.

Ward et al. (2010) examined the perspectives of students and faculty to gain a more in-depth understanding of quality in an online teaching environment. When considering dimensions of quality, ease of access was rated high in synchronous and asynchronous learning environments. This dimension was rated low in face-to-face learning environments. The same relationship was found for the dimension that addressed minimizing cost (other than tuition) of taking the course. Students were asked if they would recommend the course and “84.5% responded ‘yes’” or if they would take another course offered online and “(85.2%) answered ‘yes’” (Ward et al., 2010, p. 72), which suggested that quality is perceived in the course environment. In 2012 the Florida Distance Learning Consortium (FDLC) surveyed students to better understand the impact of textbook costs as well as identify alternative educational

resources students use (Florida Virtual Campus, 2012). The researchers found that students are financially burdened by the high cost of textbooks but are unaware of other open resources that are available. Over half of the respondents (55%) rated OER as the same or more valuable than commercial resources (Florida Virtual Campus, 2012). The Student Public Interest Groups (Senack, 2014) conducted a survey of students related to textbook costs. The survey revealed that “65% of students said that they decided against buying a textbook because it was too expensive” (Senack, 2014, p. 4). In addition, “94% of students who had foregone purchasing a textbook were concerned that doing so would hurt their grade in a course” (Senack, 2014, p. 4).

Learning Environment

Burkett et al. (2001) examined the attitudes and anxieties of students in relation to computer usage. Three institutions in southern Florida – a community college, a private business college, and a private 4-year liberal arts college – provided data from 565 students (p. 78). The researchers were interested in determining whether students’ levels of computer anxiety would be related to their level of aversion toward computers. The survey consisting of true-false and multiple choice questions, and demographic information was completed by each participant. The researchers found that students at the three institutions differed in their perceived competency of computer usage with community college students having the least perceived competency. However, all three student groups believed they could successfully use computers in daily life. The survey data also revealed that age was associated with a student’s attitude toward computers with older students having a more positive attitude toward computers in their daily lives (Burkett et al., 2001). Another aspect of the e-learning environment to be considered is the absence of interactive cues given by students related to their understanding of course materials that are apparent in other learning environments (OnlineUniversities.com, 2015). Many times this

obstacle can be overcome by attentive faculty who maintain a high degree of online communication with their students (OnlineUniversities.com, 2015).

Faculty

In order for faculty to measure the utility of their instructional delivery methods a valid instrument is needed. To meet this need the Study Process Questionnaire (SPQ) was developed in 1987 by Biggs as a survey to measure teaching effectiveness and was later adapted by Biggs et al. (2001) to incorporate updated language and fewer items. The updated SPQ was known as the two-factor Revised Study Process Questionnaire (R-SPQ-2F). The researchers made modifications that resulted in a questionnaire that could be used by faculty to determine the effectiveness of their teaching in relation to two learning process modes of their students. The first was a deep approach to learning that can be identified by a student's interest and determination to understand the subject; the second was the surface approach to learning that provides a narrow understanding of a subject (Biggs et al., 2001). Students who practice the surface approach to learning put forth the least amount of effort to fully understand a topic. The researchers succeeded in providing an updated SPQ questionnaire that could be easily used in the classroom. In turn, courses could be revised when necessary to provide a better learning environment (Biggs et al., 2001). Bell and Rothery (2006) gathered data related to the perspective of sharing course content held by staff and repository providers as well as identification of perceived barriers and potential support in the building of a repository of OER. The researchers conducted a fourpart project. Base-line interviews were conducted at the institutional level and determined how each institution in the study was initially using OER. The second survey was piloted at the project contact level to provide an indication of the level of understanding about digital content and the ways it was stored and used. Staff attitudes toward

OER were gathered using a questionnaire during the third phase of the project. Finally, an executive group was assembled to provide expertise and guidance during all phases of the project. The researchers found that documents were the most created type of resource, being created by “96.9%” of those surveyed (Bell & Rothery, 2006, p. 3). Responses related to sharing found that “74.6%” of the respondents actively share with colleagues (Bell & Rothery, 2006, p. 4). While only “6.2%” are willing to share materials with anyone (Bell & Rothery, 2006, p. 4). A digital content repository can be considered as an intermediate level of sharing that would be within an institutional network but not available to the entire Web. The researchers reported that “62% of our sample would be willing to upload their own teaching materials to a digital content repository” (Bell & Rothery, 2006, p. 4). Technology issues that created a negative attitude toward the general ideal of a digital content repository were indicated as barriers to the use of or implementation of a repository that relied on technology. An understanding of copyright laws and how these laws apply in an educational setting was also identified as a barrier. Clements and Pawlowski (2012) used data gathered through two surveys to understand faculty perspectives related to OER re-use, quality, and trust. The researchers found that faculty members did not have a high level of knowledge about quality measures that can be used to determine the quality of OER. When asked how quality was determined “82% trusted the recommendation of a colleague” (Clements & Pawlowski, 2012, p. 9). Quality assurance could possibly be part of the reason that revised OER are not shared. Teachers may not want their works to be judged or they may feel others will not fully realize the hard work that went into the creation of the revised OER. Overall, “83% of the respondents reported that good use of multimedia and simulations was an indicator of quality” (Clements & Pawlowski, 2012, p. 10).

Rolfe (2012) researched the attitudes and awareness levels of faculty. Both qualitative and quantitative research methods were used in the mixed methods study. Semistructured interviews aided in the development of the survey instrument to be used in the study. The findings indicated that only “(18%) had heard of the term OER” (Rolfe, 2012, p. 3). While “74%” were willing to share their course resources with people within their institution, only “12%” would be willing to share with everyone (Rolfe, 2012, p.5). Resources created by someone else were used by “76%” of the respondents and a need for clear information related to copyright was indicated by “64%” (Rolfe, 2012, p.7). The need for a better understanding of the reasons faculty choose to use or not use OER was the driving force behind research conducted by Beaven (2013). The researcher conducted qualitative research to gain insight into the reasoning behind OER use decisions. A structured approach was used during the initial contact. Follow-up was conducted as a personal conversation rather than a formal interview type setting. The researcher found that faculty members were more at ease during the personal conversations. The study findings conclude that when OER are used in a course the faculty member will often make modifications to the content that is specific to their personal teaching style and the needs of the students in their classes. The personal teaching content was identified as a reason for their unwillingness to share revised versions on a scale such as the Internet. The teachers were not as hesitant to share content within their own network that could only be accessed by teachers within their institution. McKerlich et al. (2013) surveyed faculty at an institution in Canada to determine their perspectives on the use and creation of OER. The research was conducted in response to Florida legislation requiring data for the publically funded open textbook project. A previously designed instrument was used to gather the data. McKerlich et al. (2013) found that “59%” of the respondents were “somewhat familiar” with OER (p. 94), “41%” use OER in their courses (p.

95), and “29%” created OER (p. 96). The types of OER being used included “scholarly journal access (72%)... video (68%)... images (65%)... textbooks (65%)... audio (62%)” (McKerlich et al., 2013, p. 95). As a result of these findings the researchers proposed that a ratio of faculty use to faculty creation of OER could be used as a possible measurement of positive OER implementation.

Students

Students think, perceive, and have a variety of viewpoints related to their experiences in higher education. Martens et al. (2007) studied whether student perceptions of learning activities were the same as the perceived intentions of the faculty developing the activities. The data gathered provided valuable information that could be used in the development of new courses. The researchers found that significant differences existed between the perceptions of the students and those of the developers. Developers believed they had created two authentic role playing activities to encourage students to explore the topics further. However, students rated each activity much lower than the developers as a motivator to deeper study of the topic. Students did not perceive the activities to be realistic. Based on constructivist design principles, developers presented problems that they thought were not structured in a way that students could understand. Constructivist design principles argue intrinsic motivation to resolve the confusion will lead to knowledge attainment. Again, students did not perceive the problems as the developers had intended. The students were not nearly as confused by the environment as the developers had thought they would be. Intrinsic motivation for resolution was not apparent. Overall, the researchers concluded that development of activities following constructivist design principles is problematic. The most important consideration is the perception of the activity held by the student regardless of the design principle alignment.

Fong and Kwen (2007) gathered data related to student motivation to learn and their academic achievement in relation to the learning environment. The cooperative learning environment that incorporated group learning and reflective journal writing was examined to determine if student motivation to learn and academic achievement were improved. A pre and postexam were used to measure academic achievement and a survey to measure student motivation. The researchers found that the group activities and journal writing were positive influences on student motivation to learn and their academic achievement. A cooperative learning environment was found to be a positive environment promoting both collaboration and problem solving. The researchers also discovered that students preferred taking a pretest because it helped them realize their current understanding of the topic, resulting in a higher motivation to learn.

Batts (2008) surveyed students and faculty to determine if they had the same perceptions of course quality in introductory technology courses offered online. The survey instrument was first developed to measure student perceptions of quality in face-to-face courses. The survey was modified for use in an online setting. Overall, the findings of the study indicate both students and faculty held the same level of perceived course quality. The survey results suggest a need for additional active learning activities and cooperative learning opportunities. Rovai et al. (2009) developed an instrument that could be used across disciplines that used student self-reporting to determine the level of learning achieved in a particular course. The researchers developed the instrument addressing cognitive, affective, and psychomotor learning through a small number of survey questions related to each domain. The survey is relatively small with just nine questions. However, the researchers provide evidence of the validity of the instrument. Instead of responding to 50 questions students are required to answer only nine. This made the instrument a

tool that could be used in the classroom without using too much time. Ledden and Kalafatis (2010) surveyed students to determine whether their perception of value would change within the timeframe of the course. Study participants completed a survey at the beginning of the course and at the midpoint of the course. For this research learners' emotions represented their affective state and learner knowledge represented the cognitive influences on perception. They found that emotions and knowledge are significant factors that influence the perception of value.

Thomas and Blackwood (2010) employed a student perception study and found that students have a positive perception of the level of instructional support provided by online resources. The fact that OER are available online for students to use at a time that is best for them, flexible access, was identified as an important aspect of the overall positive perception. The researchers conducted two studies to determine whether an introductory computer concepts course redesign had a positive impact on student perceptions of the course. This particular course was a requirement for all majors of the institution. Many of the students were not technology program majors. The course redesign was important to student success and satisfaction.

Smith (2012) surveyed students to provide data related to their attitude toward technology and their aptitude of computer technology. The researcher discovered that males had a significantly higher perception of their technical computer aptitude. Age had a significant effect on social aptitude perceptions of technology, while academic major affected both social and technical aptitude perceptions of technology. Males were found to have a higher level of confidence using computers, low anxiety toward use of computers, and a greater general liking of computers than females. The researcher concludes that positive social and technical computer attitudes correspond to positive attitudes and aptitudes toward technology. The Pupils' Attitudes Towards Technology (PATT) is a survey instrument that was developed nearly 30 years ago.

Ardies et al. (2013) wanted to determine whether the instrument was still a valid measure of student attitudes. They also wanted the survey to incorporate fewer items yet remain valid. The researchers conducted an extensive pilot and following study that provided positive evidence that the updated PATT instrument results in a reliable measure of attitudes toward technology.

The National Union of Students (2014) used qualitative and quantitative methods to ask traditional and nontraditional students about their view of OER. Researchers found that “the majority (62% traditional and 61% nontraditional) of students surveyed indicated that they were at least ‘somewhat able’ to learn from OERs” (National Union of Students, 2014, p. 6). In addition, of the students who responded to a specific question about the type of OER that would improve their learning experience “44%” of the traditional and “52%” of the nontraditional students indicated that they would like to have access to “more audio and video resources” (National Union of Students, 2014, p. 30). When asked about accessing course content at home, “23.1%” of the traditional and “39.8%” of the nontraditional students would access “live video streaming” from their home (National Union of Students, 2014, p. 32). Nearly all of the students reported that they would like OER to be used more in their future courses (National Union of Students, 2014).

Summary

Open sharing of educational resources is an issue of international scope (National Union of Students, 2014). Educators have been willing to share the materials they develop among their colleagues but there is reluctance to share with the world (Creed-Dikeogu, 2009). As the cost of education is rising, educators are beginning to realize shared content can lower the financial burden that many students face. Open Educational Resources (OER) are an avenue that educators have started to recognize as an alternative to costly textbooks (Caswell et al., 2008). As more

educators become involved in the process of designing courses that use OER, there is a growing awareness of the opportunities OER offer and an increased commitment to continuous improvement of the educational experience offered to their students (Scardamalia & Bereiter, 2006).

CHAPTER 3

RESEARCH METHODOLOGY

The purpose of this study was to analyze factors that may contribute to student perceptions of courses using Open Educational Resources (OER). More specifically this study was an analysis of community college student demographic characteristics in relation to their motivation to learn, their perceptions regarding the quality of their learning experience, their perceptions regarding the quality of the course format, their perceptions regarding the value of OER, their perceived affective learning, and their perceived cognitive learning as factors that may contribute to community college student perceptions of courses using OER.

A quantitative approach to research may employ written surveys to gather data that can be statistically analyzed (McMillan & Schumacher, 2010). This study was conducted using a quantitative nonexperimental survey design to collect data using an instrument incorporating 5-point Likert-scale measures that can be statistically analyzed to determine correlations among predictor variables and criterion variables (Witte & Witte, 2010). Students attending a community college in Virginia who are enrolled in at least one course that used OER exclusively – with no textbook requirement – were asked to complete a survey about their attitudes toward OER and their perceptions of OER. The researcher developed the OER perceptions survey instrument, Teaching Without a Textbook, using previously validated perception research (see Appendix A).

Research Questions and Null Hypotheses

This study was guided by the six research questions and corresponding null hypotheses. Research Question 1: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience,

Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

Ho₁₁: There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

Ho₁₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

Ho₁₃: There is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

Ho₁₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

Ho₁₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

Ho₁₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

Research Question 2: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on age of participants?

Ho2₁: There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on age of participants.

Ho2₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on age of participants.

Ho2₃: There is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on age of participants.

Ho2₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on age of participants.

Ho2₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on age of participants.

Ho2₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on age of participants.

Research Question 3: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on gender?

Ho3₁: There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on gender.

Ho3₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on gender.

Ho3₃: There is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on gender.

Ho3₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on gender.

Ho3₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on gender.

Ho3₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on gender.

Research Question 4: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online)?

Ho4₁: There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

Ho4₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

Ho4₃: There is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

Ho4₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

Ho4₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

Ho4₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

Research Question 5: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours)?

Ho5₁: There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

Ho5₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

Ho5₃: There is no significant difference in the mean scores on the Value of Open Educational Resource dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

Ho5₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

Ho5₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

Ho5₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

Research Question 6: Is there a significant relationship between the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on number of credit hours taken by participants?

Ho6₁: There is no significant relationship between the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on number of credit hours taken by participants.

Ho6₂: There is no significant relationship between the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on number of credit hours taken by participants.

Ho6₃: There is no significant relationship between the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on number of credit hours taken by participants.

Ho6₄: There is no significant relationship between the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on number of credit hours taken by participants.

Ho6₅: There is no significant relationship between the mean scores on the Affective Learning dimension of the OER perceptions survey based on number of credit hours taken by participants.

Ho6₆: There is no significant relationship between the mean scores on the Course Quality dimension of the OER perceptions survey based on number of credit hours taken by participants.

Sample

The study was conducted at a public, 2-year community college in Virginia accredited by the Southern Association of Colleges and Schools, Commission on Colleges. The institution's Carnegie classification is Associate's – Public Rural-serving Medium (Carnegie Foundation for the Advancement of Teaching, 2014). In the 2013-2014 academic year, according to the Institutional Research department of the college, the student population consisted of 58% female and 42% male. Enrollment was approximately 2,600 students with 25% enrolled full time and 75% enrolled part time. The population for this quantitative research study consisted of 344

students who were enrolled in OER courses (no textbook required) at the community college during the fall semester of 2014. The sample consisted of the 104 students who accessed the OER perceptions survey. There were 80 fully completed OER perceptions surveys submitted by participants who were enrolled in one of 24 course sections of 10 different courses. The survey response rate was 23%.

Instrumentation

The researcher developed an OER perceptions survey (see Appendix A) that was administered to students attending a community college in Virginia who were enrolled in courses that use OER instead of a required textbook. The OER perceptions survey questions were developed based on previous perception research conducted in the field of education keeping in mind that “well-designed student perception surveys capture important aspects of instruction and the classroom environment” (MET Project, 2012, p. 3). The OER perceptions survey was developed using a design process that included input from students, faculty peers, and expert opinion related to individual question clarity. The researcher modified questions that were seen as unclear by those providing feedback during the survey development phase of the study. The OER perceptions survey items were divided into six dimensions and six demographic descriptors (see Appendix B): The dimensions are 1-motivation to learn (questions #1-6), 2-quality of learning (questions #7-11), 3-value of OER (questions #12-17), 4-cognitive learning (questions #18-20), 5-affective learning (questions #21-23), and 6-course quality (questions #24-27). Cronbach’s alpha (Cronbach, 1951) was used to determine reliability of the measurement provided by each dimension of the OER perceptions survey. The demographic descriptors are 1-course discipline (question #28), 2-course delivery mode (question #29), 3-gender (question

#30), 4-age (question #31), 5-enrollment status (question #32), and 6-number of credit hours in which the student was enrolled during the fall semester of 2014 (question #33).

Data Collection

There were 10 courses that used OER instead of purchased textbooks offered at the participating VCCS institution during the fall semester of 2014. Permission was granted by the East Tennessee State University's Institutional Research Board to conduct the study (see Appendix C). Permission was also granted by the participating VCCS institution to conduct the study (see Appendix D). Prior to data collection, permission was also obtained by the researcher from the chairperson of the doctoral dissertation committee.

On February 12, 2015, each student identified as taking a course using OER was contacted by her or his preferred VCCS student email account to disseminate information about the study and request that they complete the online perception survey. Prospective student participants were informed that the perception survey could be accessed by clicking the link provided in the email. The prospective student participants were assured that the perception survey was voluntary and completely anonymous. They were also informed that they could quit the survey at any time if they changed their mind about participating in the research study (see Appendix E). The first paragraph of the email was changed to past tense because the prospective student participants did not receive the request to participate until the spring semester of 2015. An email reminder was sent to all prospective students on February 19, 2015, 1 week after the first email invitation to participate in the study (see Appendix F). The first two words of the approved student email reminder were changed to "One week."

The OER perceptions survey was housed on an on-campus institutional server and available for a 3-week period beginning February 12, 2015, and ending March 5, 2015. During

this time the college was closed due to inclement weather February 23 through February 27. A sample size of 100 is recommended for quantitative research that will examine correlations among independent variables and dependent variables (Onwuegbuzie & Collins, 2007). For this study, 344 potential respondents were identified. There were 104 respondents who started the OER perceptions survey. The number of students who provided complete responses to the OER perceptions survey that were used in this study was 80. The researcher's doctoral committee statistician, an independent statistics consultant who was a Professor of Mathematics at Virginia Polytechnic University for 45 years, and the researcher determined this number to be adequate for the purposes of this study.

Data Analysis

Student responses to items 1-27 were scored using a 5-point Likert scale. The scale used for all items included *Strongly Agree* as the highest possible point value (5), *Neither Agree nor Disagree (undecided or neutral)* as the mid-point value (3), and *Strongly Disagree* as the lowest possible point value (1). Items 10, 11, and 20 were inversely scored. Six participant descriptive characteristics (items 28-33) were summarized as numbers and percentages of demographic independent variables:

28. OER course discipline (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, ITE – Information Technology, MKT – Marketing, and SDV – Student Development),
29. Age of participants,
30. Gender,
31. Course delivery mode (Classroom Face-to-Face or Delivered Completely Online),

32. Enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours), and
33. Number of credit hours taken by participants (fall semester 2014).

The six research questions provided direction for analysis of the dependent variable data gathered. The six dependent variables are:

1. Motivation to Learn,
2. Quality of Learning Experience,
3. Value of Open Educational Resources,
4. Cognitive Learning,
5. Affective Learning, and
6. Course Quality

A correlation analysis, descriptive statistics, scale means, independent-samples *t* tests, and Pearson correlation coefficients are reported. A significance level of .05 was used for all analyses. An independent-samples *t* test was conducted to evaluate research questions 1-5; a Pearson product-moment correlation was calculated to evaluate research question 6.

Summary

The methodology used to conduct this research study was presented in Chapter 3. The chapter included a detailed summary of the study sample, instrument design, and a description of the instrument development process. A description of the procedure used to administer the OER perceptions survey was explained and an overview of the process used for data analysis was also provided.

CHAPTER 4

RESULTS AND DATA ANALYSIS

Open Educational Resources (OER) are an alternative to textbook usage in higher education that can help reduce the financial burden on students (Florida Virtual Campus, 2012). When OER is included in a course, the learning environment inevitably changes. Student perceptions of the learning environment could also change (Martens et al., 2007). The purpose of this study was to analyze factors that may contribute to student perceptions of courses using OER. The study consisted of 80 respondents. The return rate was 23%. Results and analysis of the data gathered are reported in this chapter.

Data included for analysis in this study encompassed two objectives: (1) to provide a description of students who have taken a course that uses OER in terms of the demographic variables of course discipline, age, gender, course delivery mode, enrollment status, and credit hours taken during the fall semester of 2014; and (2) to determine the perceptions these students have toward the use of OER represented by six dimensions: motivation to learn, quality of learning experience, value of open educational resources, cognitive learning, affective learning, and course quality. The research questions were answered by data analysis focused on the two objectives.

Each demographic designation was treated as an independent variable to describe the students who have taken a course that used OER to illustrate the first objective. The independent variables included in the data analyses were: (1) course discipline, (2) age, (3) gender, (5) course delivery mode, (6) enrollment status, and (4) credit hours taken.

Six dependent variables were used to represent student perceptions related to the use of OER in community college level courses. The six dimensions surveyed were used to represent

the six dependent variables through 27 items in the OER perceptions survey instrument (see Appendix A). Cronbach's alpha (Cronbach, 1951) was used as a measurement of the equivalence of the items within each of the six dimensions to determine the reliability of the OER perceptions survey. The value of Cronbach's alpha (Cronbach, 1951) for the six dependent variable dimensions of learning included in the data analyses were: (1) motivation to learn, $\alpha = .82$; (2) quality of learning, $\alpha = .83$; (3) value of open educational resources, $\alpha = .84$; (4) cognitive learning, $\alpha = .55$; (5) affective learning, $\alpha = .71$; and (6) course quality, $\alpha = .93$. All of the dependent variable dimensions, with the exception of cognitive learning, had a satisfactory level of internal consistency defined by Nunnally (1967) as $\alpha > .70$. The cognitive learning dimension was measured using previously validated items (Biggs et al., 2001).

Student Respondents

During the 2013-2014 academic year the total enrollment population at the participating community college was approximately 2,600, which consisted of 58% female and 42% male students. There were 344 potential respondents who were enrolled in OER courses (no textbook requirement) of which 104 started the survey; 80 students submitted complete OER perceptions surveys that were used for analysis in this study. The sample consisted of 75% female and 25% male students representing a disproportionate number of female to male students relative to the college population. There was a 23% response rate for the survey. McMillan and Schumacher (2010) stated, "Response rates for online surveys can fluctuate widely from rates in single digits to higher rates" (p. 241). A response rate between 20% and 40% can be expected for an online survey, given that online surveys typically expect a response rate 20% below that of a mail survey, which is "40% to 60%" (McMillan & Schumacher, 2010, p. 239). Further, the survey results are not intended to be generalized to a larger population.

Student Demographic Characteristics

There were six demographic characteristics used in this study.

OER Course Discipline

On the OER perceptions survey students were asked to indicate the discipline of the course that they had taken in the fall semester of 2014 that used OER. The findings revealed that 5% of the respondents were taking a course with the AST course prefix, 2.5% of the respondents were taking a course with the BUS prefix, 6.2% of the respondents were taking a course with the HIM prefix, 73.8% of the respondents were taking a course with the ITE prefix, 5.0% of the respondents were taking a course with the MKT prefix, and 7.5% of the students were taking a course with the SDV prefix.

For the purpose of this study the number of students who indicated a course discipline of AST, BUS, HIM, MKT, or SDV was combined into one grouping variable – Non-ITE. The combined grouping indicated that 26.2% of the respondents had taken a course with a Non-ITE course prefix and 73.8% of the respondents had taken a course with an ITE course prefix.

Student Age

On the OER perceptions survey, students were asked their age on their last birthday. The age in total years rather than partial years was collected for each participant. The mean age of the students who participated in this study was 32.5 years of age. The age range was 48 years. The findings indicated that the most frequent age was 18 years and the median age was 28 years. For the purpose of this study, the age variable was combined into one of two groups – less than 28 years of age or 28 years of age and above. The groupings were determined using the median age of 28 years in order to distribute the sample equally into two groups.

Student Gender

Participants were asked to indicate their gender on the OER perceptions survey. The respondents were 75% female and 25% male, while the college overall was 58% female and 42% male students during the fall semester of 2014. These findings revealed that the respondents to the OER perceptions survey were similar but disproportionate to the college gender percentages, with a higher percentage of female students than male students.

Course Delivery Mode

Participants were asked to indicate whether the delivery mode of the course that used OER during the fall semester of 2014 was online, face-to-face on-campus, or face-to-face off-campus. The findings indicated that 36.3% of the students who completed the OER perceptions survey took an OER course in an on-campus face-to-face classroom setting, 6.2% took an OER course in an off-campus face-to-face classroom setting, and the remaining 57.5% of the students took an OER class through distance learning in an online only format. These findings show that a majority of the students who enrolled in a course that used OER took the course through distance learning in an online only format during the fall semester of 2014. According to the Institutional Research department of the college, 65% of students take face-to-face courses while the remaining 35% take courses in an online only format. The findings are inversely related to the college population.

For the purpose of this study the number of students who indicated either the on-campus face-to-face course delivery mode or off-campus face-to-face course delivery mode were combined into one grouping variable – face-to-face – given that the number of respondents for the off-campus face-to-face course delivery mode option was 5. The findings using a combined

variable for the face-to-face demographic indicated 57.5% of the students took an OER course online only and 42.5% of the students took an OER course in the face-to-face classroom setting.

Enrollment Status

Participants were asked to indicate whether their enrollment status was full time or part time during the fall semester of 2014. The findings indicated 82.5% of the students who completed the OER perceptions survey were full-time students and the remaining 17.5% were part-time students. These findings portray a reversal of percentages when compared to the overall college student enrollment status whereby 25% of the students are enrolled full time and 75% of the students are enrolled part time.

Credit Hours Taken

Respondents were asked to indicate the total number of credit hours that they had taken during the fall semester of 2014. The mean of credit hours taken of the students who participated in this study was 11.9 credit hours. The range in the number of credit hours taken was 18 credit hours. The findings indicated that the most frequent number of credit hours taken was 12 credit hours and the median number of credit hours taken was 12 credit hours.

Dimensions of Learning

The mean was examined for each of the six dimensions of learning analyzed in the study: (1) motivation to learn; (2) quality of learning; (3) value of open educational resources; (4) cognitive learning; (5) affective learning; and (6) course quality. A 5-point Likert-type scale was used as a measure of perception in response to questions 1-27 under the six dimensions with strongly agree = 5, agree = 4, neither agree nor disagree (undecided or neutral) = 3, disagree = 2,

and strongly disagree = 1. The items included in each dimension are presented in Tables 1 through 6.

Motivation to Learn Dimension

The motivation to learn dimension was measured using six items (#1-6) included in the OER perceptions survey. The six items related to the student’s perception of their motivation to learn are reported as motivation to learn item means presented in Table 1.

Table 1
Motivation to Learn Dimension Item Means

Motivation to Learn Item	<i>M</i>
1. I like to learn things that are challenging	4.12
2. I am able to complete my homework on time	4.14
3. I enjoy working on assignments	3.99
4. I enjoy learning in an environment that incorporates OER	4.02
5. I would describe using OER as interesting	4.02
6. I do not like the learning environment when OER are used	3.54

The motivation to learn dimension item means were all 3.54 or more, indicating that students are motivated to learn. The highest motivation to learn item mean of 4.14 supports student motivation to learn as a result of students’ ability to complete homework on time. The scale mean for the motivation to learn dimension was 3.97.

Quality of Learning Dimension

The quality of learning dimension was measured using five items (#7-11) included in the OER perceptions survey. The five items related to the student’s perception of the quality of the

learning environment in the course that used OER are reported as quality of learning dimension item means presented in Table 2.

Table 2

Quality of Learning Dimension Item Means

Quality of Learning Item	<i>M</i>
7. OER make me feel more engaged with my learning	3.79
8. If given a choice, I prefer learning using OER	3.75
9. OER directly improve the quality of my learning experience in this course	3.76
10. There is a match between the OER content and specific learning objectives of this course	4.00
11. If given a choice, I prefer learning using a textbook	3.01

All quality of learning dimension items received a positive rating of 3.01 or more. A preference for learning with a textbook was rated lowest (a reverse-scored item). A preference for learning with OER was rated higher (3.75), indicating students had a more positive preference for learning with OER. The scale mean for the quality of learning dimension was 3.97.

Value of Open Educational Resources (OER) Dimension

The value of OER dimension was measured using six items (#12-17) included in the OER perceptions survey. The six items related to the student’s perception of the value of OER in the course that used OER are reported as value of OER dimension item means presented in Table 3.

Table 3

Value of Open Educational Resources Dimension Item Means

Value of Open Educational Resources Item	<i>M</i>
12. I think this course is of less value to me because anyone can access the materials	3.78
13. OER are not as good as purchased textbooks	3.45
14. Textbooks help me understand topics better than OER	3.22
15. I believe I can learn more through OER than through a textbook	3.34
16. OER help me understand topics better than textbooks	3.28
17. OER does not offer any advantages to me	3.61

The value of open educational resources dimension items were rated similarly ranging from 3.22 to 3.78. The item that received the highest rating (3.78) was the students' perception that their course was of less value to them because everyone had access to the OER materials that were used in the course. The scale mean of the open educational resources dimension was 3.37.

Cognitive Learning Dimension

The cognitive learning dimension was measured using three items (#18-20) included in the OER perceptions survey. The three items related to the student's perception of their level of cognitive learning in the course that used OER are reported as cognitive learning dimension item means presented in Table 4.

Table 4

Cognitive Learning Dimension Item Means

Cognitive Learning Item	<i>M</i>
18. I can organize course material into a logical structure	3.95
19. I cannot produce an outline of the topics covered in this course for future students	3.28
20. I can intelligently critique the OER used in this course	3.80

The cognitive dimension items were all rated 3.28 or higher. The item rated highest (3.95) indicated students perceived the course that used OER had structure. The scale mean for the cognitive dimension was 3.68.

Affective Learning Dimension

The affective learning dimension was measured using three items (#21-23) included in the OER perceptions survey. The three items related to the student's perception of their level of affective learning in the course that used OER are reported as affective learning dimension item means presented in Table 5.

Table 5

Affective Learning Dimension Item Means

Affective Learning Item	<i>M</i>
21. I have changed my attitudes about this course subject matter as a result of this course	3.62
22. I feel more self-reliant as a result of this course	3.81
23. I feel I am a more sophisticated thinker as a result of this course	3.62

All affective learning dimension items had similar means of 3.62 or higher. The highest affective learning mean (3.81) indicated that students had a greater sense of self-reliance as a

result of their enrollment in a course that used OER. The scale mean for the affective learning dimension was 3.69.

Course Quality Dimension

The course quality dimension was measured using four items included in the OER perceptions survey. The four items related to the student’s perception of the quality of the course that used OER are reported as course quality dimension item means presented in Table 6.

Table 6

Course Quality Dimension Item Means

Course Quality Item	<i>M</i>
24. I would like to take more courses that use OER	3.85
25. I would recommend a course that uses OER to others	3.90
26. Overall the learning experience in this course was positive	4.15
27. Overall the quality of the OER content of this course was excellent	3.99

All of the course quality dimension item means were 3.85 or greater. The highest rated course quality dimension (4.15) indicated that the students perceived an overall positive learning experience in the course that used OER. The scale mean for the course quality dimension was 3.97.

Analyses of Perceptions of OER by Demographic Characteristics

Independent-samples *t* tests were used for research questions 1 through 5 in determining whether there were significant differences in each of the six dependent OER perception dimension means based on the five independent demographic characteristics of course discipline, age, gender, course delivery mode, and enrollment status. To address research question 6 a Pearson product-moment correlation was calculated to determine whether there were significant

relationships among the six dependent OER perception dimension means and the independent demographic characteristic measured by the number of credit hours taken.

OER Perceptions by Course Discipline (ITE or Non-ITE)

Research Question 1: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

H_{01} : There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

An independent-samples t test was used to determine if differences in the mean scores on the Motivation to Learn dimension could be attributed to the course discipline (ITE or Non-ITE). The independent variable was the course discipline and the dependent variable was the Motivation to Learn dimension. There was not a significant difference in motivation to learn for ITE ($M = 4.00$, $SD = 0.58$) and Non-ITE ($M = 3.90$, $SD = 0.64$) course prefixes; $t(78) = 0.68$, $p = .497$, 95% CI [-0.20, 0.40], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Motivation to Learn dimension of the OER

perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix.

Ho₁₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

An independent-samples *t* test was used to determine if differences in the mean scores on the Quality of Learning dimension could be attributed to the course discipline (ITE or Non-ITE). The independent variable was the course discipline and the dependent variable was the Quality of Learning dimension. There was not a significant difference in quality of learning for ITE ($M = 3.71$, $SD = 0.67$) and Non-ITE ($M = 3.54$, $SD = 0.91$) course prefixes; $t(78) = 0.88$, $p = .381$, 95% CI [-0.21, 0.54], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix.

Ho₁₃: There is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

An independent-samples *t* test was used to determine if differences in the mean scores on the Value of Open Educational Resources dimension could be attributed to the course discipline (ITE or Non-ITE). The independent variable was the course discipline and the dependent variable was the Value of Open Educational Resources dimension. There was not a significant difference in value of OER for ITE ($M = 3.39$, $SD = 0.47$) and Non-ITE ($M = 3.32$, $SD = 0.67$) course prefixes; $t(78) = 0.54$, $p = .591$, 95% CI [-0.19, 0.34], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix.

Ho₁₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

An independent-samples *t* test was used to determine if differences in the mean scores on the Cognitive Learning dimension could be attributed to the course discipline (ITE or Non-ITE). The independent variable was the course discipline and the dependent variable was the Cognitive Learning dimension. There was not a significant difference in cognitive learning for ITE ($M = 3.73$, $SD = 0.64$) and Non-ITE ($M = 3.52$, $SD = 0.70$) course prefixes; $t(78) = 1.23$, $p = .221$, 95% CI [-0.13, 0.54], $\eta^2 = .02$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions

survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix.

Ho₁₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

An independent-samples *t* test was used to determine if differences in the mean scores on the Affective Learning dimension could be attributed to the course discipline (ITE or Non-ITE). The independent variable was the course discipline and the dependent variable was the Affective Learning dimension. There was not a significant difference in affective learning for ITE ($M = 3.72$, $SD = 0.74$) and Non-ITE ($M = 3.60$, $SD = 0.80$) course prefixes; $t(78) = 0.59$, $p = .555$, 95% CI [-0.27, 0.50], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix.

Ho₁₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix (AST – Administrative Support Technology, BUS – Business, HIM – Health Information Management, MKT – Marketing, and SDV – Student Development).

An independent-samples *t* test was used to determine if differences in the mean scores on the Course Quality dimension could be attributed to the course discipline (ITE or Non-ITE). The independent variable was the course discipline and the dependent variable was the Course Quality dimension. There was not a significant difference in course quality for ITE ($M = 4.00$, $SD = 0.82$) and Non-ITE ($M = 3.88$, $SD = 1.03$) course prefixes; $t(78) = 0.55$, $p = .582$, 95% CI [-0.32, 0.57], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on students taking an OER course with an Information Technology (ITE) prefix and those taking an OER course without an ITE prefix.

Results of the independent-samples *t* tests were used to determine if the course discipline (ITE or Non-ITE) could be attributed to significant differences in the six OER perception dimension means. While there were no significant differences in the six OER perception dimensions, the cognitive learning dimension was most affected by the course discipline.

OER Perceptions by Age

Research Question 2: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on age of participants?

Ho₂₁: There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on age of participants.

An independent-samples *t* test was used to determine if differences in the mean scores on the Motivation to Learn dimension could be attributed to age (18 to 27 years of age or 28 to 66 years of age). The independent variable was age and the dependent variable was the Motivation

to Learn dimension. There was not a significant difference in motivation to learn for students less than 28 ($M = 3.88$, $SD = 0.51$) and 28 plus ($M = 4.07$, $SD = 0.66$) years of age; $t(78) = -1.49$, $p = .140$, 95% CI [-0.46, 0.07], $\eta^2 = .03$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on age of participants.

Ho₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on age of participants.

An independent-samples t test was used to determine if differences in the mean scores on the Quality of Learning dimension could be attributed to age (18 to 27 years of age or 28 to 66 years of age). The independent variable was age and the dependent variable was the Quality of Learning dimension. There was not a significant difference in quality of learning for students less than 28 ($M = 3.61$, $SD = 0.70$) and 28 plus ($M = 3.72$, $SD = 0.78$) years of age; $t(78) = -0.66$, $p = .509$, 95% CI [-0.44, 0.22], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on age of participants.

Ho₃: There is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on age of participants.

An independent-samples t test was used to determine if differences in the mean scores on the Value of Open Educational Resources dimension could be attributed to age (18 to 28 years of age or 28 to 66 years of age). The independent variable was age and the dependent variable was the Value of Open Educational Resources dimension. There was not a significant difference in

Value of Open Educational Resources for students less than 28 ($M = 3.32$, $SD = 0.52$) and 28 plus ($M = 3.42$, $SD = 0.54$) years of age; $t(78) = -0.85$, $p = .398$, 95% CI [-0.33, 0.13], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on age of participants.

Ho2₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on age of participants.

An independent-samples t test was used to determine if differences in the mean scores on the Cognitive Learning dimension could be attributed to age (18 to 28 years of age or 28 to 66 years of age). The independent variable was age and the dependent variable was the Cognitive Learning dimension. There was not a significant difference in cognitive learning for students less than 28 ($M = 3.62$, $SD = 0.62$) and 28 plus ($M = 3.73$, $SD = 0.70$) years of age; $t(78) = -0.79$, $p = .430$, 95% CI [-0.41, 0.18], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on age of participants.

Ho2₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on age of participants.

An independent-samples t test was used to determine if differences in the mean scores on the Affective Learning dimension could be attributed to age (18 to 28 years of age or 28 to 66 years of age). The independent variable was age and the dependent variable was the Affective Learning dimension. There was not a significant difference in affective learning for students less than 28 ($M = 3.71$, $SD = 0.73$) and 28 plus ($M = 3.67$, $SD = 0.79$) years of age; $t(78) = 0.25$, $p = .807$, 95% CI [-0.30, 0.38], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no

significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on age of participants.

Ho₂₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on age of participants.

An independent-samples *t* test was used to determine if differences in the mean scores on the Course Quality dimension could be attributed to age (18 to 28 years of age or 28 to 66 years of age). The independent variable was age and the dependent variable was the Course Quality dimension. There was not a significant difference in course quality for students less than 28 ($M = 3.94$, $SD = 0.85$) and 28 plus ($M = 4.00$, $SD = 0.91$) years of age; $t(78) = -0.29$, $p = .776$, 95% CI [-0.45, 0.34], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on age of participants.

Results of the independent-samples *t* tests were used to determine if age (18 to 28 years of age or 28 to 66 years of age) could be attributed to significant differences in the six OER perception dimension means. There were no significant differences in the six OER perception dimension means.

OER Perceptions by Gender

Research Question 3: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on gender?

Ho₃₁: There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on gender.

An independent-samples *t* test was used to determine if differences in the mean scores on the Motivation to Learn dimension could be attributed to gender (female or male). The independent variable was gender and the dependent variable was the Motivation to Learn dimension. There was not a significant difference in motivation to learn for female ($M = 3.98$, $SD = 0.63$) and male ($M = 3.94$, $SD = 0.47$) students; $t(78) = 0.27$, $p = .787$, 95% CI [-0.26, 0.35], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on gender.

Ho3₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on gender.

An independent-samples *t* test was used to determine if differences in the mean scores on the Quality of Learning dimension could be attributed to gender (female or male). The independent variable was gender and the dependent variable was the Quality of Learning dimension. There was not a significant difference in quality of learning for female ($M = 3.63$, $SD = 0.80$) and male ($M = 3.76$, $SD = 0.53$) students; $t(78) = -0.66$, $p = .510$, 95% CI [-0.51, 0.25], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on gender.

Ho3₃: There is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on gender.

An independent-samples *t* test was used to determine if differences in the mean scores on the Value of Open Educational Resources dimension could be attributed to gender (female or

male). The independent variable was gender and the dependent variable was the Value of Open Educational Resources dimension. There was not a significant difference in the value of OER for female ($M = 3.38, SD = 0.57$) and male ($M = 3.36, SD = 0.38$) students; $t(78) = 0.12, p = .903$, 95% CI [-0.26, 0.29], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on gender.

Ho3₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on gender.

An independent-samples t test was used to determine if differences in the mean scores on the Cognitive Learning dimension could be attributed to gender (female or male). The independent variable was gender and the dependent variable was the Cognitive Learning dimension. There was not a significant difference in cognitive learning for female ($M = 3.69, SD = 0.62$) and male ($M = 3.62, SD = 0.77$) students; $t(78) = 0.46, p = .649$, 95% CI [-0.26, 0.42], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on gender.

Ho3₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on gender.

An independent-samples t test was used to determine if differences in the mean scores on the Affective Learning dimension could be attributed to gender (female or male). The independent variable was gender and the dependent variable was the Affective Learning dimension. There was not a significant difference in affective learning for female ($M = 3.68, SD = 0.77$) and male ($M = 3.70, SD = 0.72$) students; $t(78) = -0.09, p = .933$, 95% CI [-0.41, 0.37], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the

mean scores on the Affective Learning dimension of the OER perceptions survey based on gender.

Ho₃₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on gender.

An independent-samples *t* test was used to determine if differences in the mean scores on the Course Quality dimension could be attributed to gender (female or male). The independent variable was gender and the dependent variable was the Course Quality dimension. There was not a significant difference in course quality for female ($M = 3.96$, $SD = 0.91$) and male ($M = 4.00$, $SD = 0.77$) students; $t(78) = -0.17$, $p = .869$, 95% CI [-0.49, 0.41], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on gender.

Results of the independent-samples *t* tests were used to determine if gender could be attributed to significant differences in the six OER perception dimension means. There were no significant differences in the six OER perception dimension means.

OER Perceptions by Course Delivery Mode

Research Question 4: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online)?

Ho₄₁: There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

An independent-samples *t* test was used to determine if differences in the mean scores on the Motivation to Learn dimension could be attributed to course delivery mode (Face-to-Face or Online). The independent variable was course delivery mode and the dependent variable was the Motivation to Learn dimension. There was not a significant difference in motivation to learn for face-to-face ($M = 3.99, SD = 0.49$) and online ($M = 3.96, SD = 0.66$) course delivery mode; $t(78) = -0.23, p = .824, 95\% CI [-0.30, 0.24], \eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on course delivery mode.

Ho4₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

An independent-samples *t* test was used to determine if differences in the mean scores on the Quality of Learning dimension could be attributed to course delivery mode (Face-to-Face or Online). The independent variable was course delivery mode and the dependent variable was the Quality of Learning dimension. There was not a significant difference in quality of learning for face-to-face ($M = 3.69, SD = 0.75$) and online ($M = 3.65, SD = 0.74$) course delivery mode; $t(78) = -0.24, p = .811, 95\% CI [-0.38, 0.29], \eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on course delivery mode.

Ho4₃: There is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

An independent-samples *t* test was used to determine if differences in the mean scores on the Value of Open Educational Resources dimension could be attributed to course delivery mode (Face-to-Face or Online). The independent variable was course delivery mode and the dependent variable was the Value of Open Educational Resources dimension. There was not a significant difference in value of OER for face-to-face ($M = 3.40, SD = 0.53$) and online ($M = 3.35, SD = 0.53$) course delivery mode; $t(78) = -0.45, p = .652, 95\% CI [-0.29, 0.18], \eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on course delivery mode.

Ho4₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

An independent-samples *t* test was used to determine if differences in the mean scores on the Cognitive Learning dimension could be attributed to course delivery mode (Face-to-Face or Online). The independent variable was course delivery mode and the dependent variable was the Cognitive Learning dimension. There was not a significant difference in cognitive learning for face-to-face ($M = 3.72, SD = 0.60$) and online ($M = 3.64, SD = 0.70$) course delivery mode; $t(78) = -0.48, p = .636, 95\% CI [-0.37, 0.23], \eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on course delivery mode.

Ho4₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

An independent-samples *t* test was used to determine if differences in the mean scores on the Affective Learning dimension could be attributed to course delivery mode (Face-to-Face or Online). The independent variable was course delivery mode and the dependent variable was the Affective Learning dimension. There was not a significant difference in affective learning for face-to-face ($M = 3.82, SD = 0.69$) and online ($M = 3.59, SD = 0.80$) course delivery mode; $t(78) = -1.39, p = .168, 95\% CI [-0.58, 0.10], \eta^2 = .02$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on course delivery mode.

Ho₄₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on course delivery mode (Classroom Face-to-Face or Delivered Completely Online).

An independent-samples *t* test was used to determine if differences in the mean scores on the Course Quality dimension could be attributed to course delivery mode (Face-to-Face or Online). The independent variable was course delivery mode and the dependent variable was the Course Quality dimension. There was not a significant difference in course quality for face-to-face ($M = 4.06, SD = 0.78$) and online ($M = 3.91, SD = 0.94$) course delivery mode; $t(78) = -0.76, p = .448, 95\% CI [-0.55, 0.24], \eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on course delivery mode.

Results of the independent-samples *t* tests were used to determine if course delivery mode (Face-to-Face or Online) could be attributed to significant differences in the six OER perception dimension means. There were no significant differences in the six OER perception dimension means.

OER Perceptions by Enrollment Status

Research Question 5: Is there a significant difference in the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours)?

Ho5₁: There is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

An independent-samples *t* test was used to determine if differences in the mean scores on the Motivation to Learn dimension could be attributed to enrollment status (full time or part time). The independent variable was enrollment status and the dependent variable was the Motivation to Learn dimension. There was not a significant difference in motivation to learn for full time ($M = 3.92, SD = 0.56$) and part time ($M = 4.23, SD = 0.70$) students; $t(78) = -1.79, p = .078, 95\% \text{ CI } [-0.65, 0.04], \eta^2 = .04$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on enrollment status.

Ho5₂: There is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

An independent-samples *t* test was used to determine if differences in the mean scores on the Quality of Learning dimension could be attributed to enrollment status (full time or part time). The independent variable was enrollment status and the dependent variable was the Quality of Learning dimension. There was not a significant difference in quality of learning for full time ($M = 3.59, SD = 0.72$) and part time ($M = 4.00, SD = 0.75$) students; $t(78) = -1.90, p = .062, 95\% \text{ CI } [-0.83, 0.02], \eta^2 = .04$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey based on enrollment status.

Ho5₃: There is no significant difference in the mean scores on the Value of Open Educational Resource dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

An independent-samples *t* test was used to determine if differences in the mean scores on the Value of Open Educational Resources dimension could be attributed to enrollment status (full time or part time). The independent variable was enrollment status and the dependent variable was the Value of Open Educational Resources dimension. There was not a significant difference in value of OER for full time ($M = 3.36, SD = 0.53$) and part time ($M = 3.44, SD = 0.51$) students; $t(78) = -0.54, p = .588, 95\% \text{ CI } [-0.39, 0.22], \eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey based on enrollment status.

Ho5₄: There is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on enrollment status (Full Time –

enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

An independent-samples t test was used to determine if differences in the mean scores on the Cognitive Learning dimension could be attributed to enrollment status (full time or part time) could be attributed to significant differences in the mean scores on the Cognitive Learning dimension. The independent variable was enrollment status and the dependent variable was the Cognitive Learning dimension. There was not a significant difference in cognitive learning for full time ($M = 3.62$, $SD = 0.58$) and part time ($M = 3.93$, $SD = 0.91$) students; $t(78) = -1.61$, $p = .112$, 95% CI [-0.69, 0.07], $\eta^2 = .03$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Cognitive Learning dimension of the OER perceptions survey based on enrollment status.

Ho5₅: There is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

An independent-samples t test was used to determine if differences in the mean scores on the Affective Learning dimension could be attributed to enrollment status (full time or part time). The independent variable was enrollment status and the dependent variable was the Affective Learning dimension. There was not a significant difference in affective learning for full time ($M = 3.63$, $SD = 0.70$) and part time ($M = 3.98$, $SD = 0.95$) students; $t(78) = -1.59$, $p = .116$, 95% CI [-0.79, 0.09], $\eta^2 = .03$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Affective Learning dimension of the OER perceptions survey based on enrollment status.

Ho5₆: There is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on enrollment status (Full Time – enrolled in 12 or more credit hours – or Part Time – enrolled in fewer than 12 credit hours).

An independent-samples *t* test was used to determine if differences in the mean scores on the Course Quality dimension could be attributed to enrollment status (full time or part time). The independent variable was enrollment status and the dependent variable was the Course Quality dimension. There was not a significant difference in course quality for full time ($M = 3.94$, $SD = 0.84$) and part time ($M = 4.13$, $SD = 1.02$) students; $t(78) = -0.72$, $p = .474$, 95% CI [-0.19, 0.26], $\eta^2 < .01$. Therefore, the null hypothesis was retained; there is no significant difference in the mean scores on the Course Quality dimension of the OER perceptions survey based on enrollment status.

Results of the independent-samples *t* tests were used to determine if enrollment status (full time or part time) could be attributed to significant differences in the six OER perception dimension means. There were no significant differences in the six OER perception dimension means. Both full-time and part-time students had similar perceptions toward their course that used OER.

OER Perceptions Correlations by Number of Credit Hours

Research Question 6: Is there a significant relationship between the mean scores on the six dimensions of the OER perceptions survey (Motivation to Learn, Quality of Learning Experience, Value of Open Educational Resources, Cognitive Learning, Affective Learning, and Course Quality) and the number of credit hours taken by participants?

Ho6₁: There is no relationship between the mean scores on the Motivation to Learn dimension of the OER perceptions survey based on number of credit hours taken by participants.

The Pearson correlation coefficient between the Motivation to Learn dimension and the number of credit hours taken revealed a negative correlation that was not significant, $r(78) = -.18, p = .121$. Therefore, the null hypothesis was retained; there is no significant relationship between the mean scores on the Motivation to Learn dimension of the OER perceptions survey and the number of credit hours taken by participants.

Ho6₂: There is no significant relationship between the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey and the number of credit hours taken by participants.

The Pearson correlation coefficient between the Quality of Learning dimension and the number of credit hours taken revealed a negative correlation that was not significant, $r(78) = -.16, p = .156$. Therefore, the null hypothesis was retained; there is no significant relationship between the mean scores on the Quality of Learning Experience dimension of the OER perceptions survey and the number of credit hours taken by participants.

Ho6₃: There is no significant relationship between the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey and the number of credit hours taken by participants.

The Pearson correlation coefficient between the Value of Open Educational Resources dimension and the number of credit hours taken revealed a negative correlation that was not significant, $r(78) = -.05, p = .636$. Therefore, the null hypothesis was retained; there is no

significant relationship between the mean scores on the Value of Open Educational Resources dimension of the OER perceptions survey and the number of credit hours taken by participants.

Ho64: There is no significant relationship between the mean scores on the Cognitive Learning dimension of the OER perceptions survey and the number of credit hours taken by participants.

The Pearson correlation coefficient between the Cognitive Learning dimension and the number of credit hours taken revealed a negative correlation that was significant, $r(78) = -.25, p = .023$. The null hypothesis was rejected; there is a significant relationship between the mean scores on the Cognitive Learning dimension of the OER perceptions survey and the number of credit hours taken by participants. While the correlation is weak ($r \leq .30$) these findings reveal that participants who took a higher number of credit hours tended to have a lower perception of their cognitive learning. Stated another way, as the number of credit hours taken increased students perceived their level of cognitive learning (their ability to organize the course material, outline the topics covered, and critique the OER used) was lower.

Ho65: There is no significant relationship between the mean scores on the Affective Learning dimension of the OER perceptions survey based on number of credit hours taken by participants.

The Pearson correlation coefficient between the Affective Learning dimension and the number of credit hours taken revealed a negative correlation that was not significant, $r(78) = -.16, p = .168$. Therefore, the null hypothesis was retained; there is no significant relationship between the mean scores on the Affective Learning dimension of the OER perceptions survey and the on number of credit hours taken by participants.

Ho6₆: There is no significant relationship between the mean scores on the Course Quality dimension of the OER perceptions survey and the number of credit hours taken by participants.

The Pearson correlation coefficient between the Course Quality dimension and the number of credit hours taken revealed a negative correlation that was not significant, $r(78) = -.03, p = .793$. Therefore, the null hypothesis was retained; there is no significant relationship between the mean scores on the Course Quality dimension of the OER perceptions survey and the number of credit hours taken by participants.

Summary

Analyses of data associated with the six research questions and corresponding null hypotheses were presented in Chapter 4. Chapter 4 contains tables illustrating the analyses of data for clarification. Chapter 5 provides a summary of the findings and interpretation of the data analyses in addition to recommendations for future research and conclusions.

CHAPTER 5

SUMMARY, KEY FINDINGS, IMPLICATIONS FOR PRACTICE, RECOMMENDATIONS FOR FUTURE RESEARCH, AND CONCLUSION

Four sections are used in this chapter to provide an overview of the research study. The first section is a description of the background and setting, including the specific research questions addressed and methodology used. The second section is a summary of the key findings of the study and the implications of these findings related to higher education. The third section provides recommendations for future research. The fourth section includes final conclusions.

Summary

Open Educational Resources (OER) are gaining acceptance in higher education as a functional cost-effective alternative to traditional textbooks. The purpose of this study was to analyze factors that may contribute to student perceptions of courses using OER rather than a traditional textbook. In order to gain a better understanding of student perceptions of OER a survey was developed by the researcher related to six dimensions of teaching and learning in higher education. The web-based survey was administered to students who had been enrolled in a course during the fall semester of 2014 that exclusively used OER with no textbook requirement. The survey consisted of 27 questions; the first 21 questions were grouped into the six dimensions of the study to provide a dimension mean and the last six questions were used to collect demographic data.

The study used one web-based survey instrument that was completed by each respondent. The survey was started by 104 respondents and completed by 80 of the respondents. The completed surveys were used in the study. The remaining 24 surveys were submitted incomplete and were not included for data analysis.

Six research questions guided the analyses of 36 hypotheses. The research questions and related null hypotheses are detailed in chapters 3 and 4. The six research questions addressed the independent factors associated with all who participated in the study including the discipline of the course in which they were enrolled that used OER, the participants' age, gender, whether they had taken their OER course in a face-to-face learning environment or in an online learning environment, their enrollment status during the fall semester of 2014, and the number of credit hours they had taken during the fall 2014 semester.

The six dependent factors identified as dimensions in the study were used to analyze participants' perceptions including their motivation to learn; their perception of the quality of the learning environment that used OER; their perceived value of OER; their estimation of their level of cognitive learning gained in the course; their perception of affective learning as measured, in part, by their level of appreciation of the course subject matter; and their perception of the course quality.

There were 30 null hypotheses tested using independent-samples *t* tests to determine if there were significant differences between the means of the six OER perception dimensions that could be attributed to any of the six independent factors included in the study. The statistical level of significance as measured by *p* was .05. The data analyses for the OER perception dimensions by each of the independent factors are summarized in Tables 7 through 11. The remaining six null hypotheses were tested using the Pearson product-moment correlation.

Results of the independent-samples *t* tests were used to determine if differences in dimension mean scores could be attributed to the course discipline (ITE or Non-ITE). While there were no significant differences in the six OER perception dimensions, the cognitive learning dimension was most affected by the course discipline. This suggests that students taking

OER courses with Non-ITE prefixes may perceive a slightly lower level of cognitive learning than students taking OER courses with an ITE prefix. A summary of the results is provided in Table 7.

Table 7
OER Perception Dimension Mean Scores by Course Discipline

OER Perception Dimension	Discipline	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	95% CI	η^2
Motivation to Learn	ITE ^a	4.00	0.58	0.68	.497	[-0.20, 0.40]	< .01
	Non-ITE ^b	3.90	0.64				
Quality of Learning	ITE ^a	3.71	0.67	0.88	.381	[-0.21, 0.54]	< .01
	Non-ITE ^b	3.54	0.91				
Value of OER	ITE ^a	3.39	0.47	0.54	.591	[-0.19, 0.34]	< .01
	Non-ITE ^b	3.32	0.67				
Cognitive Learning	ITE ^a	3.73	0.64	1.23	.221	[-0.13, 0.54]	.02
	Non-ITE ^b	3.52	0.70				
Affective Learning	ITE ^a	3.72	0.74	0.59	.555	[-0.27, 0.50]	< .01
	Non-ITE ^b	3.60	0.80				
Course Quality	ITE ^a	4.00	0.82	0.55	.582	[-0.32, 0.57]	< .01
	Non-ITE ^b	3.88	1.03				

^a*n* = 59

^b*n* = 21

Results of the independent-samples *t* tests were used to determine if differences in dimension mean scores could be attributed to age (18 to 28 years of age or 28 to 66 years of age). There were no significant differences in the six OER perception dimension means. These

findings indicate that age does not significantly influence perceptions related to OER. The summary of the results is provided in Table 8.

Table 8
OER Perception Dimension Mean Scores by Age

OER Perception Dimension	Age	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	95% CI	η^2
Motivation to Learn				-1.49	.140	[-0.46, 0.07]	.03
	Less than 28 years of age ^a	3.88	0.51				
	28 or more years of age ^b	4.07	0.66				
Quality of Learning				-0.66	.509	[-0.44, 0.22]	< .01
	Less than 28 years of age ^a	3.61	0.70				
	28 or more years of age ^b	3.72	0.78				
Value of OER				-0.85	.398	[-0.33, 0.13]	< .01
	Less than 28 years of age ^a	3.32	0.52				
	28 or more years of age ^b	3.42	0.54				
Cognitive Learning				-0.79	.430	[-0.41, 0.18]	< .01
	Less than 28 years of age ^a	3.62	0.62				
	28 or more years of age ^b	3.73	0.70				
Affective Learning				0.25	.807	[-0.30, 0.38]	< .01
	Less than 28 years of age ^a	3.71	0.73				
	28 or more years of age ^b	3.67	0.79				
Course Quality				-0.29	.776	[-0.45, 0.34]	< .01
	Less than 28 years of age ^a	3.94	0.85				
	28 or more years of age ^b	4.00	0.91				

^a*n* = 40

^b*n* = 40

Results of the independent-samples *t* tests were used to determine if differences in dimension mean scores could be attributed to gender (female or male). There were no significant differences in the six OER perception dimension means. A summary of the results is provided in Table 9.

Table 9

OER Perception Dimension Mean Scores by Gender

OER Perception Dimension	Gender	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	95% CI	η^2
Motivation to Learn	Female ^a	3.98	0.63	0.27	.787	[-0.26, 0.35]	< .01
	Male ^b	3.94	0.47				
Quality of Learning	Female ^a	3.63	0.80	-0.66	.510	[-0.51, 0.25]	< .01
	Male ^b	3.76	0.53				
Value of OER	Female ^a	3.38	0.57	0.12	.903	[-0.26, 0.29]	< .01
	Male ^b	3.36	0.38				
Cognitive Learning	Female ^a	3.69	0.62	0.46	.649	[-0.26, 0.42]	< .01
	Male ^b	3.62	0.77				
Affective Learning	Female ^a	3.68	0.77	-0.09	.933	[-0.41, 0.37]	< .01
	Male ^b	3.70	0.72				
Course Quality	Female ^a	3.96	0.91	-0.17	.869	[-0.49, 0.41]	< .01
	Male ^b	4.00	0.77				

^a*n* = 60^b*n* = 20

Results of the independent-samples *t* tests were used to determine if differences in dimension mean scores could be attributed to course delivery mode (Face-to-Face or Online). There were no significant differences in the six OER perception dimension means. A summary of the results are provided in Table 10.

Table 10

OER Perception Dimension Mean Scores by Course Delivery Mode

OER Perception Dimension	Mode	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	95% CI	η^2																																																		
Motivation to Learn	Face-to-Face ^b	3.99	0.49	-0.23	.824	[-0.30, 0.24]	< .01																																																		
	Online ^a	3.96	0.66					Quality of Learning	Face-to-Face ^b	3.69	0.75	-0.24	.811	[-0.38, 0.29]	< .01	Online ^a	3.65	0.74	Value of OER	Face-to-Face ^b	3.40	0.53	-0.45	.652	[-0.29, 0.18]	< .01	Online ^a	3.35	0.53	Cognitive Learning	Face-to-Face ^b	3.72	0.60	-0.48	.636	[-0.37, 0.23]	< .01	Online ^a	3.64	0.70	Affective Learning	Face-to-Face ^b	3.82	0.69	-1.39	.168	[-0.58, 0.10]	.02	Online ^a	3.59	0.80	Course Quality	Face-to-Face ^b	4.06	0.78	-0.76	.448
Quality of Learning	Face-to-Face ^b	3.69	0.75	-0.24	.811	[-0.38, 0.29]	< .01																																																		
	Online ^a	3.65	0.74					Value of OER	Face-to-Face ^b	3.40	0.53	-0.45	.652	[-0.29, 0.18]	< .01	Online ^a	3.35	0.53	Cognitive Learning	Face-to-Face ^b	3.72	0.60	-0.48	.636	[-0.37, 0.23]	< .01	Online ^a	3.64	0.70	Affective Learning	Face-to-Face ^b	3.82	0.69	-1.39	.168	[-0.58, 0.10]	.02	Online ^a	3.59	0.80	Course Quality	Face-to-Face ^b	4.06	0.78	-0.76	.448	[-0.55, 0.24]	< .01	Online ^a	3.91	0.94						
Value of OER	Face-to-Face ^b	3.40	0.53	-0.45	.652	[-0.29, 0.18]	< .01																																																		
	Online ^a	3.35	0.53					Cognitive Learning	Face-to-Face ^b	3.72	0.60	-0.48	.636	[-0.37, 0.23]	< .01	Online ^a	3.64	0.70	Affective Learning	Face-to-Face ^b	3.82	0.69	-1.39	.168	[-0.58, 0.10]	.02	Online ^a	3.59	0.80	Course Quality	Face-to-Face ^b	4.06	0.78	-0.76	.448	[-0.55, 0.24]	< .01	Online ^a	3.91	0.94																	
Cognitive Learning	Face-to-Face ^b	3.72	0.60	-0.48	.636	[-0.37, 0.23]	< .01																																																		
	Online ^a	3.64	0.70					Affective Learning	Face-to-Face ^b	3.82	0.69	-1.39	.168	[-0.58, 0.10]	.02	Online ^a	3.59	0.80	Course Quality	Face-to-Face ^b	4.06	0.78	-0.76	.448	[-0.55, 0.24]	< .01	Online ^a	3.91	0.94																												
Affective Learning	Face-to-Face ^b	3.82	0.69	-1.39	.168	[-0.58, 0.10]	.02																																																		
	Online ^a	3.59	0.80					Course Quality	Face-to-Face ^b	4.06	0.78	-0.76	.448	[-0.55, 0.24]	< .01	Online ^a	3.91	0.94																																							
Course Quality	Face-to-Face ^b	4.06	0.78	-0.76	.448	[-0.55, 0.24]	< .01																																																		
	Online ^a	3.91	0.94																																																						

^a*n* = 46^b*n* = 34

Results of the independent-samples *t* tests were used to determine if differences in dimension mean scores could be attributed to enrollment status (full time or part time). There were no significant differences in the six OER perception dimension means. Both full-time and part-time students had similar perceptions toward their course that used OER. A summary of the results are provided in Table 11.

Table 11

OER Perception Dimension Mean Scores by Course Enrollment Status

OER Perception Dimension	Status	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>	95% CI	η^2
Motivation to Learn	Full time ^a	3.92	0.56	-1.79	.078	[-0.65, 0.04]	.04
	Part time ^b	4.23	0.70				
Quality of Learning	Full time ^a	3.59	0.72	-1.90	.062	[-0.83, 0.02]	.04
	Part time ^b	4.00	0.75				
Value of OER	Full time ^a	3.36	0.53	-0.54	.588	[-0.39, 0.22]	< .01
	Part time ^b	3.44	0.51				
Cognitive Learning	Full time ^a	3.62	0.58	-1.61	.112	[-0.69, 0.07]	.03
	Part time ^b	3.93	0.91				
Affective Learning	Full time ^a	3.63	0.70	-1.59	.116	[-0.79, 0.09]	.03
	Part time ^b	3.98	0.95				
Course Quality	Full time ^a	3.94	0.84	-0.72	.474	[-0.19, 0.26]	< .01
	Part time ^b	4.13	1.02				

^a*n* = 66^b*n* = 14

Results of Pearson product-moment correlations were used to determine if there was a correlation between the quantity of credit hours taken that could be attributed to significant relationships between the six OER perception dimension means. There were no significant relationships between five of the six OER perception dimension means; there was a negative correlation that was significant between the number of credit hours taken and the Cognitive Learning dimension. As the number of credit hours taken increased, students perceived their

level of cognitive learning (their ability to organize the course material, outline the topics covered, and critique the OER used) was lower.

The six null hypotheses pertaining to the number of credit hours taken in relation to the six dimensions of the OER perceptions survey were tested using the Pearson product-moment correlation. The resulting Pearson correlation coefficients (r) were used to determine whether there was a correlation between the number of credit hours taken and each OER perception dimension. The Pearson correlation coefficients (r) were also evaluated as either positive or negative to indicate the interaction taking place between the number of credit hours taken and each OER perception dimension. An r value less than or equal to .30 was considered to be a weak correlation. An r value greater than .30 and less than .70 was considered to be a moderate correlation. An r value greater than or equal to .70 was considered to be a strong correlation (Green & Salkind, 2011).

Key Findings

The survey instrument gathered data related to six perception dimensions. Russo and Benson (2005) discovered that positively correlated attitudes related to a course environment were associated with student course satisfaction.

Of the six dimension scale means of student perception students rated their Motivation to Learn highest. This finding was nearly identical to their rating of the Course Quality. Both ratings were greater than 3.97 on a 5-point Likert-type scale. Fong and Kwen (2007) examined student motivation to learn and found that a positive motivation to learn was associated with higher academic achievement. This may be an indication of the high ratings for both motivation to learn and perceived high course quality. It may possibly follow that had the students rated the quality of the course lower they may have also rated their motivation to learn in the course lower.

Similarly, Thomas and Blackwood (2010) found that course quality was a key factor to student success.

The lowest rated student perception dimension scale mean was the Value of Open Educational Resources. The rating for this dimension was 3.37 on a 5-point Likert-type scale. The students' perception of the Value of OER is positive, given that a rating of 3 is neither positive nor negative. This may be an indication of that they simply have not made up their minds about OER at this point. Ledden and Kalafatis (2010) conducted research related to perceptions of value. They found that learner knowledge influenced their perceptions. Perhaps the respondents need additional knowledge and experience with OER before they are ready to make a positive or negative judgment on the value that OER holds for them and their educational goals.

There was one statistically significant finding in this research study. A weak, negative correlation ($r(78) = -.25$) existed between the number of credit hours in which students were enrolled and their perceived cognitive learning dimension score. This finding would likely hold true in many educational environments. As students take more credit hours they perceived they were cognitively learning less. While this study is specifically related to courses that used OER, students' cognitive learning capacity may well decrease when they take more credit hours regardless of the fact that OER is used. There are credit hour enrollment limits imposed for likely reasons and cognitive learning capacity seems to be a valid justification for these limits.

Research conducted by the National Union of Students (2014) to determine whether students could learn using OER found that the majority of students surveyed reported that they could learn in a course that incorporated OER. Smith (2012) conducted research related to the computer technology aptitude of students. Smith's (2012) findings were that computer

technology aptitude can influence students' perceptions of computer technology. It is possible that students may perceive their aptitude related to OER as low. Should this be the case, they may perceive their cognitive learning to be less, regardless of the number of credit hours they are taking.

Implications for Practice

There is a growing awareness of the value and cost savings potential of OER in higher education (McAndrew et al., 2012). As faculty members develop and incorporate OER into course curricula, it is essential to take into consideration the perceptions of the students they serve. The findings of this research indicate that students perceive themselves as highly motivated to learn and only somewhat positive in their perceptions related to OER. It appears that the students have yet to develop a definitive perception about the value of OER in the courses they take. These findings are in line with the findings of research conducted by the Florida Distance Learning Consortium (Florida Virtual Campus, 2012) that a small majority of students rated OER as the same or more valuable than more traditional types of educational resources like textbooks. Student perceptions of the value of OER may change (positively or negatively) as they gain experience interacting with the variety of OER available. This signifies an opportunity to introduce OER to students in a positive manner. Members of the higher education community have the potential to influence the direction of students' perceptions toward OER. Conscious choices related to the quality of OER used in courses may serve both faculty in higher education and the students they serve well into the future. Facilitating OER awareness enthusiastically may help students realize the value of the resources that are available to them.

The significant finding of this research was a weak negative relationship between the number of credit hours in which a student was enrolled and their perceived level of cognitive learning. Those students enrolled in a greater number of credit hours tended to have a lower perceived level of cognitive learning in courses that incorporated OER. Related to this finding, Baek and Monaghan (2013) found that reading large amounts of text on a computer screen has a tendency to be uncomfortable for many students. It could be that students who are prone to discomfort when reading text on a computer screen stop reading to prevent the irritation. This, in turn, could have an effect on their perceived level of cognitive learning because they do not actually read the required materials that help them formulate their perception of the level of cognitive learning they have acquired in a course. A possible solution would be to incorporate several types of OER into the course curriculum. Bishop and Verleger (2013) identified the use of short video lessons as a practical OER that could eliminate part of the text that was previously read on the computer screen. DeVaney (2009) also found that the use of multimedia OER promoted student engagement, which may lead to a positive attitude toward the course. A positive attitude toward a course may have the benefit of a higher perceived level of cognitive learning.

Recommendations for practice in higher education can be ideally illuminated as suggestions for practice. Try to find good quality OER that is suitable for a specific course; this may not be an easy task but it is well worth the effort. Avoid mediocre OER. Students depend on the OER to serve them just as well as and in the same capacity as a textbook. It is crucial to put just as much thought into the selection of OER as is put into the selection of a textbook. It is important to use a variety of OER within the course.

Students are motivated to learn, keep in mind that there are many learning styles and one style does not fit all. Support students as they become acquainted with the OER selected for a course. A student enrolled full time may have as many as six courses to keep track of. If even two or three of the courses are incorporating OER instead of a textbook, a student may become overwhelmed or frustrated by the new learning environment. Assess levels of competency as measured by cognition. Help students develop and build strong critical thinking skills through the use of OER. Finally, try to continually assess the OER that is being used. Strive for excellence. Better yet, develop and share educational resources openly for the benefit of the entire educational community.

Recommendations for Future Research

For this study student perspectives related to OER were gathered through an online survey. Future research could employ other methods of data collection. The researcher could visit specific face-to-face classrooms and administer a paper-and-pencil survey. Another method would be similar, with the researcher visiting face-to-face classrooms and the students completing an online survey.

This study did not address the different types of OER that are available for faculty members to incorporate into courses. Future research could explore OER perception dimensions based on the type of OER used. It would be particularly interesting to examine student perceptions of cognitive learning in relation to the type of OER used in a course.

Future research could also explore perceptions of cognitive learning in courses that incorporate OER and courses that do not incorporate OER to discover the relationships that may exist between them. There was a weak correlation between perceived cognitive learning and the

number of credit hours a student is taking; it would be worthwhile to determine these relationships. The findings may be similar for courses using OER and those that do not use OER.

Finally, a qualitative study of student perceptions related to OER could provide an in-depth understanding of student thoughts that simply cannot be gathered through an online survey. There are a broad range of approaches that could be taken in this type of study. However, the depth and nature of the study would inherently provide additional knowledge related to student perceptions of OER.

Conclusion

The economy, political agendas, and technology advances have greatly influenced institutions of higher education. The students these institutions serve may feel insecure as a result of economic hardship and an unstable political arena. However, today's students are experiencing a time in the history of education that has been filled with technological innovation. Barriers to education are being removed through transformative distribution of educational resources. There is a renewed sense of a global society as technological breakthroughs engage people of all nations in a collaborative effort to educate one another. As a result, open educational resources (OER) – educational materials that may be used by anyone, anywhere, and at no cost – are increasingly becoming available for a wide range of disciplines. The inclusion of OER into the regular curriculum of higher education courses is in a phase of growth. Higher education continually strives to provide a quality education while keeping the student financial burden as low as possible. During this phase of OER implementation consideration of the perceptions held by students related to their educational experience is essential. There are many dynamics that contribute to perceptions; this study took into consideration six facets that may influence a person's perception of OER.

This study revealed that the discipline, student age, student gender, the enrollment status, and the course delivery mode were of no significance to student perceptions of courses that incorporate OER. For this study student perceptions of courses that use OER can be viewed collectively in regards to discipline, age, gender, enrollment status, and course delivery mode. Students of all ages and disciplines, whether male or female, enrolled full time or part time, or taking a course face-to-face in the classroom or as a distance learning course did not perceive courses that use OER in a significantly different way. There was a relationship between the number of credit hours the student was taking and their perceived level of cognitive learning. It is possible that students are overextended and the requirements of additional credit hours cannot be maintained at a level they perceive to be acceptable. It is also possible that the requirements of additional credit hours combined with the use of OER is a scenario that leaves the student with the perception of a lower level of cognitive learning. This may be established with future research.

To fully understand perceptions held by students is more than likely an unattainable goal. Survey design is critical to a worthwhile study and pilot testing is important even if it takes more time. This researcher sought to gain insight into six of the multitude of characteristics that make each of us unique human beings. Specifically, the researcher sought insight into perceptions of OER, always keeping in mind that, as *humans being*, our perceptions are influenced by our day-to-day experiences. As the findings suggest, the perspectives related to OER are similarly open-minded. Students are still making up their minds about OER. Institutions of higher education interested in decreasing the financial burden caused by textbooks may consider using OER in select courses and determine for themselves whether full implementation is worthwhile. It should also be noted that the number of people who are willing to share their course-related materials

completely open – with no strings attached – is on the rise; a promising trend. The cost benefit that can be realized by students because people are open to the idea of freely revealing their wisdom is immeasurable. As we are all educators in a sense, it is important to share your knowledge with the world.

REFERENCES

- Abeywardena, I.S., Raviraj, S., & Tham, C.Y. (2012). Conceptual framework for parametrically measuring the desirability of open educational resources using D-Index. *The International Review of Research in Open and Distance Learning*, 13(2), 59-76. Retrieved January 15, 2015, from <http://www.irrodl.org/index.php/irrodl/article/viewFile/1177/2181>
- Allen, I.E., & Seaman, J. (2011). *Going the distance: Online education in the United States, 2011*. Babson Park, MA: Babson Survey Research Group. Retrieved January 15, 2015, from <http://www.babson.edu/Academics/centers/blank-center/global-research/Documents/going-the-distance.pdf>
- Alphonse, C. (2005). *Program in course redesign: University at Buffalo (SUNY)*. Saratoga Springs, NY: The National Center for Academic Transformation. Retrieved January 15, 2015, from http://www.thencat.org/PCR/R1/UB/UB_Plan.htm
- American Association of Community and Junior Colleges. (1988). *Building communities: A vision for a new century*. Washington, DC: Author.
- Andrade, A., Ehlers, U.-D., Caine, A., Carneiro, R., Conole, G., Kairamo, A.-K.,... Holmberg, C. (2011). *Beyond OER: Shifting focus to open educational practices: OPAL report 2011*. Essen, Germany: OPAL – Open Educational Quality Initiative. Retrieved January 15, 2015, from http://duepublico.uni-duisburg-essen.de/servlets/DerivateServlet/Derivate-25907/OPALReport2011_Beyond_OER.pdf
- Ardies, J., DeMaeyer, S., & Gijbels, D. (2013). Reconstructing the pupils attitude towards technology-survey. *Design and Technology Education: An International Journal*, 18(1), 8-19. Retrieved January 15, 2015, from <http://ojs.lboro.ac.uk/ojs/index.php/DATE/article/viewFile/1796/1730>
- Arendt, A.M., & Shelton, B.E. (2009). Incentives and disincentives for the use of OpenCourseWare. *The International Review of Research in Open and Distance Learning*, 10(5), 100-124. Retrieved from January 15, 2015, <http://www.irrodl.org/index.php/irrodl/article/view/1106/1925>
- Atkins, D.E., Bennett, J., Brown, J.S., Chopra, A., Dede, C., Fishman, B., ... Williams, B. (2010). *Transforming American education: Learning powered by technology – national education technology plan 2010*. Washington, DC: United States Department of Education, Office of Educational Technology. Retrieved January 15, 2015, from <http://www.ed.gov/sites/default/files/netp2010.pdf>
- Atkins, D.E., Brown, J.S., & Hammond, A.L. (2007). *A review of the open educational resources (OER) movement: Achievements, challenges, and new opportunities*. San Francisco, CA: The William and Flora Hewlett Foundation. Retrieved January 15, 2015, from http://www.issuelab.org/click/download2/review_of_the_open_educational_resources_oer_movement_achievements_challenges_and_new_opportunities

- Baek, E-O., & Monaghan, J. (2013). Journey to textbook affordability: An investigation of students' use of eTextbooks at multiple campuses. *International Review of Research in Open and Distance Learning*, 14(3), 1-26. Retrieved January 15, 2015, from <http://www.irrodl.org/index.php/irrodl/article/view/1237/2478>
- Batts, D. (2008). Comparison of student and instructor perceptions of best practices in online technology courses. *MERLOT Journal of Online Learning and Teaching*, 4(4), 477-489. Retrieved January 15, 2015, from http://jolt.merlot.org/vol4no4/batts_1208.pdf
- Beaven, T. (2013). Qualitative methods for researching teachers' (re)use of OER. In *Proceedings of OER13: Creating a Virtuous Circle* (March 26-27). Nottingham, England: University of Nottingham. Retrieved January 15, 2015, from <http://oro.open.ac.uk/37408/2/OER13-Paper-TB.pdf>
- Bell, V., & Rothery, A. (2006). *E-sharing: Developing use of E-repositories and E-libraries for learning and teaching*. Worcester, United Kingdom: University of Worcester. Retrieved January 15, 2015, from <https://eprints.worc.ac.uk/48/>
- Berners-Lee, T., & Fischetti, M. (1999). *Weaving the Web: The original design and ultimate destiny of the World Wide Web by its inventor*. New York, NY: Harper-Collins.
- Bethard, S., Wetzer, P., Butcher, K., Martin, J.H., & Sumner, T. (2009). Automatically characterizing resource quality for educational digital libraries. Austin, TX: *Proceedings of the ACM/IEEE Joint Conference on Digital Libraries*, June 15-19, 221-230. doi:10.1145/1555400.1555436. Retrieved January 15, 2015, from http://www.researchgate.net/profile/James_Martin10/publication/220924243_Automatically_characterizing_resource_quality_for_educational_digital_libraries/links/0deec523c7704d177b000000.pdf
- Biggs, J., Kember, D., & Leung, D.Y.P. (2001). The revised two-factor study process questionnaire: R-SPQ-2F (Paper ID #6219). *British Journal of Educational Psychology*, 71(1), 133-149. doi:10.1348/000709901158433. Retrieved January 15, 2015, from <http://onlinelibrary.wiley.com/doi/10.1348/000709901158433/abstract;jsessionid=BE9109136CFF95831B0A1AA6EC6B1E80.f02t03>
- Bishop, J.L., & Verleger, M.A. (2013). The flipped classroom: A survey of the research. *120th ASEE Annual Conference and Exposition* (June 23-26). Atlanta, GA: American Society for Engineering Education. Retrieved January 15, 2015, from <http://www.studiesuccessho.nl/wp-content/uploads/2014/04/flipped-classroom-artikel.pdf>
- Bliss, T.J., Robinson, T.J., Hilton, J., & Wiley, DA.. (2013). An OER coup: College teacher and student perceptions of open educational resources. *Journal of Interactive Media in Education*, 1(4). doi:10.5334/2013-04. Retrieved January 15, 2015, from <http://dx.doi.org/10.5334/2013-04>
- Bolter, J.D. (2003). Theory and practice in new media studies. In Liestol, G., Morrison, A., & Rasmussen, T. (Eds.) *Digital media revisited: Theoretical and conceptual innovation in*

- digital domains* (pp. 15-33). Retrieved January 15, 2015, from <http://www.cubanxgiants.com/berry/329/spring11/readings/week2/bolter.pdf>
- Bower, B.L. (2001). Distance education: Facing the faculty challenge. *Online Journal of Distance Learning Administration*, 4(2). Retrieved January 15, 2015, from <http://www.westga.edu/~distance/ojdl/summer42/bower42.pdf>
- Brent, I., Gibbs, G.R., & Gruszczynska, A.K. (2012). Obstacles to creating and finding open educational resources: The case of research methods in the social sciences. *Journal of Interactive Media in Education*, 1(5). doi:10.5334/2012-05. Retrieved January 15, 2015, from <http://dx.doi.org/10.5334/2012-05>
- Brown, J.S., & Adler, R.P. (2008). Minds on fire: Open education, the long tail, and learning 2.0. *EDUCAUSE Review*, 43(1), 16-20, 22, 24, 26, 28, 30, 32.
- Burkett, W.H., Compton, D.M., & Burkett, G.G. (2001). An examination of computer attitudes, anxieties, and aversions among diverse college populations: Issues central to understanding information sciences in the new millennium. *Informing Science*, 4(3), 77-85. Retrieved January 15, 2015, from <http://www.inform.nu/Articles/Vol4/v4n3077-085.pdf>
- Butcher, N., Kanwar, A., & Uvalic-Trumbic, S. (2011). *A basic guide to open educational resources (OER)*. Vancouver, Canada: Commonwealth of Learning. Retrieved January 15, 2015, from <http://www.col.org/PublicationDocuments/Basic-Guide-To-OER.pdf>
- Carnegie Foundation for the Advancement of Teaching. (2014). *The Carnegie classification of institutions of higher education*TM. Stanford, CA: Author. Retrieved January 15, 2015, from <http://carnegieclassifications.iu.edu/>
- Caswell, T., Henson, S., Jensen, M., & Wiley, D. (2008). *Open educational resources: Enabling universal education. The International Review of Research in Open and Distributed Learning (IRRODL)*, 9(1). Retrieved January 15, 2015, from <http://www.irrodl.org/index.php/irrodl/article/view/469/1001>
- Charles, K., & Rice, O. (2012). Emerging issues: Open educational resources how science teachers can use open educational resources to revitalize lessons. *Science Educator*, 21(2), 55-56. Retrieved January 15, 2015, from <http://www.questia.com/read/1P3-2904653761/emerging-issues-open-educational-resources-how-science>
- Clements, K.I., & Pawlowski, J.M. (2012). User-oriented quality for OER: Understanding teachers' views on re-use, quality, and trust. *Journal of Computer Assisted Learning*, 28(1), 4-14. doi:10.1111/j.1365-2729.2011.00450.x. Retrieved January 15, 2015, from <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2729.2011.00450.x/abstract>
- College Open Textbooks. (2012). *Press Room*. Retrieved January 15, 2015, from <http://www.collegeopentextbooks.org/pressroom>

- Conole, G., & Alevizou, P. (2010). *A literature review of the use of Web 2.0 tools in higher education*. Milton Keynes, United Kingdom: The Open University. Retrieved January 15, 2015, from http://issuu.com/gfbertini/docs/a_literature_review_of_the_use_of_web_2.0_tools_in
- Crawford-Ferre, H.G., & Weist, L.R. (2012). Effective online instruction in higher education. *The Quarterly Review of Distance Education*, 13(1), 11-14.
- Creative Commons. (2014). *About the licenses*. West Medford, MA: Creative Commons. Retrieved January 15, 2015, from <http://creativecommons.org/licenses/>
- Creed-Dikeogu, G. (2009). The open education resource phenomenon: Free educational resources for all. *SIDLIT Conference Proceedings*, (Paper 32). Retrieved January 15, 2015, from <http://scholarspace.jccc.edu/sidlit/32>
- Cronbach, L.J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334. Retrieved January 15, 2015, from http://psych.colorado.edu/~carey/courses/psyc5112/readings/alpha_cronbach.pdf
- Daugherty, M., & Funke, B.L. (1998). University faculty and student perceptions of web-based instruction. *International Journal of E-Learning & Distance Education*, 13(1), 21-39. Retrieved January 15, 2015, from <http://www.jofde.ca/index.php/jde/article/view/134/411>
- de Freitas, S., & Conole, G. (2010). The influence of pervasive and integrative tools on learners' experiences and expectation of study. In R. Sharpe, H. Beetham, & S. de Freitas (Eds.), *Rethinking Learning for a Digital Age: How Learners are Shaping their Own Experiences* (pp. 15-30). New York, NY: Routledge. Retrieved January 15, 2015, from <http://site.ebrary.com/lib/alltitles/docDetail.action?docID=10398843>
- DeVaney, T.A. (2009). Impact of video tutorials in an online educational statistics course. *MERLOT Journal of Online Learning and Teaching*, 5(4). Retrieved January 15, 2015, from http://jolt.merlot.org/vol5no4/devaney_1209.htm
- Dholakia, U.M., King, W.J., & Baraniuk, R. (2006). *What makes an open education program sustainable? The case of Connexions*. Houston, TX: Rice University. Retrieved January 15, 2015, from <http://www.oecd.org/edu/ceri/36781781.pdf>
- Donat, E., Brandtweiner, R., & Kerschbaum, J. (2009). Attitudes and the digital divide: Attitude measurement as instrument to predict Internet usage. *Informing Science: The International Journal of an Emerging Transdiscipline*, 12, 37-56. Retrieved January 15, 2015, from <http://www.inform.nu/Articles/Vol12/ISJv12p037-056Donat229.pdf>
- Dougherty, K. (2004). Financing higher education in the United States: Structures, trends, and issues. *Address to the Institute for Economics of Education, Peking University*. Retrieved May 1, 2015, from <http://www.cnefr.net/yjdh/wxlq/qt/images/2009/1/17/356.pdf>

- Duncan, D. (2001). *Program in course redesign: University of Colorado at Boulder*. Saratoga Springs, NY: The National Center for Academic Transformation. Retrieved January 15, 2015, from http://www.thencat.org/PCR/R1/UCB/UCB_Overview.htm
- Ehiyazaryan, E. (2012). *Embedding open educational resources in research methods teaching in education, social science and criminology*. The Open University. Milton Keynes, England: Support Centre for Open Resources in Education (SCORE). Retrieved January 15, 2015, from <https://www.oerknowledgecloud.org/sites/oerknowledgecloud.org/files/Ester%20Ehiyazaryan%20Fellowship%20Final%20Report%20-20Web%20Version.pdf>
- Ferriter, B. (2010). *Teaching students about the Creative Commons*. Chapel Hill, NC: Learning NC – K-12 Teaching and Learning from the UNC School of Education. Retrieved January 15, 2015, from <http://www.learnnc.org/lp/pages/6443>
- Florida Virtual Campus. (2012). *2012 Florida student textbook survey*. Tallahassee, FL: Author. Retrieved January 15, 2015, from http://www.academia.edu/4271585/2012_Florida_Student_Textbook_Survey
- Fong, H.F., & Kwen, B.H. (2007). Exploring the effectiveness of cooperative learning as a teaching and learning strategy in the physics classroom. *Proceedings of the Redesigning Pedagogy: Culture, Knowledge and Understanding Conference Singapore, May 2007*. Singapore, Republic of Singapore: National Institution of Education, Nanyang Technical University. Retrieved January 15, 2015, from <http://conference.crpp.nie.edu.sg/2007/paper/papers/SCI102.pdf>
- Friesen, N. (2009). Open educational resources: New possibilities for change and sustainability. *The International Review of Research in Open and Distributed Learning*, 10(5), 61-73. Retrieved January 15, 2015, from <http://www.irrodl.org/index.php/irrodl/article/viewArticle/664/1388>
- Green, S.B., & Salkind, N.J. (2011). *Using SPSS for windows and macintosh: Analyzing and understanding data* (6th edition). Upper Saddle River, NJ: Pearson Education.
- Griffin, S. (2000). *Internet pioneers - Tim Berners-Lee*. Chapel Hill, NC: University of North Carolina at Chapel Hill. Retrieved January 15, 2015, from <http://www.ibiblio.org/pioneers/lee.html>
- Groundwater-Smith, S. (2007). Student voice: Essential testimony for intelligent schools. In A. Campbell, & S. Groundwater-Smith (Eds.), *An ethical approach to practitioner research: Dealing with issues and dilemmas in action research* (pp. 113-128). New York, NY: Routledge.
- Harley, D. (2010). Why understanding the use and users of open education matters. In T. Iiyoshi, & M.S. Vijay Kumar (Eds.), *Opening up education: The collective advancement of education through open technology, open content, and open knowledge* (pp. 197-212). Cambridge, MA: MIT Press. Retrieved January 15, 2015, from http://mitpress.mit.edu/sites/default/files/titles/content/9780262515016_Open_Access_Edition.pdf

- Hassler, B., Hennessy, S., Knight, S., & Connolly, T. (2014). Developing an open resource bank for interactive teaching of STEM: Perspectives of school teachers and teacher educators. *Journal of Interactive Media in Education*, (1)9. doi:10.5334/2014-09. Retrieved January 15, 2015, from <http://jime.open.ac.uk/article/view/2014-09>
- Hauben, M. (2000). *History of ARPANET: Behind the net – the untold history of the ARPANET*. Retrieved January 15, 2015, from <http://pages.infinit.net/jbcoco/Arpa-Arpanet-Internet.pdf>
- Herman, J.L., Osmundson, E., & Dietel, R. (2010). *Benchmark assessment for improved learning* (AACC Report). (ED524104). Los Angeles, CA: University of California. Retrieved January 15, 2015, from <http://eric.ed.gov/?id=ED524104>
- Hilton, J., Wiley, D., & Bliss, T.J. (2012). Cost savings, learning impacts, and user perceptions of open textbooks. In *Proceedings of Cambridge 2012: Innovation and impact – Openly collaborating to enhance education (April 16-18)*, (pp. 86-95). Milton Keynes, United Kingdom: The Open University. Retrieved January 15, 2015, from <http://core.kmi.open.ac.uk/download/pdf/5193190.pdf>
- Hilton, J.L., Gaudet, D., Clark, P., Robinson, J., & Wiley, D. (2013). The adoption of open educational resources by one community college math department. *The International Review of Research in Open and Distributed Learning*, 14(4), 37-50. Retrieved January 15, 2015, from <http://www.irrodl.org/index.php/irrodl/article/view/1523>
- Holdren, J.P.. (2013). *Increasing access to the results of federally funded scientific research*. Washington, DC: Executive Office of the President, Office of Science and Technology Policy. Retrieved January 15, 2015, from http://www.whitehouse.gov/sites/default/files/microsites/ostp/ostp_public_access_memo_2013.pdf
- Hoosen, S. (2012). *Survey on governments' open educational resources (OER) policies*. Vancouver, Canada: Commonwealth of Learning. Retrieved January 15, 2015, from http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/CI/pdf/themes/Survey_On_Government_OER_Policies.pdf
- Hull, J. (2010). *Cutting to the bone: How the economic crisis affects school*. Alexandria, VA: Center for Public Education. Retrieved January 15, 2015, from <http://www.centerforpubliceducation.org/Main-Menu/Public-education/Cutting-to-the-bone-At-a-glance/Cutting-to-the-bone-How-the-economic-crisis-affects-schools.html>
- Jaggars, S.S., & Bailey, T. (2010). *Effectiveness of fully online courses for college students: Response to a department of education meta-analysis*. New York, NY: Community College Research Center (CCRC) of Teachers College, Columbia University. Retrieved January 15, 2015, from <http://67.205.94.182/media/k2/attachments/effectiveness-online-response-meta-analysis.pdf>
- Johnson, J., & Rochkind, J. (2009). *With their whole lives ahead of them: Myths and realities about why so many students fail to finish college*. New York, NY: A Public Agenda

- Report for the Bill & Melinda Gates Foundation. Retrieved January 15, 2015, from <http://files.eric.ed.gov/fulltext/ED507432.pdf>
- Johnson, L., Adams Becker, S., Cummins, M., Estrada, V., Freeman, A., & Ludgate, H. (2013). *NMC new horizon report: 2013 higher education edition*. Austin, TX: The New Media Consortium. Retrieved January 15, 2015, from <http://www.nmc.org/pdf/2013-horizon-report-HE.pdf>
- Karunanayaka, S. (2012). Perceptions of teachers and teacher educators on the use of open educational resources in teaching and learning. *Annual Academic Sessions 2012 – Open University of Sri Lanka*, (pp. 68-71). Retrieved January 15, 2015, from http://digital.lib.ou.ac.lk/docs/bitstream/701300122/551/1/OU5165_000.pdf
- Kelty, CM., Burrus, C.S., & Baraniuk, R.G. (2008). Peer review anew: Three principles and a case study in postpublication quality assurance. *Proceedings of the IEEE*, 96(6), 1000-1011. Retrieved January 15, 2015, from <http://cnx.org/news/news/peer-review-anew-ProcIEEE-june08.pdf>
- Kende, M. (2014). *Internet society global Internet report 2014: Open and sustainable access for all*. Geneva, Switzerland: Internet Society. Retrieved January 15, 2015, from http://www.internetsociety.org/sites/default/files/Global_Internet_Report_2014_0.pdf
- Klymkowsky, M.W. (2007). Teaching without a textbook: Strategies to focus learning on fundamental concepts and scientific process. *CBE Life Sciences Education*, 6(3), 190-193. doi:10.1187/cbe.07-06-0038. Retrieved January 15, 2015, from <http://www.lifescied.org/content/6/3/190.full>
- Kraut, R., Patterson, M., Lundmark, V., Kiesler, S., Mukaphadhyay, T., & Scherlis, W. (1998). *Internet paradox: A social technology that reduces social involvement and psychological well-being?* Pittsburgh, PA: Carnegie Mellon University. Retrieved January 15, 2015, from <http://paedpsych.jk.uni-linz.ac.at/paedpsych/NETSCHULE/NETSCHULELITERATUR/KRAUTetal98/Krauteta198.html>
- Kreutzer, T. (2011). User-related assets and drawbacks of open content licensing. In L. Guibault, & C. Angelopoulos (Eds.), *Open content licensing: From theory to practice* (pp. 107-136). Amsterdam, Netherlands: Amsterdam University Press. Retrieved January 15, 2015, from <http://www.press.uchicago.edu/ucp/books/book/distributed/O/bo12378513.html>
- Learn.org. (2014). *What is the history of online education?* Mountain View, CA: Author. Retrieved January 15, 2015, from http://degreedirectory.org/articles/What_is_the_History_of_Online_Education.html
- Lebo, H. (1997). *Instructional enhancement initiative at UCLA will expand computing and Internet access for undergraduates*. Los Angeles, CA: UCLA. Retrieved January 15, 2015, from <http://newsroom.ucla.edu/releases/Instructional-Enhancement-Initiative-1519>

- Ledden, L., & Kalafatis, S.P. (2010). The impact of time on perceptions of educational value. *International Journal of Public Sector Management*, 23(2), 141-157. Retrieved January 15, 2015, from <http://dx.doi.org/10.1108/09513551011022492>
- Lee, M. (2010). *Meet the free software gang*. Boston, MA: Free Software Foundation. Retrieved January 15, 2015, from <http://www.fsf.org/working-together/gang>
- Lindshield, B., & Adhikari, K. (2013). Online and campus college students like using an open educational resource instead of a traditional textbook. *MERLOT Journal of Online Learning and Teaching*, 9(1), 26-38. Retrieved January 15, 2015, from http://jolt.merlot.org/vol9no1/lindshield_0313.pdf
- Lizzio, A., Wilson, K., & Simmons, R. (2002). University student's perceptions of the learning environment and academic outcomes: Implications for theory and practice. *Studies in Higher Education*, 27(1), 27-52. Retrieved January 15, 2015, from <http://reforma.fen.uchile.cl/Papers/Learning%20Environment%20and%20Academic%20Outcomes%20-%20Lizzio%20Wilson%20Simons.pdf>
- Ljubojevic, M., Vaskovic, V., Stankovic, S., & Vaskovic, J. (2014). Using supplementary video in multimedia instruction as a teaching tool to increase efficiency of learning and quality of experience. *The International Review of Research in Open and Distance Learning*, 15(3), 275-291. (EJ1033049). Retrieved January 15, 2015, from <http://files.eric.ed.gov/fulltext/EJ1033049.pdf>
- Lumen Learning. (2013). *Fall semester OER projects with lumen learning yield \$700,000 in textbook cost savings for students: Twenty colleges offer open content option for high enrollment courses in math, business, psychology, developmental education and more*. [Press release]. Retrieved January 15, 2015, from http://lumenlearning.com/wp-content/uploads/2014/04/Lumen-Momentum_PR_FINAL.pdf
- Mardis, M., Everhart, N., Smith, D., Newsum, J., & Baker, S. (2010). *From paper to pixel: Digital textbooks and Florida's schools* (Paper 11). Tallahassee, FL: School of Library and Information Studies Faculty Publications. Retrieved January 15, 2015, from http://diginole.lib.fsu.edu/slis_faculty_publications/11
- Martens, R., Bastiaens, T., & Kirschner, P.A. (2007). New learning design in distance education: The impact on student perception and motivation. *Distance Education*, 28(1), 81-93. Retrieved January 15, 2015, from <http://dspace.ou.nl/bitstream/1820/4016/1/New%20Learning%20Design%20in%20Distance%20Education.pdf>
- Massachusetts Institute of Technology (MIT). (2001). *Mellon, Hewlett foundations grant \$11M to launch free MIT course materials on web*. Cambridge, MA: Author. Retrieved January 15, 2015, from <http://newsoffice.mit.edu/2001/ocwfund>
- Masterman, L., & Wild, J. (2011). *Jisc open educational resources programme: Phase 2 - OER impact study: Research report*. Bristol, United Kingdom: University of Oxford. Retrieved January 15, 2015, from

<http://www.jisc.ac.uk/media/documents/programmes/elearning/oer/JISCOERImpactStudyResearchReportv1-0.pdf>

- McAndrew, P., Farrow, R., Elliot-Cirigottis, G., & Law, P. (2012). Learning the lessons of openness. *Journal of Interactive Media in Education*, 2(10). doi:10.5334/2012-10. Retrieved January 15, 2015, from <http://dx.doi.org/10.5334/2012-10>
- McGill, L. (2013). *Digitisation and OER: Synthesis report*. Bristol, United Kingdom: Jisc. Retrieved January 15, 2015, from <https://oersynth.pbworks.com/w/file/fetch/69023922/digitisationforoersyntheis.final.pdf>
- McGill, L., Falconer, I., Dempster, J.A., Littlejohn, A., & Beetham, H. (2013). *Journeys to open educational practice: Motivations*. Bristol, United Kingdom: Jisc. Retrieved January 15, 2015, from <https://oersynth.pbworks.com/w/file/fetch/67270755/OER%20Review%20Motivations.pdf>
- McGreal, R. (2004). Learning objects: A practical definition. *International Journal of Instructional Technology & Distance Learning*, 1(9), 21-32. Retrieved January 15, 2015, from http://www.itdl.org/Journal/Sep_04/article02.htm
- McGreal, R. (2013). *Creating, using and sharing open educational resources*. Vancouver, Canada: Commonwealth of Learning. Retrieved January 15, 2015, from http://www.col.org/PublicationDocuments/KS13_OER.pdf
- McKerlich, R.C., Ives, C., & McGreal, R. (2013). Measuring use and creation of open educational resources in higher education. *The International Review of Research in Open and Distributed Learning*, 14(4), 90-103. Retrieved January 15, 2015, from <http://www.irrodl.org/index.php/irrodl/article/view/1573>
- McMillan, J.H., & Schumacher, S. (2010). *Research in education evidence-based inquiry* (7th ed.). Upper Saddle River, NJ: Pearson.
- Means, B., Toyama, Y., Murphy, R., Bakia, M., & Jones, K.. (2010). *Evaluation of evidence-based practices in online learning: A meta-analysis and review of online learning studies*. Washington, DC: United States Department of Education, Office of Planning, Evaluation, and Policy Development. Retrieved January 15, 2015, from <https://www2.ed.gov/rschstat/eval/tech/evidence-based-practices/finalreport.pdf>
- MET Project. (2012). *Asking students about teaching: Student perception surveys and their implementation*. Seattle, WA: Bill & Melinda Gates Foundation. Retrieved January 15, 2015, from http://metproject.org/downloads/Asking_Students_Practitioner_Brief.pdf
- Millard, M. (2014). *Open-source textbooks can help drive down the overall cost of college*. Denver, CO: Education Commission of the States. Retrieved January 15, 2015, from <http://www.ecs.org/clearinghouse/01/14/37/11437.pdf>

- Mossley, D. (2013). *Open educational resources and open education*. Heslington, United Kingdom: The Higher Education Academy. Retrieved January 15, 2015, from http://ils.unc.edu/courses/2014_fall/inls690_109/Readings/Mossely2013-OERandOpenEducation.pdf
- Mtebe, J., & Raisamo, R. (2014). Challenges and instructors' intention to adopt and use open educational resources in higher education in Tanzania. *The International Review of Research in Open and Distance Learning*, 15(1), 249-271. (EJ1024358). Retrieved January 15, 2015, from <http://files.eric.ed.gov/fulltext/EJ1024358.pdf>
- Mulder, F. (2013). The logic of national policies and strategies for open educational resources. *The International Review of Research in Open and Distance Learning*, 14(2), 96-105. (EJ1008095). Retrieved January 15, 2015, from <http://files.eric.ed.gov/fulltext/EJ1008095.pdf>
- National Center for Academic Transformation. (2005). *NCAT outcomes analysis*. Saratoga Springs, NY: Author. Retrieved January 15, 2015, from http://www.thencat.org/Program_Outcomes.html
- National Union of Students. (2014). *Students' views on learning methods and open educational resources in higher education*. Heslington, United Kingdom: Higher Education Academy. Retrieved January 15, 2015, from <https://www.heacademy.ac.uk/sites/default/files/resources/NUS-report.pdf>
- Noble, D.F. (1998). Digital diploma mills: The automation of higher education. *First Monday*, 3(1). doi:10.5210/fm.v3i1.569. Retrieved January 15, 2015, from <http://uncommonculture.org/ojs/index.php/fm/article/view/569/490>
- Nunnally, J.C. (1967). *Psychometric theory*. New York, NY: McGraw-Hill.
- Onink, T. (2013). Georgia Tech, Udacity shock higher ed with \$7,000 degree. *Forbes*, (May 15). Retrieved January 15, 2015, from <http://www.forbes.com/sites/troyonink/2013/05/15/georgia-tech-udacity-shock-higher-ed-with-7000-degree/>
- OnlineUniversities.com. (2015). *Investigating the online student body*. [Online]. Retrieved January 15, 2015, from <http://www.onlineuniversities.com/articles/educators/investigating-the-online-student-body/>
- Onwuegbuzie, A.J., & Collins, K.M.T. (2007). A typology of mixed methods sampling designs in social science research. *The Qualitative Report*, 12(2), 281-316. (EJ800183). Retrieved January 15, 2015, from <http://files.eric.ed.gov/fulltext/EJ800183.pdf>
- Open Society Institute. (2007). *Cape Town open education declaration: Unlocking the promise of open educational resources*. Cape Town, South Africa: Author. Retrieved January 15, 2015, from <http://www.capetowndeclaration.org/read-the-declaration>

- Overland, M.A. (2011). State of Washington to offer online materials as texts. *The Chronicle of Higher Education*, (January 9). Retrieved January 15, 2015, from <http://chronicle.com/article/State-of-Washington-to-Offer/125887/>
- Pallen, M. (1995). Guide to the Internet: The World Wide Web. *British Medical Journal*, 311(7019), 1552-1556. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2548211/pdf/bmj00622-0042.pdf>
- Peter, S., & Deimann, M. (2013). On the role of openness in education: A historical reconstruction. *Open Praxis*, 5(1), 7-14. doi:10.5944/openpraxis.5.1.23. Retrieved from <http://dx.doi.org/10.5944/openpraxis.5.1.23>
- Plotkin, H. (2010). *Free to learn: An open educational resources policy development guidebook for community college governance officials*. San Francisco, CA: Creative Commons. Retrieved from <https://wiki.creativecommons.org/images/6/67/FreetoLearnGuide.pdf>
- Polsani, P.R. (2003). Use and abuse of reusable learning objects. *Journal of Digital Information*, 3(4). Retrieved from <https://journals.tdl.org/jodi/index.php/jodi/article/view/89/88>
- Rivard, R. (2013). The fine print: Documents shed light on details of Georgia Tech-Udacity deal. *Inside Higher Ed*, (May 28). Retrieved from <https://www.insidehighered.com/news/2013/05/28/documents-shed-light-details-georgia-tech-udacity-deal>
- Rodriguez, M.A., & Anicete, R.C.R. (2010). Students' views of a mixed hybrid ecology course. *MERLOT Journal of Online Learning and Teaching*, 6(4). Retrieved from http://jolt.merlot.org/vol6no4/rodriguez_1210.htm
- Rolfe, V. (2012). Open educational resources: Staff attitudes and awareness. *Research in Learning Technology: The Journal of the Association for Learning Technology (ALT)*, 20(1). doi:10.3402/rlt.v20i0/14395. Retrieved from <http://dx.doi.org/10.3402/rlt.v20i0.14395>
- Rolfe, V., & Fowler, M. (2012). *HEA/JISC open educational resources case study: Pedagogical development from OER practice - How institutional culture can change to adopt open practices*. Heslington, United Kingdom: The Higher Education Academy. Retrieved January 15, 2015, from https://www.heacademy.ac.uk/sites/default/files/OER_CS_Vivien_Rolfe_How_institutional_culture_can_change.pdf
- Rossini, C. (2010). The open world: Access to knowledge as a foundation for an open world. *EDUCAUSE Review*, 45(4), 60-62, 64-68.
- Rovai, A.P., Wighting, M.J., Baker, J.D., & Grooms, L.D. (2009). Development of an instrument to measure perceived cognitive, affective, and psychomotor learning in traditional and virtual classroom higher education settings. *The Internet and Higher Education*, 12(1), 7-13. Retrieved January 15, 2015, from <http://www.sciencedirect.com/science/article/pii/S109675160800064X>

- Russo, T., & Benson, S. (2005). Learning with invisible others: Perceptions of online presence and their relationship to cognitive and affective learning. *Educational Technology*, 8(1), 54-62. Retrieved January 15, 2015, from http://kuscholarworks.ku.edu/bitstream/handle/1808/13159/Learning_With_Invisible_Others_Perceptions_of_Online_Presence_and_Their_Relationship_to_Cognitive_and_Affective_Learning.pdf
- Scardamalia, M., & Bereiter, C. (2006). Knowledge building: Theory pedagogy, and technology. In K. Sawyer (Ed.), *Cambridge handbook of the learning sciences* (pp. 97-118). New York, NY: Cambridge University Press. Retrieved January 15, 2015, from http://ikit.org/fulltext/2006_KBTheory.pdf
- Schrum, L.G., Ledesma, L., & Schrum, P. (2011). Educational leadership and technology integration: An investigation into preparation, experiences, and roles. *Journal of School Leadership*, 21(2), 241-261. (EJ923552). Retrieved January 15, 2015, from <http://eric.ed.gov/?id=EJ923552>
- Sebastian, R. (2014). *Open educational resources*. Richmond, VA: EdTech@theVCCS, Virginia's Community Colleges. Retrieved January 15, 2015, from <http://edtech.vccs.edu/educational-technology-resources/oervccs/>
- Senack, E. (2014). *Fixing the broken textbook market: How students respond to high textbook costs and demand alternatives*. Washington, DC: US PIRG Education Fund & The Student PIRGs. Retrieved January 15, 2015, from <http://uspirg.org/sites/pirg/files/reports/NATIONAL%20Fixing%20Broken%20Textbooks%20Report1.pdf>
- Smith, K.R. (2012). College students' perceptions of aptitude and attitude toward social media technology and technical computer technology. *International Journal of Business, Humanities and Technology*, 2(5), 24-40. Retrieved January 15, 2015, from http://www.ijbhtnet.com/journals/Vol_2_No_5_August_2012/3.pdf
- Sugar, W., Brown, A., & Luterbach, K. (2010). Examining the anatomy of a screencast: Uncovering common elements and instructional strategies. *The International Review of Research in Open and Distributed Learning*, 11(3), 1-20. Retrieved January 15, 2015, from <http://www.irrodl.org/index.php/irrodl/article/view/851/1596>
- Svihla, V., Vye, N., Brown, M., Phillips, R., Gawel, D., & Bransford, J. (2009). Interactive learning assessments for the 21st century. *Education Canada*, 49(3), 44-47. Retrieved January 15, 2015, from <http://www.cea-ace.ca/sites/default/files/EdCan-2009-v49-n3-Svihla.pdf>
- The White House Office of the Press Secretary. (2013). *FACT SHEET on the president's plan to make college more affordable: A better bargain for the middle class*. [August 22 Briefing]. Retrieved January 15, 2015, from <http://www.whitehouse.gov/the-press-office/2013/08/22/fact-sheet-president-s-plan-make-college-more-affordable-better-bargain->

- The William and Flora Hewlett Foundation. (2010). *Education program strategic plan*. Menlo Park, CA: Author. Retrieved January 15, 2015, from http://www.hewlett.org/uploads/documents/Education_Strategic_Plan_2010.pdf
- The William and Flora Hewlett Foundation. (2014). *Exploring the Hewlett foundation's grants*. Menlo Park, CA: Author. Retrieved January 15, 2015, from <http://www.hewlett.org/active-oer-grantee-list>
- Thomas, J.D.E., & Blackwood, M. (2010). Computer literacy and non-IS majors. *Information Systems Education Journal*, 8(58), 1-12. Retrieved January 15, 2015, from [http://isedj.org/8/58/ISEDJ.8\(58\).Thomas.pdf](http://isedj.org/8/58/ISEDJ.8(58).Thomas.pdf)
- Tidewater Community College. (2013). *Tidewater community college partners with lumen learning to offer textbook-free degree*, (March 14). [Press Release]. Hampton Roads, VA: Tidewater Community College. Retrieved from January 15, 2015, <http://www.tcc.edu/news/press/2013/TextbookFreeDegree.htm>
- United Nations Educational, Scientific, and Cultural Organization (UNESCO). (2002). Forum on the impact of open courseware for higher education in developing countries. *Conference Proceedings Final Report* (July 1-3). Paris, France: Author. Retrieved January 15, 2015, from <http://unesdoc.unesco.org/images/0012/001285/128515e.pdf>
- United Nations Educational, Scientific, and Cultural Organization (UNESCO). (2011). *Guidelines for open educational resources (OER) in higher education*. Vancouver, Canada: Commonwealth of Learning. Retrieved January 15, 2015, from http://www.col.org/PublicationDocuments/Guidelines_OER_HE.pdf
- United States Census Bureau. (2014). *Measuring America: Computer & Internet trends in America*. Washington, DC: Author. Retrieved January 15, 2015, from http://www.census.gov/hhes/computer/files/2012/Computer_Use_Infographic_FINAL.pdf
- United States Government Accountability Office. (2013). *College textbooks: Students have greater access to textbook information* (GAO-13-368). Washington, DC: Author. Retrieved January 15, 2015, from <http://www.gao.gov/assets/660/655066.pdf>
- United States White House Office. (2011). *The open government partnership: National action plan for the United States of America*. Retrieved January 15, 2015, from http://www.whitehouse.gov/sites/default/files/us_national_action_plan_final_2.pdf
- United States White House Office. (2013). *The open government partnership: Second open government national action plan for the United States of America*. Retrieved January 15, 2015, from http://www.whitehouse.gov/sites/default/files/docs/us_national_action_plan_6p.pdf
- United States White House Office. (2014). *The open government partnership: Announcing new open government initiatives as part of the second open national action plan for the United States of America*. Retrieved January 15, 2015, from

http://www.whitehouse.gov/sites/default/files/microsites/ostp/new_nap_commitments_report_092314.pdf

- VCCS Re-engineering Task Force II. (2013). *Textbook costs & digital learning resources: Interim report*. [Unpublished report]. Richmond, VA: Virginia Community College System.
- Ward, M.E., Peters, G., & Shelley, K. (2010). Student and faculty perceptions of the quality of online learning experiences. *The International Review of Research in Open and Distributed Learning*, 11(3), 57-77. Retrieved January 15, 2015, from <http://www.irrodl.org/index.php/irrodl/article/view/867/1610>
- Wiley, D. (2007). *Open education license draft*. [August 8 Blog post]. Retrieved January 15, 2015, from <http://opencontent.org/blog/archives/355>
- Wiley, D. (2013). *Taking a leap of faith*. [December 18 Blog post]. Retrieved January 15, 2015, from <http://opencontent.org/blog/archives/3068>
- Wiley, D. (2014a). *The access compromise and the 5th R*. [March 5 Blog post]. Retrieved January 15, 2015, from <http://opencontent.org/blog/archives/3221>
- Wiley, D. (2014b). *The MOOC misstep and the open education infrastructure*. [September 18 Blog post]. Retrieved January 15, 2015, from <http://opencontent.org/blog/archives/3557>
- Wiley, D., & Green, C. (2012). Why openness in education? In D.G. Oblinger (Ed.), *Game Changers: Education and Information Technologies* (pp. 81-89). Washington, DC: EDUCAUSE. Retrieved January 15, 2015, from <http://net.educause.edu/ir/library/pdf/pub72036.pdf>
- Wiley, D., Green, C., & Soares, L. (2012). *Dramatically bringing down the cost of education with OER: How open education resources unlock the door to free learning*. Washington, DC: Center for American Progress. (ED535639). Retrieved January 15, 2015, from <http://files.eric.ed.gov/fulltext/ED535639.pdf>
- Witte, R.S., & Witte, J.S. (2010). *Statistics* (9th ed.). Hoboken, NJ: John Wiley & Sons.

APPENDICES

APPENDIX A

Learning Without a Textbook

PERCEPTION SURVEY

Instructions: Indicate your level of agreement or disagreement with each statement by selecting the option that best describes your feelings. Your participation in this survey is completely voluntary. You may stop at any time during the survey. All information on this survey is anonymous. You must be 18 years of age or older to participate. Participation is not associated with your course grade. Your instructor will not know who completes the survey.

Open educational resources are the course materials, modules, videos, tests, and any other materials incorporated into this course that are available to you at no cost. These resources provide course learning support in place of a purchased textbook.

1. I like to learn things that are challenging.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2. I am able to complete my homework on time.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. I enjoy working on my assignments.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. If given a choice, I prefer learning using a textbook.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. I can organize course material into a logical structure.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. I feel more self-reliant as a result of this course.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. I enjoy learning in an environment that incorporates open educational resources.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. I would describe using open educational resources as interesting.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. If given a choice, I prefer learning using open educational resources.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

10. I do not like the learning environment when open educational resources are used.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. I cannot produce an outline of the topics covered in this course for future students.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Open educational resources make me feel more engaged with my learning.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Open educational resources directly improve the quality of my learning experience in this course.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. There is a match between the open educational resources' content and specific learning objectives of this course.

Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

-
15. I think this course is of less value to me because anyone can access the materials.
- | | | | | |
|-----------------------|-----------------------|--|-----------------------|-----------------------|
| Strongly
Agree | Agree | Neither Agree nor Disagree
(undecided or neutral) | Disagree | Strongly
Disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
16. Open educational resources are not as good as purchased textbooks.
- | | | | | |
|-----------------------|-----------------------|--|-----------------------|-----------------------|
| Strongly
Agree | Agree | Neither Agree nor Disagree
(undecided or neutral) | Disagree | Strongly
Disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
17. Textbooks help me understand topics better than open educational resources.
- | | | | | |
|-----------------------|-----------------------|--|-----------------------|-----------------------|
| Strongly
Agree | Agree | Neither Agree nor Disagree
(undecided or neutral) | Disagree | Strongly
Disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
18. I believe I can learn more through open educational resources than through a textbook.
- | | | | | |
|-----------------------|-----------------------|--|-----------------------|-----------------------|
| Strongly
Agree | Agree | Neither Agree nor Disagree
(undecided or neutral) | Disagree | Strongly
Disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
19. Open educational resources help me understand topics better than textbooks.
- | | | | | |
|-----------------------|-----------------------|--|-----------------------|-----------------------|
| Strongly
Agree | Agree | Neither Agree nor Disagree
(undecided or neutral) | Disagree | Strongly
Disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
20. Open educational resources do not offer any advantages to me.
- | | | | | |
|-----------------------|-----------------------|--|-----------------------|-----------------------|
| Strongly
Agree | Agree | Neither Agree nor Disagree
(undecided or neutral) | Disagree | Strongly
Disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
21. I have changed my attitudes about the course subject matter as a result of this course.
- | | | | | |
|-----------------------|-----------------------|--|-----------------------|-----------------------|
| Strongly
Agree | Agree | Neither Agree nor Disagree
(undecided or neutral) | Disagree | Strongly
Disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
22. I can intelligently critique the open educational resources used in this course.
- | | | | | |
|-----------------------|-----------------------|--|-----------------------|-----------------------|
| Strongly
Agree | Agree | Neither Agree nor Disagree
(undecided or neutral) | Disagree | Strongly
Disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
23. I feel I am a more sophisticated thinker as a result of this course.
- | | | | | |
|-----------------------|-----------------------|--|-----------------------|-----------------------|
| Strongly
Agree | Agree | Neither Agree nor Disagree
(undecided or neutral) | Disagree | Strongly
Disagree |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

24. I would like to take more courses that use open educational resources.

Strongly Agree	Agree	Neither Agree nor (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

25. I would recommend a course that incorporates open educational resources to others.

Strongly Agree	Agree	Neither Agree nor (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

26. Overall the learning experience in this course was positive.

Strongly Agree	Agree	Neither Agree nor (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

27. Overall the quality of the open educational resources content of this course was excellent.

Strongly Agree	Agree	Neither Agree nor (undecided or neutral)	Disagree	Strongly Disagree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

28. Please mark the appropriate discipline for this course.

- AST (Administrative Support Technology)
- BUS (Business)
- HIM (Health Information Management)
- ITE (Information Technology)
- MKT (Marketing)
- SDV (Student Development)

29. What was your age as of your last birthday?

30. What is your gender?

- | | |
|-----------------------|-----------------------|
| Female | Male |
| <input type="radio"/> | <input type="radio"/> |

31. Are you enrolled in a section that meets in a classroom either on or off campus (face-to-face) or a distance learning section (online only)?

- | | | |
|------------------------|-------------------------|--------------------------|
| Online only, web-based | On-campus, face-to-face | Off-campus, face-to-face |
| <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

32. What is your enrollment status?

- Full time (12 or more credit hours)
- Part time (fewer than 12 credit hours)

33. How many credit hours are you taking this semester?

Thank you for completing this survey.

APPENDIX B

Perception Survey Items by Dimension

For questions 1 – 27 use the following response scale:

5	4	3	2	1
Strongly Agree	Agree	Neither Agree nor Disagree (undecided or neutral)	Disagree	Strongly Disagree

	5	4	3	2	1	
MOTIVATION TO LEARN	1. I like to learn things that are challenging.	5	4	3	2	1
	2. I am able to complete my homework on time.	5	4	3	2	1
	3. I enjoy working on my assignments.	5	4	3	2	1
	4. I enjoy learning in an environment that incorporates OER.	5	4	3	2	1
	5. I would describe using OER as interesting.	5	4	4	2	1
	6. I do not like the learning environment when OER are used.	5	4	3	2	1
QUALITY OF LEARNING	7. OER make me feel more engaged with my learning.	5	4	3	2	1
	8. If given a choice, I prefer learning using OER.	5	4	3	2	1
	9. OER directly improve the quality of my learning experience in this course.	5	4	3	2	1
	10. There is a match between the OER content and specific learning objectives of this course.	5	4	3	2	1
	11. If given a choice, I prefer learning using a textbook.	5	4	3	2	1
VALUE OF OER	12. I think this course is of less value to me because anyone can access the materials.	5	4	3	2	1
	13. OER are not as good as purchased textbooks.	5	4	3	2	1
	14. Textbooks help me understand topics better than OER.	5	4	3	2	1
	15. I believe I can learn more through OER than through a textbook.	5	4	3	2	1
	16. OER help me understand topics better than textbooks.	5	4	3	2	1
	17. OER does not offer any advantages to me.	5	4	3	2	1
COGNITIVE LEARNING	18. I can organize course material into a logical structure.	5	4	3	2	1
	19. I cannot produce an outline of the topics covered in this course for future students.	5	4	3	2	1
	20. I can intelligently critique the OER used in this course.	5	4	3	2	1

AFFECTIVE LEARNING	21. I have changed my attitudes about this course subject matter as a result of this course.	5	4	3	2	1
	22. I feel more self-reliant as a result of this course.	5	4	3	2	1
	23. I feel I am a more sophisticated thinker as a result of this course.	5	4	3	2	1
	24. I would like to take more courses that use OER.	5	4	3	2	1
COURSE QUALITY	25. I would recommend a course that uses OER to others.	5	4	3	2	1
	26. Overall the learning experience in this course was positive.	5	4	3	2	1
	27. Overall the quality of the OER content of this course was excellent.	5	4	3	2	1

DEMOGRAPHIC DESCRIPTORS	28. Please mark the appropriate discipline for this course? <input type="checkbox"/> AST – Administrative Support Technology <input type="checkbox"/> BUS – (Business), <input type="checkbox"/> HIM – (Health Information Management), <input type="checkbox"/> ITE – Information Technology <input type="checkbox"/> MKT – (Marketing), <input type="checkbox"/> SDV – (Student Development)	29. What was your age on your last birthday? Click here to enter age
		30. What is your gender? <input type="checkbox"/> Female <input type="checkbox"/> Male
31. Are you enrolled in a section that meets in a classroom either on or off campus (face-to-face) or a distance learning section (online only)? <input type="checkbox"/> Online – Web-based <input type="checkbox"/> On-campus – Face-to-face <input type="checkbox"/> Off-campus – Face-to-face		
32. What is your enrollment status? <input type="checkbox"/> Full time <input type="checkbox"/> Part time		33. How many credit hours are you taking this semester? Click here to enter hours

APPENDIX C

East Tennessee State University IRB Approval Letter



EAST TENNESSEE STATE
UNIVERSITY

Office for the Protection of Human Research Subjects • Box 70565 • Johnson City, Tennessee 37614-1707
Phone: (423) 439-6053 Fax: (423) 439-6060

IRB APPROVAL – Initial Exempt

January 29, 2015

Janet Rowell

RE: Student Perceptions: Teaching and Learning with
Open Educational Resources
IRB#: c0115.9e
ORSPA#: ,

On **January 26, 2015**, an exempt approval was granted in accordance with 45 CFR 46.101(b)(2). It is understood this project will be conducted in full accordance with all applicable sections of the IRB Policies. No continuing review is required. The exempt approval will be reported to the convened board on the next agenda.

- xform New Protocol Submission; Email Invite; Email Reminder; Survey; Bibliography; Resume

Projects involving Mountain States Health Alliance must also be approved by MSHA following IRB approval prior to initiating the study.

Unanticipated Problems Involving Risks to Subjects or Others must be reported to the IRB (and VA R&D if applicable) within 10 working days.

Proposed changes in approved research cannot be initiated without IRB review and approval. The only exception to this rule is that a change can be made prior to IRB approval when necessary to eliminate apparent immediate hazards to the research subjects [21 CFR 56.108 (a)(4)]. In such a case, the IRB must be promptly informed of the change following its implementation (within 10 working days) on Form 109 (www.etsu.edu/irb). The IRB will review the change to determine that it is consistent with ensuring the subject's continued welfare.

Sincerely,
Stacey Williams, Chair
ETSU Campus IRB

Cc:



Accredited since December 2005

APPENDIX D

Combined Attestation and Permission Form

East Tennessee State University
IRB – Office for the Protection of Human Research Subjects

Educational Research

I, Dr. Barbara Fuller, grant permission to Janet Rowell to

conduct research for the study titled Student Perceptions: Teaching and Learning with Open Educational Resources at the following institutions:

Southwest Virginia Community College
P.O. Box SVCC
Richlands, VA 24641-1101

As Vice President of Academic and Student Services, I attest that our educational institution has policies

developed in conjunction with parents regarding the following:

- The right of a parent of a student to inspect, upon the request of the parent, a survey created by a third party before the survey is administered or distributed by a school to a student.
Any applicable procedures for granting a request by a parent for reasonable access to such survey within a reasonable period of time after the request is received.
Arrangements to protect student privacy that are provided by the agency in the event of the administration or distribution of a survey to a student containing one or more of the following items (including the right of a parent of a student to inspect, upon the request of the parent, any survey containing one or more of such items):
Political affiliations or beliefs of the student or the student's parent.
Mental or psychological problems of the student or the student's family.
Sex behavior or attitudes.
Illegal, anti-social, self-discriminating, or demeaning behavior.
Critical appraisals of other individuals with whom respondents have close family relationships.
Legally recognized privileged or analogous relationships, such as those of lawyers, physicians, and ministers.
Religious practices, affiliations, or beliefs of the student or the student's parent.
Income (other than that required by law to determine eligibility for participation in a program or for receiving financial assistance under such program).

P.I. Janet Rowell 1/12/15
(Signature) (Date)

Institutional Rep. Barbara Fuller 1/12/15
(Signature) (Date)

APPENDIX E

Student Email

You are receiving this email because you are enrolled in a course that uses open educational resources and does not require a textbook. Open educational resources are the course materials that you have been using this semester instead of a textbook.

I want to gain a better understanding of your perspectives on the use of open educational resources in this course. I need your responses to the survey questions to help me understand your point of view. Will you complete the survey?

The survey should take about 5 minutes to complete. You can access the survey online by clicking the link below. You may also copy and paste the link into your Internet browser. To begin the survey, click the link below.

Survey link: <http://www.oerperstectivesurvey.com/>

Your participation in this survey is completely anonymous and voluntary. You may stop completing the survey at any time if you decide you do not want to participate in the research study. No personally identifiable information is associated with your responses to the survey. The college has approved this survey. Should you have any comments or questions related to the survey, please feel free to contact me via email at rowellj@goldmail.etsu.edu or phone 276-964-7213.

Thank you very much for your time and support of my research. Feedback from you is important to future students here at the college.

Best regards,
Janet Rowell
Professor of Information Systems Technology



APPENDIX F

Student Email Reminder

Two days ago you received an email requesting your participation in a research study to better understand your point of view related to the open educational resources that are being used in your course that does not require a textbook. Open educational resources are the course materials that you have been using this semester instead of a textbook.

Will you please consider completing the survey? Your input is essential for the success of this research. You play a vital role in making this research meaningful. Your responses to the survey questions will help me understand your point of view.

The survey should take about 5 minutes to complete. You can access the survey online by clicking the link below. You may also copy and paste the link into your Internet browser. To begin the survey, click the link below.

Survey link: <http://www.oerperstectivesurvey.com/>

Your participation in this survey is completely anonymous and voluntary. You may stop completing the survey at any time if you decide you do not want to participate in the research study. No personally identifiable information is associated with your responses to the survey. The college has approved this survey. Should you have any comments or questions related to the survey, please feel free to contact me via email at rowellj@goldmail.etsu.edu or phone 276-964-7213.

Thank you very much for your time and support of my research. Feedback from you is important to me and to future students here at the college.

Best regards,
Janet Rowell
Professor of Information Systems Technology

APPROVED
By the ETSU IRB
JAN 26 2015
By 
Chair/IRB Coordinator

VITA

JANET L. ROWELL

- Education: East Tennessee State University, Johnson City, TN, Ed.D.,
Educational Leadership, August 2015.
Radford University, Radford, VA, Graduate Certificate,
Information Technology, May 2007.
Southern Illinois University, Carbondale, IL, M.S.Ed., Vocational
Education Leadership, December 1987.
Southern Illinois University, Carbondale, IL, B.S., Education, May
1985.
- Professional Experience: Southwest Virginia Community College, Richlands, VA,
Professor, Information Systems Technology/Administrative
Support Technology, August 1998-Present.
Virginia Highlands Community College, Abingdon, VA, Adjunct
Instructor, Center for Business and Industry, August 1993-May
1999.
Mount San Antonio College, Walnut, CA, Adjunct Instructor,
Computer Programming, August 1989-May 1991.
- Professional Affiliations: Trustee, Epsilon Pi Tau – Delta Nu Chapter.
- Awards and Honors: Rudisill Scholarship recipient, Epsilon Pi Tau, 2014.