IMPLEMENTATION OF OPEN EDUCATION

RECOURCES IN HIGHER EDUCATION:

EXPERIENCES OF SCHOLARS, LIBRARIANS,

ADMINISTRATORS, AND ADVOCATES

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AND ADVOCATES

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Abstract: Open Education Resources (OER) provide free educational resources, tools, software, and learning material to the world. However, just because a resource is free, it does not mean it was produced for free. While there is a consensus regarding the positive impact of OER, the issue of how individuals are implementing and sustaining OER has received limited attention. This dissertation explored how individuals at higher education institutions are implementing and sustaining OER initiatives. To obtain data to answer the research questions an exploratory case study, incorporating thematic analysis was used in the study. The research examined different perspectives of participants' experiences leading, creating, or adopting an OER initiative. Findings from the research reveal the following: (1) OER initiatives start on campus with faculty who wish to exercise more control over their teaching materials and scholarly publishing; (2) individuals get involved in OER initiatives either because they are employed at an organization that has OER initiatives or they come from a previous institution that had an OER initiative that they wish to continue at the current institution; (3) higher education institutions benefit from OER at three levels: faculty, students, and institution. Participants also indicate that amongst the challenges they face is a lack of consensus on how to implement and sustain OER and that not all institutions give tenure credit to faculty that create OER.

TABLE OF CONTENTS

LIST OF TABLES

Table   Page

LIST OF FIGURES

CHAPTER I

INTRODUCTION

It has been 16 years since the United Nations Educational, Scientific, and Cultural Organization (UNESCO) adopted the term open education resources (OER). In the time since, studies have been conducted on OER topics such as their cost savings (Hilton, Gaudet, Clark, Robinson, & Wiley, 2013), definition of quality (Wiley & Gurell, 2009), intellectual property issues (Bissell, 2009), and many others. This is indicative of a growing interest in and further development of the field. However, as the field of OER continues to grow, some issues need further examination. Specifically, in addition to textbook costs, other critical areas that require more research are sustainability (Farisi, 2013; Hodgkinson-Williams & Donnelly, 2010; Pegler 2010; Santally, 2011) and quality assurance (Biswas-Diener, 2017; Camilleri, Ehlers, Ulf & Pawlowski, 2014; Ehlers, 2011a; Fischer, Ernst & Mason, 2017). When it comes to OER, it is important to examine how to maintain progress that has been made so far, such as saving students money (Sclater, 2011; Hilton, Robinson, Wiley & Ackerman, 2014), particularly as it relates to implementing and sustaining OER initiatives.

An important reason behind the creation of OER was to lower textbook costs, especially given that the average college student spends about $900 on textbooks per academic year (Belliston, 2009; Hilton, Gaudet, Clark, Robinson, & Wiley, 2013). OER

provides financial benefits to students, such as saving thousands of dollars on textbooks, without decreasing their learning of the material (Kleymeer, Kleinman, & Hanss, 2010; Hilton, 2016). Therefore, the academic community sees OER as a way to provide substantial cost savings and increase the number of academic resources available to students (Hilton, Gaudet, Clark, Robinson, & Wiley, 2013; Sclater, 2011; Hilton, Robinson, Wiley, & Ackerman, 2014).

OER provides free educational resources, tools, software, and learning material to the world. However, just because a resource is free, it does not mean it was produced for free. As De Lagen (2013) stated "efforts to supply, to exploit, and to maintain OER can be financed through voluntary activities but will also require financial support of some kind" (p. 1). Costs associated with OER can include hosting the materials, especially for institutions (Hodgkinson-Williams & Donnelly, 2010; Santally 2011). For example, a university professor may produce an OER textbook and put it on a university website for students to download. While the book may be given away for free, its production included labor costs (such as time for the individual to write the book), software to create it, and the website to host the book (Hendricks, Reinsberg, & Rieger, 2017). If the goal is to encourage more production of OER, is this model sustainable?

A few examples exist of higher education institutions and organizations that have implemented OER initiatives, and these may provide guidance on how to sustain such initiatives. The Massachusetts Institute of Technology (MIT) contributed $8 million from its general institution budget to support an OER initiative called Open CourseWare (OCW) (Hodgkinson-Williams & Donnelly, 2010). The Monterey Institute of Technology and Education runs the National Repository of Online Courses (NROC) for high school,

advanced placement, and higher education, and this is considered a sustainable OER

programs (Geith & Vignare, 2008). The University of Michigan Medical School created

Open Michigan, which is dedicated to providing free educational materials that were created

by educators, staff, and students of the university and are open to anyone (Kleymeer,

Kleinman & Hanss, 2010). The Kaleidoscope Open Course Initiative (KOCI) consists of

eight community colleges and state colleges working together to develop new course designs

and textbook replacements that exclusively use OER (Hilton, Robinson, Wiley, & Ackerman,

2014). Creating an OER initiative has benefits to students and educators, but research on

how OER initiatives are sustained is still emerging.

Theoretical Framework

OER can be viewed as an educational innovation. An innovation is defined as "an

idea, practice, or object that is perceived as new by the individual or other unit of adoption"

(Rogers, 2003, p. 12). Numerous theoretical frameworks have been used to study

innovations; the one guiding this dissertation was diffusion of innovations theory (DoI),

which Everett M. Rogers developed and popularized. Rogers (2003) defines this as the

"process by which an innovation is communicated through certain channels over time among

the members of a social system" (p. 11). The final acceptance of an innovation is not

required as part of the DoI innovation-decision process. An individual can reverse their

decision about adopting an innovation if the individual becomes dissatisfied with the

innovation or, perhaps, a newer innovation replaces the older idea (Rogers, 2003). DoI is

comprised of a five-step process (Figure 1) where the individual goes from knowledge of the

innovation to developing an attitude toward the innovation, which leads to the decision-

making process of either accepting or rejecting the innovation, implementing the new idea, and finally confirming the decision (Rogers, 2003).
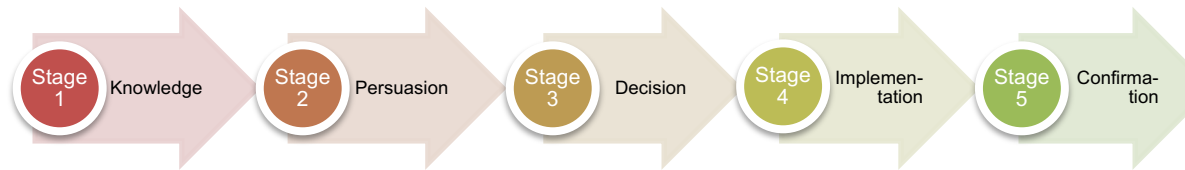
Figure 1. The Innovation of the Design Process. This figure illustrates the five steps in the innovation-decision process adapted from "Diffusion of Innovations" 5th edition Rogers, 2003, p. 165.

The innovation-decision process passes the individual "from first knowledge of an innovation, to a decision to adopt or reject, to implementation of the new idea, and to confirmation of this decision" (Rogers, 2003, p. 170). The first step in the innovation-decision process is knowledge, which is when an individual discovers the existence of the innovation and gains an understanding of how the innovation functions (Rogers, 2003). The second step is persuasion, which is where the individual "forms a favorable or unfavorable attitude toward the innovation" (Rogers, 2003, p. 20). In the decision process's third step, the individual engages in activities "that lead to a choice to adopt or reject the innovation" (Rogers, 2003, p. 20). At the fourth step, implementation, "an individual puts an innovation into use" (Rogers, 2003, p. 20). The fifth step, confirmation, is when "an individual seeks reinforcement of an innovation decision that has already been made" (Rogers, 2003, p. 20). For this dissertation, the focus was on the implementation and confirmation stages because, as the research in chapter two of this research illustrates, knowledge of OER is already

evident; people have been persuaded to the use of OER and have decided to adopt the innovation.

Statement of Problem

Open Education Resources (OER) provide individuals with free resources, such as lesson plans, pictures, assignments, videos, and open software, for reuse with a creative commons license (Geith, Vignare, Bourquin, & Thiagarajan, 2010; Ehlers, 2011b) to enhance education and learning in society (Fulantelli, Gentile, Taibi, & Allegra, 2008). While there is a consensus regarding the positive impact of OER, the issue of how institutions are implementing and sustaining OER has received limited attention. The research problem that this dissertation aimed to explore is how higher education institutions are implementing and sustaining Open Educational Resources (OER) initiatives.

Purpose of Study

The purpose of this study was to use structured interviews with a thematic analysis approach to explore how higher education institutions implement and sustain Open Education Resources (OER) initiatives.

Research Questions

The overall question guiding this research was: How are individuals at higher education institutions implementing and sustaining Open Education Resources (OER) initiatives?

The sub-questions exploring this topic were:

1. What makes individuals at higher education institutions embark on Open Education Resources (OER) initiatives?

2. What are the benefits and challenges experienced by individuals at higher education institutions implementing and sustaining OER initiatives?

3. How are individuals at higher education institutions sustaining OER initiatives?

Definition of Terms

Understanding key terms is imperative to the research process. The following is a list of key terms and their definitions related to this study:

Open Education Resources Initiative. The creation, adoption, or adaption of OER resources that is led by an individual or otherwise leading the effort of an OER resource.

Open Education Resources. Free and open resources that are available to anyone with Internet access and can be reused for educational purposes.

Open Education. The practice of freely sharing ideas, knowledge, methods, platforms, and tools used in learning and teaching (Mossley, 2013).

Quality. Meeting the stakeholders' objectives and needs (Pawlowski, 2007).

Sustainability. In education, something that does not require additional funding for it to continue (Grove & Pugh, 2017).

Summary

Chapter one introduced the definition of OER and theoretical framework for this dissertation, as well as its research problem and purpose. OER provides cost savings to students for textbooks and has created a movement where educators across the world provide educational material at no cost. As a result, questions remain as to how OER can be sustained and who assures the quality of OER material. Sustainability has different definitions, but the common theme among them is assuring continuation over time to meet the demands of users.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter contains a review of the literature that informs this study, particularly as it relates to sustaining and implementing Open Education Resources (OER). The purpose of this study was to explore how higher education institutions implement and sustain OER initiatives. To accomplish this goal, the literature review is organized in three sections: characteristics of OER, sustaining OER, and advancing sustainability in OER. The first section summarizes OER, defining sustainability and diffusion of innovations theory (DoI). The second section discusses sustainability questions with OER, such as its cost savings and ability to sustain quality. The third section discusses challenges, gaps in the research, theoretical framework, and advancing the definition of sustainability in OER.

Characteristics of Open Education Resources

This section focuses on two aspects of OER: explaining what are OER and defining sustainability. The first subsection explains OER, the 5R method of OER, and the purpose of OER. The second subsection discusses the various definitions of sustainability in scholarly research and how OER defines sustainability.

What are Open Education Resources?

Open education resources (OER) are free and open resources that are available

to anyone with Internet access and can be reused for educational purposes. For a resource to be open and free to the public, it must have a creative commons license. David Wiley, a well-known leader in OER, further adds that OER must have the following set of features, which he refers to as the 5R: 1) Revise: adapt and improve the OER so it better meets your needs, 2) Reuse: use the original or your new version of the OER in a wide range of contexts, 3) Remix: combine or mash up the OER with other OER to produce new materials, 4) Redistribute: make copies and share the original OER or your new version with others, and 5) Retain: keep the right to make, own, and control copies of the content (Wiley, 2014, p. 1).

OER initiatives have been made possible by advancements in technology, such as Internet bandwidth quality, accessible computers, and mobile computers. Core attributes of OER include access to content free of charge and source code for the materials being available for reuse (Schaffert & Geser, 2008). What is unique about OER is an educator's ability to reuse the material to fit their classroom needs. This is possible because OER includes a creative commons license, which is an easy-to-use legal tool to "obtain pre-clear copyrights to creative work" (Bissell, 2009, p. 4). OER's attributes include adaption capability, provision of information and communication technology, diverse community, and non-commercial resources (Ehlers, 2011b). In addition to the reuse and free access, educators believe OER provides stimulating ways to improve education, and continues with the academic traditions of sharing knowledge. (Yuan, MacNeil, & Kraan, 2008).

To ensure truly free access, OER includes additional requirements, such as no conditions attached to the resources, nothing to purchase, and no additional advanced

technology necessary for access (Stacey, 2007). What separates OER from other sources is the ability to reuse the resource freely by following the creative commons license. Non-OER resources would not let you remix the resource because doing so would violate its creator's intellectual property. It is important to recognize resources that cannot be repurposed are not considered OER. Not meeting the additional free access requirements or offering reuse capabilities does not mean that a resource is not educational or it is not of quality; it simply means it is not labeled as an OER. The same would be true if a food product wanted to be labeled organic. Before this could be done, the food would need to meet organic standards to receive the proper organic labeling. Several educational resources are available online, but most do not allow for reuse or fail to meet the other requirements necessary for OER materials.

Creative Commons Licenses

A creative commons license ensures an item's original creator receives the appropriate credit. The license lasts as long as the copyright lasts and provides access to the creator of their original work. Creative Commons consists of a charitable corporation based in the United States and Creative Commons International, a U.K. not-for-profit company limited by guarantee (Berman, 2006). A creative commons license is an easy-to-use legal tool to "obtain pre-clear copyrights to [someone's] creative work" (Bissell, 2009, p. 4). The idea behind creative commons is that "some people may not want to exercise all of the intellectual property rights the law affords them" (Hurta, 2006, p. 100). Creative commons licenses allow original creators to retain the copyright of their work while still allowing "others to copy, distribute, and make some uses of their work—at least non-commercially" (Creative Commons, 2018, p. 1). Creative commons licenses do

require that licensees get permission for work the law reserves as exclusive to the licensor; they also indicate what the license doesn't allow (Creative Commons, 2018; Friesen, 2013). For instance, licensees cannot use technology to restrict access to creative commons work from others (Creative Commons, 2018; Friesen, 2013). There are different creative commons licenses, and all of them have baseline rights and restrictions (Hurta, 2006). All creative commons licenses have some features in common, such as the license's requirements, what the license allows you to do, and what licensees can do with the creative commons work. In the case of OER, licensors are the creators, and licensees are the individuals using the OER content. The following is a bulleted list that explains the function of the licenses.

All licenses require licensees to do the following (Hurta, 2006, p. 103):

- Get permission from the original creator to do any of the things the original creator chose to restrict

- Keep any copyright notice intact on all copies of the original creator's work

- Link to the original creator's license from copies of the work

- Not alter the terms of the license

- Not use technology to restrict other licensees' lawful uses of the work

All licenses allow licensees to do the following (Hurta, 2006, p. 104):

- Copy the work

- Distribute the work

- Display or perform the work publicly

- Make digital public performances of the work

- Shift the work into another format as a verbatim copy

The three categories of creative commons licenses are the following:

1. Attribution: Original creators let individuals copy, distribute, display, and perform copyrighted work from the original creator with proper credit that is requested by the original creator (Huerta, 2006, p. 103).

2. Noncommercial: The original creator lets others copy, distribute, display, and perform the original creator's work and derivate work based upon the original work—but for noncommercial purposes only (Huerta, 2006, p. 103).

3. No Derivative Works: The original creator lets others copy, distribute, display, and perform only identical copies of the original creator's work, not derivative works based on the original work (Huerta, 2006, p.103).

The following are creative common licenses icons which indicate their function. This allows identification for which attribution they are referring to. The attributions include: CC BY (Figure 2), CC BY-SA (Figure 3), NoDerivs CC BY-ND (Figure 4), Attribution-NonCommercial CC BY-NC (Figure 5), Attribution-NonCommercial-ShareAlike CC BY-NC-SA (Figure 6), and NonCommercial-NoDerivs CC BY-NC-ND (Figure 7).

Figure 2. Attribution CC BY. Let's individuals distribute, remix, tweak, and build upon the original creator's work, even for commercial purposes, as long as the original creator is credited adapted from "Creative Commons", 2018.

Figure 3. Attribution CC BY-SA. Let's individuals distribute, remix, tweak, and build upon the original creator's work, even for commercial purposes, as long as the original creator is credited. All new works created based on the original creator's work carry the same license; any derivatives also allow commercial use adapted from "Creative Commons", 2018.

Figure 4. Attribution-No Derivs CC BY-ND. License allows for distribution, commercial, and non-commercial use as long as the original work is passed unchanged and in whole with credit to the original creator adapted from "Creative Commons", 2018.

Figure 5. Attribution-Non-Commercial CC BY-NC. License lets others remix, tweak, and build upon the original creator's work non-commercially. The work must acknowledge the original creator and be non-commercial, but the individual does not have to license their derivatives under the same terms adapted from "Creative Commons", 2018.

Figure 6. Attribution-Non-Commercial-ShareAlike CC BY-NC-SA. License lets others remix, tweak, and build upon the original creator's work non-commercially. The work must acknowledge the original creator under the identical terms (Creative Commons, 2018).

Figure 7. Attribution Non-Commercial-NoDerivs CC BY-NC-ND. The most restricted of the licenses. Individuals are only allowed to download the original creator's work and share with others as long as credit is given to the original creator. The work cannot be changed in any way or used for commercial purposes (Creative Commons, 2018).

Defining Sustainability

The focus of this dissertation is on sustainability of OER in higher education. Defining sustainability is complex. No two institutions use the same definition for sustainability, and it has been called an ill-defined concept (Corcoran, Walker, & Wals, 2004). A reason this concept is ill defined is because, in searching for a common definition on sustainability, three different concepts were found: individuals (Corcoran, Walker, & Wals, 2004), investment (Grove & Pugh, 2017), and assessment tools (Lozano, 2010; Lozano, Lukman, Lozano, Huisingh, & Lambrechts, 2011; Shriberg, 2002). After explaining the three concepts, the researcher will provide the OER definition of sustainability used for this dissertation.

The first concept, individual sustainability, is defined by the individuals involved in the process who are faced with the emergent realities (Corcoran, Walker, & Wals, 2004). Individuals are included in the first concept because sustainability cannot be defined at an institutional level; rather, it must account for complex issues such as people's norms, values, and culture (Corcoran, Walker, & Wals, 2004). When it comes to individuals, the research on sustainability includes multiple ways of looking at sustainability that must be considered, including country, culture, and how sustainability is developed over time (Corcoran, 1999). The second concept interprets sustainability "as an activity not requiring any additional financial investment for it to continue" (Grove & Pugh, 2017, p. 3). The concept refers to sustainable higher education initiatives needing to continue over time and offer a benefit to stakeholders (Grove & Pugh, 2017).

However, sustainability can be defined as an ability to meet goals (Wiley, 2007), scalability (Koohang & Harman, 2007), long-term growth (Downes, 2007), and linking to business model (McGill, 2013) in OER. The first is from Wiley (2007), who defined sustainability as an "open educational resource project's ongoing ability to meet its goals" (p. 5). Goals, as discussed by Wiley (2007), refer to understanding what a project wants to accomplish, knowing what activities need to be carried out to meet the needs, and having incentives that will drive users to engage in such activities. One way for projects to meet their goals is to have an economically sustainable model that assures continuation over time and meets the needs of the stakeholders. Other than goals, scalability is a factor for sustainability. The second definition of sustainability argues that for OER to be sustainable, there needs to be factors that drive scalability (Koohang & Harman, 2007). The third definition of sustainability, by Downes (2007), is when OER has a long-term growth that "meets provider objectives for scale, quality, production cost, margins, and return on investment" (p. 33). The last definition of sustainability, by McGill (2013), is the close linking of OER to a business model that an individual or group embraces to "release, manage, and support OER" (p. 1). There is no consistent definition for sustainability in OER as suggested from these scholars' definitions of sustainability.

Sustaining Open Education Resources

This section focuses on three aspects of sustaining OER: 1) the cost savings of OER, 2) sustainability of quality in OER, and 3) sustainable OER models. The first subsection discusses the cost savings that OER brings to students by reviewing studies of OER in higher education. The second subsection discusses how to define quality in

OER. The last subsection discusses the various sustainability models used in education to fund OER.

The Cost Savings of Open Education Resources

Textbooks are a fundamental component in higher education; instructors use them not only as a supplement to their teaching but also as a component of information for the course (Williamson, Stevens, Silver, & Clow, 2016). Costs of textbooks have increased steadily to the point that "the rate of textbook price inflation [has] averaged more than four times the rate of general price inflation" (Belliston, 2009, p. 1). The average college student will spend about $900 on textbooks alone per academic year (Belliston, 2009; Hilton, Gaudet, Clark, Robinson, & Wiley, 2013). Instead of adding to their student debt or purchasing a required textbook, students have opted to take fewer courses due to the cost of textbooks (Hilton, Gaudet, Clark, Robinson, &Wiley, 2013; Senack, 2014). Since 1988, the prices of textbooks have increased on average 6% per year and can cost a student anywhere between $805 and $1,225 each academic year (Williamson, Stevens, Silver, & Clow, 2016). A reason for the rise of textbook costs is the consolidation of textbook publishers to four major companies: McGraw-Hill, Pearson/Prentice-Hall, Houghton-Mifflin, and Cengage (Williamson, Stevens, Silver, & Clow, 2016). The major four textbook publishers make it difficult for others to publish textbooks because they drive up the costs associated with printing, delivery, marketing, and staffs of editors and reviewers (Williamson, Stevens, Silver, & Clow, 2016).

In a study done with management professors across the United States, it was found that professors know about the rise in the price of textbooks, they understand the impact costs have on students, and they realize that it makes it difficult to select a

textbook because of the concern students are voicing (Williamson, Stevens, Silver, & Clow, 2016). However, the professors rejected the idea of being forced to select a cheaper textbook for their students because, perhaps, it interfered with their academic freedom and the "sufficiency of content" (Williamson, Stevens, Silver, & Clow, 2016, p. 136). The same study of management professors also found that management professors do not consider cost that important when selecting a textbook for the classroom, at least compared to other criteria. Out of five textbook selection criteria listed in the study, cost finished second-to-last; the most important was content (Williamson, Stevens, Silver, & Clow, 2016).

However, a large number of the study's respondents (83.3%) mentioned that students do complain to management professors about the costs of textbooks; "concern over the high prices of college textbooks seemed widespread across universities of varying sizes with fairly uniform participation by institutions" (Williamson, Stevens, Silver, & Clow, 2016, p. 136). Overall, the survey suggested that management professors acknowledge high textbook prices and are willing to help as long as no university policies restrict their selection of textbooks or "add administrative burdens on the reviewer" (Williamson, Stevens, Silver, & Clow, 2016, p. 137). The study suggests academic freedom and the content of the textbook trump student choice of a cheaper selection of a textbook. What professors may or may not realize is that the high cost of textbooks affects "students' academic behaviors" (Hendricks, Reinsberg, & Rieger, 2017. p. 79). Learning outcomes between an OER textbook and non-OER textbook have no differences; instead, the main driver that affects students learning course material is the lack of access to the textbook because of its cost (Hendricks, Reinsberg, & Rieger, 2017).

Part of the appeal of OER is that it provides substantial cost savings for students and increases the number of academic resources available to them (Hilton, Gaudet, Clark, Robinson, & Wiley, 2013; Hilton, Robinson, Wiley, & Ackerman, 2014; Sclater, 2011). Recently, researchers studied an open education initiative called Kaleidoscope Open Course Initiative (KOCI), which consisted of eight community colleges and state colleges that worked together to develop new course designs and textbook replacements that exclusively use OER (Hilton, Robinson, Wiley, & Ackerman, 2014). KOCI's three goals were eliminating textbook costs, improving the quality of course designs, and fostering collaboration (Hilton, Robinson, Wiley, & Ackerman, 2014). Only seven of the eight KOCI schools participated in the study, and these colleges were in Nebraska, New York, and California (Hilton, Robinson, Wiley, & Ackerman, 2014). The study compared the experiences of students who enrolled in KOCI sections to students who enrolled in non-KOCI sections, at the schools. The sixty-two students who enrolled in the similar non-KOCI sections spent an average of $9,143.45 on textbooks (Hilton, Robinson, Wiley, & Ackerman, 2014), whereas the 75 students who enrolled in the KOCI sections spent $3,585.32—a cost savings of $5,558.13. The average textbook costs of "all non-KOCI classes at the seven KOCI schools was $90.61, which the full-time student spent $900 on textbooks per year, and OER adoption makes that cost $0" (Hilton, Robinson, Wiley, & Ackerman, 2014, p. 7).

The study also calculated the savings students achieve with OER compared to textbooks. Students who used traditional textbooks spend a total of $320,484.59 over the course of their educations; students with OER saved $104,253.57 of that amount, spending $216,231.02 total (Hilton, Robinson, Wiley, & Ackerman, 2014). The

calculation was based on an average textbook cost of $65.93 per course across five classes (Hilton, Robinson, Wiley, & Ackerman, 2014). Researchers estimated that "if only 5% of the 20,994,113 students enrolled in college in the US in 2011 fall semester [used OER], the savings would be $1 billion per year" (Hilton, Robinson, Wiley, & Ackerman, 2014, p. 7). OER textbooks save students money, making them a tremendous help for students already struggling to pay tuition and fees. Students get significant financial help when institutions adopt OER textbooks in the classroom, and these are a tremendous asset to students. However, institutions struggle to find ways to turn a profit on something that is free, and sustainability becomes a main issue (Geith & Vignare, 2008; Sclater, 2011; Stacey, 2007). Cost of publishing an open education textbook can also be burdensome to the institution. In the study done by Hendricks, Reinsberg, & Rieger (2017) that measured the learning outcomes of a publisher's physics textbook versus an OER physics textbook, the development of the OER project was approximately C$20,000 (Canadian Dollars). The project consisted of revising an existing open physics textbook and combining it with learning resources into a website (Hendricks, Reinsberg, & Rieger, 2017). Project required the efforts of four graduate physics students and two instructors to create the question database and test bank, as well as resources for technical assistance (Hendricks, Reinsberg, & Rieger, 2017).

Although OER is organized, not spontaneous, and funded by large organizations, it runs the risk of running out of money because of that reliance on large funding (Sclater, 2011). One of the main sources of funding for OER is donations; for example, MIT OCW received $11 million from the Andrew W. Mellon Foundation and the William and Flora Hewlett Foundation (Stacey, 2007). Another top OER producer, Connexions,

received two Hewlett grants totaling $2.25 million (Stacey, 2007). However, that grant money was not enough, and Connexions now faces the challenge of developing a sustainable revenue model (Stacey, 2007).

An example of a sustainable OER model comes from the Monterey Institute of Technology and Education, which runs the National Repository of Online Courses (NROC) for high school, advanced placement, and higher education. NROC "uses a consortium model where member institutions contribute to and use the courses in the repository, free for students through Hippo Campus initiative" (Geith & Vignare, 2008, p. 116). What makes NROC different from OCW or Connexions is that it is one of the first organizations to have a sustainable business model where "development costs are shared among members and NROC and paid for through membership fee[s] and in-kind production efforts; members use courses in the repository for free; and revenue generated by sales of NROC courses to non-members and for commercial licenses" (Geith & Vignare, 2008, p. 116). NROC's "major revenue driver[s] include technical support, training and consultation, and smaller [drivers] include publishing and certification" (Geith & Vignare, 2008, p. 116). Given that one of the impetuses for OER is the cost saving measure to students, the question that looms large is whether or not OER can be sustained. Secondly, given that most OER projects are funded by non-profit organizations, can this model be sustained in the long term? However, faculty are not prone to doing away with high-quality, expensive textbooks and going with free OER textbooks that have no consistency in quality and may require them to waste time determining the resources' quality (Fischer, Ernst, & Mason, 2017).

Sustaining Quality

One of the major pushbacks from educators about OER is quality assurance (Camilleri, Ehlers, & Pawlowski, 2014; Ehlers, 2011a). Quality assurance has been a barrier to OER material for classroom usage (Kimmons, 2015), and the responsibility of quality assurance in OER has been placed on the educators and not the content's original creator (Dinevski, 2008). Keeping OER content updated is important because it has to be true to its purpose, which "is to provide open access to high quality digital educational materials" (Caswell et al., 2008, p. 2). If OER content is not kept up-to-date, then it becomes an outdated resource with little to no value to students and academics.

Quality of OER material as it relates to consistency has been an issue with OER (Stacey, 2007), as has ongoing maintenance (Smith & Casserly, 2006) and quality assurance (Ehlers, 2011a; Ehlers, 2011b; Larson & Murray, 2008; Yuan, MacNeil, & Kraan, 2008; Mulder, 2007). OER has to follow standards of quality because educators, students, and self-learners rely on OER materials to be up to date. Although there is no one model that can guide quality assessment in OER, Yuan, MacNeil & Kraan (2008) argue that some of the models that practitioners can replicate include:

- Institution-based approach: use the brand or reputation of the institution to persuade the user that the materials on the website are of good quality. The major challenge here is how the use of open education material might constantly improve the material through reflected use.
- Peer review approach: people send material through a blind review process with criteria fitted for the purpose of the OER.

- Open users review approach: bottom-up approach, letting individual users

   decide the grounds upon which they consider a learning resources to be of

   high quality, useful, or good in any other respect (p. 18).

Other programs that try to address the question of sustaining quality include a

program called eduCommons, which the Hewlett Foundation funded to "assist with the

processes of placing materials into a repository, tagging them with appropriate metadata,

copyright clearance, quality assurance and publication" (Sclater, 2011, p. 5). Other

examples of quality assessment models include open communities such as Wikipedia.

eBay, and Flickr (Lane, 2008). To build quality assessment OER community -

professionals and hobbyists who are interested in this topic and issue need to get involved

(Lane, 2008). It will be up to the OER community to decide what quality assessment

model works best.

Advancing Sustainability in Open Education Resources

This section's focus is on three aspects of advancing sustainability in OER: 1)

challenges to sustainability; 2) gaps in the research; and 3) advancing the definition of

sustainability in OER. These three subsections provide evidence as to why sustainability

in OER needs to be explored. The gaps in the research highlight areas that need focus to

avoid jeopardizing OER for the near future. Also in this section is the discussion of

advancing the definition of sustainability as it relates to sustaining the quality of OER

materials and financially sustaining OER-related projects.

Challenges to Sustainability

The concept of free to use has been disputed in the education market, especially

among publishers, because they feel threatened by the idea of OER taking over the

market (Sclater, 2011). Wiley (2007) makes a compelling statement in an OER sustainability study: "Without a way of bringing in dollars, how is a project to provide the resources necessary to keep pace with its real costs from year to year?" (p. 6). Over the years, OER has run into challenges, including cost maintenance and finding the proper business model to sustain OER for the long run. Wiley (2007) suggests two fundamental challenges to OER: the first is finding a way to sustain the production of OER, and the second is to sustain the products' use and reuse by end users.

The first challenge, producing the OER, includes the technology, workflow, and human resources associated with building and running an OER (Wiley, 2007). Also included in the first challenge is the digital content, intellectual property issues, and quality assurance (Wiley, 2007). The second challenge is OER having operating platforms that allow easy access to users. Not all users have the same access to technology or knowledge on how OER works or functions. How then does OER provide a platform for access to everyone and educate those with limited knowledge on OER's "share alike" functions? Apart from a financially stable business model, OER faces the challenge of providing all users' access to OER and the education to use it. In the next section the researcher explains the theoretical framework used in the study.

Diffusion of Innovations (DoI)

Everett M. Rogers developed and popularized the diffusion of innovations theory (DoI). Rogers (2003) defined DoI as the "process by which an innovation is communicated through certain channels over time among the members of a social system" (p. 11).

The four main elements in the DoI are innovation, communication channels, time, and the social system (Rogers, 2003). Innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 2003, p. 11). Communication channel is defined as "the means by which messages get from one individual to another" (Rogers 2003, p. 17). Time in DoI has three aspects. The first is during the innovation process when the individual accepts the first knowledge "of an innovation through its adoption or rejection" (Rogers, 2003, p. 20). The second aspect of time in DoI, "that is, the relative earliness/lateness with which an innovation is adopted (Rogers, 2003, p. 20). Last aspect of time in DoI is the rate of individuals who adopt the innovation in a period of time (Rogers, 2003). Final main element of DoI, social system, is defined "as a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (Rogers, 2003, p. 24). Rogers (2003) defined units of the system to include "individuals, informal groups, organizations, and/or subsystems" (p. 24). This dissertation will focus on the innovation-decision process, also known as the communication channels.

The DoI innovation-decision process is a five-step process that occurs in a time-ordered sequence: knowledge, persuasion, decision, implementation, and confirmation (Rogers, 2003). During the five-step process, an individual goes from knowledge of the innovation to developing an attitude toward the innovation, which leads to the decision-making process of either accepting or rejecting the innovation, then implementing the new idea, and finally confirming the decision (Rogers, 2003). In the five-step process, the first step is knowledge, which is when the individual "is exposed to the innovation's existence and gains some understanding of how it functions" (Rogers, 2003, p. 20). The

second step is persuasion, which happens when the individual "forms a favorable or unfavorable attitude toward the innovation" (Rogers, 2003, p. 20). In the decision process, the third step, the individual engages in activities "that lead to a choice to adopt or reject the innovation" (Rogers, 2003, p. 20). The implementation stage happens "when an individual puts an innovation into use" (Rogers, 2003, p. 20). In the final step, confirmation, "an individual seeks reinforcement of an innovation decision that has already been made" (Rogers, 2003, p. 20). This dissertation will focus on the implementation and confirmation stages of DoI.

Implementation is when the individual "puts an innovation into use" (Rogers, 2003, p. 174), meaning the actual innovation is put into practice and is no longer a mental exercise (Rogers, 2003). After the individual puts the innovation into use, questions arise about how to use the innovation, what problems can come up, and where to obtain the innovation (Rogers, 2003). It may take a while for the individual to make the innovation a routine or daily habit. After the implementation stage, the final stage is confirmation, where the individuals reaffirms their decision (Rogers, 2003). However, the individual can reverse the decision of innovation if the individual is "exposed to conflicting messages about the innovation" (Rogers, 2003, p. 184). This dissertation focused on the implementation and confirmation stages because the interviewees already had knowledge of OER, had been persuaded to use OER, and made the decision to apply OER material in the classroom. To focus on those final two stages, this dissertation used structured interviews to get inside knowledge on how the interviewees have implemented OER initiatives and what key attributes they made to confirm their decision to implement OER.

Gaps in the Research

To identify the gap in the research, the researcher used keywords "open education resources" and "OER" to collect appropriate scholarly material when searching for OER dissertations with ProQuest Dissertation and Thesis Global search engine keyword search strategies and Boolean operators. This search produced 25 OER dissertations in the last 10 years. Compare that number of OER dissertations to those mentioning "educational technology," which is 16,069, and "online textbooks," which led to 131 results from the ProQuest Dissertation and Thesis Global search engine. Dissertations that were found on OER related to sustainability and quality, and they stated that future research needs to focus on OER curation (Brewer, Good, & Hodge, 2017), improvement of instruments for measuring digital textbook quality (Bliss, Robinson, Hilton, & Wiley, 2013), and motivation and management of volunteers from the business and non-profit sectors when it comes to OER (DeVries, 2013).

OER has several areas to address, which include, quality of material as it relates to consistency (Stacey, 2007), ongoing maintenance (Smith & Casserly, 2006), quality assurance (Ehlers, 2011a; Ehlers, 2011b; Larson & Murray, 2008; Yuan, MacNeil, & Kraan, 2008; Mulder, 2007), intellectual property issues (Bissell, 2009; Larson & Murray, 2008; Mulder, 2007; Smith & Casserly, 2006; Yuan, MacNeil, & Kraan, 2008), licensing (Bissell, 2009), lack of institutional support (Yuan, MacNeil, & Kraan, 2008), evaluation "based on empirical evidence that OER works" (Ehlers, 2011b, p. 1), bandwidth issues in developing countries (Havemann, 2016; Mulder, 2007; Sclater, 2011; Smith & Casserly, 2006; Stacey, 2007), and sustainable business models (Ehlers, 2011b; Fulantelli, et al., 2008; Larson & Murray, 2008; Mulder, 2007; Smith & Casserly, 2006).

When it comes to sustainability, there is currently no "open market in which supply and demand for OER-products is coordinated" (De Langen, 2013 p. 3). The gap in the research on sustainability could jeopardize future OER development. As De Langen & Bitter-Rijkema (2012) suggest, sustainability is about the support and openness of resources; however, ignoring the financial aspects of OER could damage the growth of OER in the years to come.

Research on sustainability can be found in individual case studies, such as the OpenContent initiative at the University of Cape Town in South Africa where they only implemented OER after ensuring sustainability and focused on resources, not content (Hodgkinson-Williams & Donnelly, 2010). At the Open CourseWare (OCW) Project at the University of the Western Cape in South Africa, their operation runs on a $44,000 USD budget with three staff members (Santally, 2011). How then can universities implement a sustainability model when others are doing so with their own resources?

Understanding OER Limitations

In a survey of 50 faculty members at a United Kingdom University to understand academic attitudes, awareness, and behaviors toward open education resources, Rolfe (2012) found only nine respondents were aware of OER. Overall the respondents did show a keen interest in sharing free resources with their immediate colleagues; however, they were "apprehensive about making resources more openly available" (Rolfe, 2012, p. 9). Some main concerns faculty had about adopting OER were "job security and wanting clear recognition for time spent producing OER" (Rolfe, 2012, p. 10). For the faculty to more fully engage with OER, they indicated that they would need technical assistance along with clarification on copyrights (Rolfe, 2012). The faculty in the study also

mentioned how they would need a clear strategy from the institution regarding OER, how the institution wanted faculty to get involved, and how the institution would recognize OER work (Rolfe, 2012). The Center for Education Research and Innovation (CERI) and Organization for Economic Cooperation and Development (OECD) conducted a similar survey regarding OER with institutional managers. In their survey, they also found that the barriers to OER included "the lack of a reward system for teachers and researchers to devote [their] time and energy to develop OER" (CERI and OECD, 2007, p. 60). The lack of reward for OER initiatives is a serious note to take when considering ways to sustain OER in the long run.

Advancing the Definition of Sustainability in OER

OER needs to have a clear definition on sustainability as it relates to sustaining the quality of OER materials and financially sustaining OER-related projects. What may work well for one organization may not work best for another. If some universities, such as MIT and Harvard, have an abundance of financial resources, their sustainability model cannot be replicated at a university in a developing country with limited financial resources and technology capabilities. To advance the definition of sustainability in OER, components such as quality, financing, culture, and access that fit the institution's needs must be considered. After the review of the literature, the overall research question that this dissertation aimed to answer was: How are individuals at higher education institutions implementing and sustaining OER initiatives?

The sub-questions exploring this topic were:

1. What makes individuals at higher education institutions embark on Open Education Resources (OER) initiatives?

2. What are the benefits and challenges experienced by individuals at higher education institutions when implementing and sustaining OER initiatives?

3. How are individuals at higher education institutions sustaining OER initiatives?

These research questions came from the discussion on what is the meaning of sustainability (Grove & Pugh, 2017; Wiley 2007), what is considered quality OER (Stacey, 2007; Wiley & Gurrell, 2009), and what sustainability model is best suited to sustain OER for an extensive period without having to jeopardize the future of OER.

Summary

A review of the literature leads one to conclude that OER has been clearly defined as the concept of providing free educational resources. However, as the literature review highlighted, differences in opinion emerge as to what further research should be explored when it comes to sustaining OER and maintaining its quality. This dissertation explained DoI as its theoretical framework. The literature review mentioned how the presence of OER threatens book publishers, but they should not fear an OER takeover if OER cannot define sustainability, ensure quality, and determine its proper model for sustainability. Also included in the literature review was how the meaning of sustainability led to conflicting definitions of sustainability in OER and the definition of quality OER. The literature review also included examples of how OER provides cost savings to college students. The overall research question that this dissertation aimed to answer is how individuals in higher education sustained and implemented OER initiatives, and the following chapter will explain how the research was tested.

CHAPTER III

METHODOLOGY

This dissertation explores how individuals in higher education institutions are implementing and sustaining OER initiatives. To obtain data to answer the research questions, the researcher used an exploratory case study, incorporating thematic analysis. The research examined different perspectives of the participants' experiences leading, creating, or adopting an OER initiative. This chapter describes in detail the method used in this research. First, the research questions and research design are presented. Second, the data collection, analysis, and participants are explained. Third, the thematic analysis approach is presented.

Research Questions

The overall research question guiding this study was: How are individuals at higher education institutions implementing and sustaining OER initiatives?

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Research Design

To get an insider's perspective of OER initiatives, this study used a phenomenological approach. The phenomenological approach aims to "explore personal experience and is concerned with an individual's personal perception or account of an object or event" (Smith & Osborn, 2015, p. 53). It gets a sense of the individual's experience (Pietkiewicz & Smith, 2012) and is appropriate when the researcher is "trying to find out how individuals are perceiving the particular situation they are facing" (Smith & Osborn, 2015, p. 55). The phenomenological approach provided an understanding of the experiences of scholars and leaders who have engaged with OER initiatives by obtaining information from them directly using an exploratory qualitative study approach.

For this research a case study gives the opportunity to explore and understand complex issues compared to quantitative studies where the research is limited because there isn't an in-depth explanation of the problems in question (Zainal, 2007). In case study methods, "a researcher is able to go beyond the quantitative statistical results and understand the behavioral conditions through the actor's perspective" (Zainal, 2007, p.1). There are various types of case study categories, Yin (1984) names three: exploratory, descriptive, and explanatory case studies. This study is an exploratory case study. The reason for choosing an exploratory study was because the research was exploring the phenomenon of OER initiatives in relation to implementation and sustainability. The study explores and gets an in-depth analysis of OER ideas, opinions, and experiences at higher education institutions. An exploratory qualitative study approach "tends to tackle

new problems on which little or no previous research has been done" (Brown, 2006, p. 43). Based on the literature review there is no common definition of sustainability in OER. Whereas other types of case studies rely on prior research (or study a case within a subject), an exploratory case study is undertaken when the researcher wants to demonstrate that further investigation is necessary. In this study, the goal is to show how there is more research needed on understanding how higher education institutions are implementing and sustaining OER initiatives. For an exploratory qualitative study, it's possible for data collection and fieldwork to be initiated before the research questions and hypothesis are defined (Yin, 1993).

Exploratory case study "addresses the problems associated with the selective use of data" (Ogawa & Malen, 1991, p. 283). And since OER is not yet responsive to "laboratory level of control implied in quantitative techniques" (Ogawa & Male, 1991, p.274) an exploratory case study was the best fit for exploring how higher education institutions are implementing and sustaining OER initiatives. The purpose of collecting data was to answer the research questions for this study.

Table 1

Research Data Matrix

Research Question	Purpose	Data to Answer Question	Data Source	Contact for Access	Data Collection Timeline
What makes higher education institutions embark on Open Education Resources (OER) initiatives?	To confirm or disapprove that OER initiatives are decided on quality.				May 2018 – October 2018
What are the benefits and challenges experienced by higher education institutions implementing and sustaining OER initiatives?	To learn of the different ways institutions sustain OER.	Interviews	Scholars; Directors of OER projects	Professors; Association for Educational Communications and Technology (AECT); Open Educational Resources (OER) Commons	May 2018 – October 2018
How are higher education institutions sustaining OER initiatives?	To understand what is influencing sustainability in OER.				May 2018 – October 2018

Note. Table 1 shows a research data matrix which contains the purpose of each question, the data sources as well as the time frame in which the data was collected.

Table 2

Interview Data Matrix

Research Question	Data Collection Timeline
What makes higher education institutions embark on Open Education Resources (OER) initiatives?	- Please tell me a little bit about yourself and how you came to be interested in Open Education Resources? - Can you tell me about your Open Education Resources initiative? - What led you to start the initiative?
What are the benefits and challenges experienced by higher education institutions implementing and sustaining OER initiatives?	- What have been your experiences with creating OER? - What are some of the challenges and benefits that you have noticed? - Have there been any benefits? Have there been any setbacks? - How do you define quality resources in OER? - What are your perceptions of using OER in regard to quality of resources? - What resources (e.g., physical, websites, and databases) do you use for creating OER content? - How has your selection of resources changed or stayed the same since you started creating OER content?
How are higher education institutions sustaining OER initiatives?	- How have you been financially supporting the initiatives? - How do you define sustainability in OER? - What are your experiences with sustaining OER resources? - How do you sustain OER resources?

Note. Interview data matrix in Table 2 provides an understanding of how the data from the interviews answered the research questions.

Data Collection

Recruitment of Participants

Recruiting participants for this study consisted of three approach. The first approach was gathering the names of scholars from the existing OER literature. This was done because the scholarly writing provided evidence of the participants knowledge in OER initiatives. The second approach was performing an Internet search through Google using the keywords "OER," "Open Education," "Open Education Resources," "Open Education Initiatives," and "Scholars in Open Education Resources" to obtain names of potential participants. Google search was conducted to find qualified candidates based on their background in OER initiatives.

The third approach used the snowball sampling process, which is defined as a method that gathers study samples via "referrals made among people who share or know of others who possess some characteristics that are of research interest" (Biernacki & Waldorf, 1981, p. 141). Snowball sampling starts with a small sample, and then asking those individuals "to select others" (Auerbach & Silverstein, 2003. p. 18). Snowball sampling method was applicable for this study because the knowledge of insiders was needed to locate people for study (Biernacki & Waldorf, 1981).

After doing extensive search online names and emails of potential participants were entered in an Excel spreadsheet, that contained the following information: first name, last name, position, organization, email, notes, email sent, interview date, transcribing status, interview length, consent form, bio, group number, and whether the interview's coding was complete. The spreadsheet helped the researcher manage participants' information and keep track of the time/date of contact, who accepted the

interview, the lengths of interviews, when information was received, and notes on each participant.

Emails messages were sent to the list of names obtained through the methods explained earlier. Emails requested the individuals' participation in an online interview regarding how higher education institutions are implementing and sustaining OER initiatives. If a participant responded with interest, a time and date was scheduled for an online interview. Interviews consisted of 11 questions aligned to each of the research questions in the study (Table 2). Interviews ranged from 19 minutes to 48 minutes. Interviewees had to sign a disclosure form, which was approved by the Oklahoma State University IRB (Appendix D).

After the interview was complete, the interviewee was asked to pass along contact information of other colleagues directly involved as a scholar or leader in an OER project. This snowball sampling produced an additional 12 potential interviews, of which nine participated in the study. Altogether, the researcher ended up with 44 potential individuals for the study: 17 were interviewed, eight did not want to participate, 19 did not reply, and two people did not respond with a time to meet after numerous attempts to set up an interview.

After interviewing the participants' information, the researcher divided the participants into four groups. First group consisted of librarians at higher education institutions who worked directly with OER initiatives. Second group were administrators at non-higher education institutions who either led an OER initiative, created an OER initiative, or consulted about OER initiatives at higher education institutions. Third group were scholars who have published an OER initiative, led an OER initiative, or

consulted about an OER initiative and had at least one peer-reviewed journal article

published related to OER within the last five years. Fourth group were administrators

and staff at higher education institutions who either led an OER initiative, published an

OER initiative, or initiated an OER initiative. Researcher divided the participants into

groups in order to have a balance of participants' backgrounds.

Interviews and Profiles of Participants

The structured interview questions were submitted to the Oklahoma State

University IRB for approval. Interviews were conducted virtually due to the travel

restrictions of the researcher and the convenience for interviewees of not having to travel

to be interviewed. Email interviews were discouraged because they would not allow for

a dialogue and would not provide the researcher the opportunity to take notes during the

interview. Once a date was set with each of the interviewees, interviews were conducted

via Google Phone, Zoom or Skype, which are web-based applications that provides video

conferencing and phone services. All interviews were recorded with the verbal consent

of each participant so that they could be transcribed. Zoom application has a built-in

feature for recording, while recording in skype was accomplished using ScreenFlow,

which is a screen casting and video editing software. Researcher transcribed the data and

stored it in a document folder. Names of the participants were coded with "participant #"

to protect their identities. A document folder for each interview was labeled with

participant name, date of interview, and the participant's institution or organization of

employment. Researcher kept the information regarding each interviewee's name and

bio in a Microsoft Excel file, as explained in the participants section.

Researcher ensured maximum control of the interview by creating structured interview questions and asking the same questions for every interview (Smith & Osborn, 2015). Structured interviews consist of reading the questions as written, asking the questions in the identical order, and "have pre-coded response categories, enabling the questioner to match what the respondent says against one of those categories" (Smith & Osborn, 2015, p. 30). Advantage of using a structured interview is control. It offers a reliable format because all participants receive the same questions, so the interview itself has "minimal impact on the responses obtained" (Smith & Osborn, 2015, p. 58).

This study used online structured interviews as a data collection method to understand OER programs at higher education institutions. The interview process "generate[s] participant perspective about ideas, opinions, and experience" (Biddix, 2009, p. 1). Structured interviews provided a deeper understanding of opinions and experiences with OER initiatives related to sustainability, challenges, and benefits to OER initiatives. The interviews were downloaded and stored in a hard drive to keep the interviewees' information and names safe. The following is a description of each of the 17 participants who were interviewed and the reason for their interview. To protect the identity of the participants, the researcher replaced their names with "participant #."

Participant 1. This participant is a male tenured professor in instructional psychology and technology at a university in the southwest region of the United States, an OER scholar, and the creator of an OER initiative. The OER initiative is an open textbook on foundations in instructional design technology. This participant gained knowledge of OER in his graduate work and did not create an OER initiative until after being awarded tenure. Participant 1 scholarly research includes published widely in his

field. According to his university profile participant 1 has published 44 scholarly articles, cited over 1900 times on google scholar, published an OER initiative and co-developer of an open education badges program. Participant 1 got involved with OER because of the lack of quality materials to use in the classroom. This participant's interview was done via Zoom with ScreenFlow software recoding in the background in case Zoom did not record properly. The interview lasted 33 minutes, and all questions were answered.

Participant 2. This participant's interview was done via Skype with ScreenFlow software recording in the background. The interview lasted 43 minutes, and all questions were answered. Participant 2 is a male OER advisor employed by an international intergovernmental organization based in Canada. The participant's employer allows the participant to work directly with institutions and governments to assist in mainstreaming OER to be accepted and used. This participant had over five years of experience teaching and doing scholarly work in OER. Based on his Google Scholar profile, Participant 2 has 51 published articles that include research on OER, re-use and adaption of OER, and OER trends in Asia. This participant has international experience mainstreaming OER initiatives and has firsthand experience on what it takes to create, develop, and manage OER initiatives in higher education. Experiences include visiting countries across the Asian continent advising the governments on the benefits that OER have to the university institutions and assisting with the development of OER.

Participant 3. This participant's interview was done via phone call on a Google phone number because it was his preference. The interview lasted 43 minutes, all questions were answered, and it was recorded using the ScreenFlow software for transcribing purposes. This participant is a male digital learning services librarian at a

four-year institution in the southwest United States with leadership in an OER initiative. The initiative was promoting OER to faculty as part of their affordability program and putting out a call to the deans of the university to get faculty to submit proposals for creating an open education resource for their course. The affordability program was established by the university to make the cost of college affordable to students and OER is part of the program. This participant has four years of experience working directly with the OER initiative at their employer's institution. The participant got involved with OER because of their employer and was asked to attend a conference and, from there, help lead the OER initiative on campus.

Participant 4. This participant's interview was done via Zoom. The interview lasted 30 minutes, and all questions were answered. This participant is a male chief information officer within a department of a university in the Midwest region of the United States. The participant started an OER initiative because of his frustrations with cost, access, and commercial publishers. The participant's leadership role has helped create a well-known national OER initiative that has been around since 2012. The initiative is an open textbook network site that provides a catalog of over 500 open textbooks. The initiative was done in order to create a space for higher education to take ownership of their academic course content. Participant 4 has experience with leading and developing OER initiatives on campuses across the United States.

Participant 5. This participant's interview was done via Zoom in a coffee shop. The interview lasted 48 minutes, which was the longest interview. The researcher used the ScreenFlow software as a backup to record the conversation. Participant 5 is a male undergraduate instruction outreach coordinator and librarian at a four-year institution in

the southwest region of the United States who was working on an OER initiative with faculty at the time of the interview. In December of 2017 participant 5 took over the OER initiative after the death of the individual leading the OER initiative. The initiative included hosting workshops to communicate open textbooks on campus and getting faculty on campus to publish an open education textbook and offered stipends for faculty to either adopt or develop their own open education resources. Participant 5 was working with participant seven on the initiative.

Participant 6. This participant's interview was done via Google phone at their request and recorded through the ScreenFlow software. Interview lasted 32 minutes, and all questions were answered. Participant 6 is a male tenured professor and department chair in counseling psychology in special education at a university in the southwest region of the United States, member of a leading OER organization, and co-author of OER research. Participant served in a leadership capacity in their academic department and has not published an OER initiative. The only experience with OER is publishing articles on OER that were on learning outcomes from open textbook adoption and the impact of open textbooks in secondary education, and advocating for OER through the OER organization. The participant was a strong proponent of getting open textbooks on campus to help students with costs of college.

Participant 7. This participant's interview was done via Zoom with additional recording using the ScreenFlow software. The participant's interview lasted 19 minutes, and all questions were answered in the short amount of time. Participant was a female associate dean for research and learning services at a four-year university in the southwest region of the United States who was leading an OER initiative at the time of

the interview. The initiative offered stipends for faculty to either adopt or develop their own open education resources. The initiative guided the faculty through the process such as writing the manuscript and determining deadline to get the open textbook published.

Participant 8. This participant's interview was done via Zoom with additional recording using the ScreenFlow software. The participant's interview also included participant 9, and it lasted 30 minutes. The interview was challenging because participants 8 and 9 were answering the question simultaneously. Participant 8 is a male that serves as associate vice president for academic affairs of a public four-year institution in the west coast region of the United States and is leading an OER initiative to help faculty adopt OER material for the classroom. He was asked by the provost to get the initiative started and continues to do so. The initiative was funded from the university central office five years ago with $20,000 to see various initiatives to engage faculty in finding low cost or no-cost materials. The second initiative was from the state legislature two years ago that funded the initiative with $50,000 to focus on adoption of OER. The money from the second initiative cannot be used to pay faculty to write OER; it can be used only for professional development for reviewing for adopting OER.

Participant 9. This participant's interview was done via Zoom with additional recording using the ScreenFlow software. The participant's interview also included participant 8, and it lasted 30 minutes. Interview was challenging because participants 8 and 9 were answering the interview questions simultaneously. Participant 9 is a female that had worked for a major textbook publishing company prior to her role as instructional designer in a public four-year institution in the west coast region of the United States. The participant took on a role as an instructional designer of the OER

initiative mentioned by Participant 8. As part of the role she engaged with faculty by hosting lunch and learns on OER.

Participant 10. This participant's interview was done via Zoom with additional recording using the ScreenFlow software. The interview only lasted 19 minutes, with only five of the 11 questions from the interview questionnaire answered. The participant mixed up their schedule and cut the interview short to attend a dissertation defense. The participant is a male assistant professor in instructional psychology and technology at a four-year university in the southwest region of the United States. He got interested in OER after watching a TED talk by David Wiley and hearing from people about OER. The first initiative was leading a three-day boot camp for K-12 teachers from his state on creating their own OER. The boot camp provided professional development credit, introduced them to the idea of OER, taught them about copyright, and gave them guided work time to create their own OER textbooks, using CK-12 and Open Staxs as starting points. The second initiative was publishing an OER textbook for his course on technology integration in K-12 schools. His scholarly articles include 34 peer reviewed journal articles on technology integration, OER adoption, and social media in education.

Participant 11. This participant's interview was done via Zoom with additional recording using the ScreenFlow software. The interview lasted 34 minutes, and all questions were answered. She got involved with OER in 2008 during her teaching days at a major university institution in Mexico. The participant is a female high-level staff member for an OER consortium, has international experience with the usage of OER in higher education, and is part of a leading effort in an OER initiative. The initiative for her started when she was invited to be part of a large OER organization that advances the

concept of OER through institutions with the goal of pushing the open concept on a global scale.

Participant 12. This participant's interview was done via Zoom with additional recoding using the ScreenFlow software. Interview lasted 21 minutes, and all questions were answered. The participant is a female librarian at a public four-year higher education institution in the Midwest region of the United States. She first got involved with OER back in 2014 from her days in graduate school. She led two OER initiatives with previous employers. The first initiative was a pilot program with four $500 stipends to incentivize faculty to either create, adopt, adapt open education resource for a class that they teach. The second initiative was working with several college and universities within a consortium on an OER stipend program to incentivize faculty to review OER. This was done so faculty wouldn't feel the pressure to adopt an OER. Instead faculty were asked to review the OER for quality purposes in order to get them thinking about OER and demonstrate that there are high quality OER. Currently, the participant has created an introductory OER online course to help other librarians understand open education resources.

Participant 13. This participant's interview was done via Zoom with additional recording using the ScreenFlow software. This was the first interview conducted. It lasted 44 minutes, and all questions were answered. The participant is male, and is the founder of a non-profit OER initiative in the Midwest region of the United States. Participant 13 had over 15 yeasts of experience in an education textbook publishing company and started an OER initiative for adult educators. His initiative is a non-profit organization with the mission to scale the availability of open education resources and to

make them available by locating the resources that aligned to adult education competencies.

Participant 14. This participant's interview was done via Zoom with additional recording using the ScreenFlow software. The interview lasted 22 minutes, and all questions were answered. The participant is male, and is the editor in chief of a leading nonprofit OER textbook organization. He formerly worked for a major publishing company, and is a leading OER advocate. The initiative is a nonprofit OER textbook organization with the goal of driving student success by providing free textbooks. The open textbooks are peer reviewed, have a scope and sequence, and provide supplemental resources.

Participant 15. This participant's interview was done via Zoom with additional recording using the ScreenFlow software. The interview lasted 35 minutes, and all questions were answered. Participant 15 is female, based in South America and led her own OER initiative. Her first initiative was through her doctoral dissertation where she educated K-12 teachers on OER and Information & Communications Technology in a country in South America. The second initiative was a global initiative on collecting stories from people on how they got interested in open education. Third initiative was creating a booklet for K-12 teachers that provided practical examples on how to find, create and publish their own OER that included video tutorials. The participant is director of a distance education company and an advocate for OER initiatives in South America.

Participant 16. This participant's interview was done via Zoom. The interview lasted 27 minutes, and all questions were answered. The participant is a female

educational technology lecturer at a private university in the southern part of the African content, has published an OER initiative, and is a leading advocate for OER initiatives in Africa. The first initiative was creating an OER about student video projects for educators. The second initiative was starting a course on online facilitation that provided the course guide along with a companion website.

Participant 17. This participant's interview was done via Zoom. The interview lasted 22 minutes, and all questions were answered. Participant is a female assistant professor in educational technology at a public four-year institution in the southwest region of the United States. Her OER initiative was publishing an introductory OER textbook on educational technology for graduate students. The textbook is an orientation to all of the topics that are important in education technology. She was motivated to publish the OER after getting introduced to OER by a colleague and from not being satisfied with the previous educational technology textbook because students complained about it being dense and not written well. Her scholarly publishing is in the area of the intersection of technology and human cognition.

All participants were emailed a copy of the interview transcript and given eight days to fix any problems in the transcript.

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Data Analysis

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To collect the data to be analyzed and provide data that answers the research questions data analysis must be done in order for the participants voices to be "interpreted and reported for others to read and learn from" (Sutton & Austin, 2015, p. 227). Data analysis is also the "process of bringing order, structure and meaning to the mass of

collected data" (Marshall & Rossman, 1999, p.150). Analysis for this study consisted of coding the data to conduct a thematic analysis.

Coding

A code is a short phrase or word that represents or captures a portion of the data (Saldana, 2009). The data can range from interview transcripts to journals and field notes (Saldana, 2009). The process of coding data "includes looking for patterns and themes" (Kawulich, 2004, p. 99), and "allows the researcher to simplify and focus on specific characteristics of the data" (Nowell, Norris, White, & Moules, 2017, p. 5). To establish a good code, Boyatzis (1998) suggests five elements: a label, a definition of what the theme concerns, a description of how to know when the theme occurs, a description of any qualifications or exclusions to the identification of the theme, and a listing of an example to eliminate confusion. The coding framework that the researcher used was structural coding, which was suggested to be best suited for thematic analysis (Saldana, 2009). Structural coding is appropriate for interview transcripts because it serves as a labeling and indexing device that allows data that is related to the larger data set to be found quicker (Saldana, 2009). Structural coding also results in the "identification of large segments of text on broad topics; these segments can then form the basis for an in-depth analysis within or across topics" (MacQueen, McLellan-Lemal, Bartholow, & Milstein, 2008, p. 125).

For this dissertation, the coding was based on a set of 17 interviews with scholars, librarians, directors, and advocates of open education resources. This research used the structural coding process, as recommended for thematic analysis (Saldana, 2009). Structural coding is suitable for interview transcripts because it is a content-based

approach that represents a "topic of inquiry to a segment of data that related to a specific research question used to frame the interview" (MacQueen, McLellan-Lemal, Bartholow, & Milstein, 2008, p. 124). Coding was done in a two-cycle phase using a thematic analysis approach. Researcher first read through the data without coding it to identify key words and phrases used. The second cycle consisted of coding the data based on the research questions. This allowed the researcher to avoid getting lost in the data and instead focus on what was and was not necessary to interpret. ATLAS.ti, a qualitative data analysis tool, was used to organize the transcripts and to help with coding. All of the transcript files were uploaded to ATLAS.ti for analysis and storage. ATLAS.ti software made the coding process manageable and efficient with the large data set.

Thematic Analysis

The analysis for this dissertation was driven by the research questions, which used a theoretical thematic analysis approach (Braun & Clarke, 2006). The thematic analysis helps to analyze, identify, and find repeated patterns within the data that capture the overall research questions (Braun & Clarke, 2006; Braun & King, 2006; Nowell, Norris, White, & Moules, 2017). To identify the data relevant to the research question, thematic analysis uses a six-phase process: familiarizing yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report (Braun & Clarke, 2006). To establish the trustworthiness of the research data, the researcher used the trustworthiness process established by Nowell, Norris, White, & Moules (2017) during each of the thematic analysis's six phases. The trustworthiness process ensures quality (Nowell, Norris, White, & Moules, 2017).

The Thematic Analysis Six-Phase Process

To start the analysis of the research a thematic analysis is the process by which the researcher translates the collected data into meaningful information. There are numerous methods for conducting a thematic analysis. In this study, the process was guided by Braun and Clarke's (2006) six phase process which includes the following.

Phase 1: Familiarize Yourself with the Data. The first phase of the thematic analysis is "familiarizing yourself with the data." In this phase, the researchers reads the transcripts (Maguire & Delahunt, 2017) and engages in enough analysis to be familiar with the content without coding it (Braun & Clarke, 2006; Maguire & Delahunt, 2017). The researcher ideally reads the data, in this case the transcripts, numerous times before coding to get an in-depth knowledge of the data to "search for meanings" (Braun & Clarke, 2006, p. 87). To establish trustworthiness in phase one, the researcher documented reflective thoughts (e.g., memos), stored the raw data in well-organized folders (Nowell, Norris, White, & Moules, 2017), and kept records of all transcripts and memos (Nowell, Norris, White, & Moules, 2017).

During each interview, the researcher used the interview question sheet of each interviewee to note initial ideas of the data and get an understanding of the data (Appendix A). To assure accuracy in the transcript the researcher read each interview transcript five times. The first time was to transcribe the data, the second was to read the transcript for errors, the third was to become immersed in the data and search for meanings and patterns (Braun & Clarke, 2006), the fourth was to confirm the interviewed individuals answered the questions, and the fifth was to start the coding process. This

five-stage process allowed the researcher to become immersed in the data and familiar with it (Braun & Clarke, 2006).

As noted earlier, the five readings helped the researcher analyze the data and know if the interviewees answered the research questions. One interviewee was excluded from the coding phase because their answers had no relation to the research topic and questions. As suggested by the researcher's advisor, the researcher wrote memos (see appendix C) every time the researcher worked on the data to document what the researcher did, how the researcher did it, and why.

Phase 2: Generating Initial Codes. The second phase of the thematic analysis process is the generation of initial codes. Phase two happens after debriefing on the transcripts and generating ideas "about what is in the data and what is interesting about them" (Braun & Clarke, 2006, p. 88). The qualitative data analytic software ATLAS.ti was used for the coding process. To establish trustworthiness in phase two, the researcher used a coding framework (Nowell, Norris, White, & Moules, 2017). The coding framework was structural coding, which was suggested to be best suited for interview transcripts with multiple participants (Saldana, 2009). Structural coding is "a question-based code that acts as a labeling and indexing device, allowing researchers to quickly access data likely to be relevant to a particular analysis from a larger data set" (Namey, Guest, Thairu, & Johnson, 2008, p. 141).

After reading the data for coding, the researcher focused on text "related to your specific research concerns" (Auerbach & Silverstein, 2003, p. 37). The coding process looked for repeating ideas, such as repeated words or phrases that expressed the same idea (Auerbach & Silverstein, 2003). To stay focused during the coding framework, the

researcher kept one question in mind: "Is that particular piece of text relevant to your broad research concerns?" (Auerbach & Silverstein, 2003, p. 44). The researcher worked through each interview transcript coding text that was either relevant to or specifically addressed the research questions (Maguire & Delahunt, 2017). Notes of each coding process were taken in a daily memo journal to keep track of the codes, how they were developed, and why (see appendix C).

After the initial coding process and finding that several interviewees did not answer the research questions, the researcher and the researcher's advisor decided to focus on participants who met the following criteria:

- Had experience with an OER initiative

- Answered the research questions

- Were involved with an OER initiative at the time of the interview

- Worked directly for or with higher education institutions

Four participants were identified who met these criteria and were best fit to represent the research. After that, another set of coding was done on the four participants chosen by the researcher, and it consisted of 187 codes.

Phase 3: Searching for Themes. Phase three is where the codes are sorted into potential themes (Braun & Clarke, 2006). Phase three starts once all the coding has been done and a large list of codes has been identified (Braun & Clarke, 2006). DeSantis and Ugarriza (2000) define themes as "an abstract entity that brings meaning and identity to a recurrent experience and its variant manifestations. As such, a theme captures and unifies the nature or basis of the experience into a meaningful whole" (p. 362). A theme organizes a group of repeating ideas to see the common thread among the ideas

(Auerbach & Silverstein, 2003). Themes should be named "with an easily understood phrase that expresses this common thread" (Auerbach & Silverstein, 2003, p. 65). To establish trustworthiness in phase three, the researcher kept notes about the development of concepts and themes (Nowell, Norris, White, & Moules, 2017).

The thematic analysis process has two levels of themes: semantic and latent. Sematic does not look for anything beyond the data, whereas latent does look beyond the data that is provided (Braun & Clarke, 2006). The process used with the codes was a latent approach, as suggested by Braun and Clarke (2006), which looks beyond what was said and it "starts to identify or examine the underlying ideas, assumptions, and conceptualizations—and ideologies—that are theorized as shaping or informing the semantic content of the data" (p. 84). The researcher developed themes from a latent approach with a combination of the interview transcripts, literature review, and codes (Auerbach & Silverstein, 2003). The researcher was careful not to fall for the common mistake of using the main interview questions as themes (Clarke & Braun, 2013). This reflects a sense of summarizing and organizing data, rather than analyzing it (Maguire & Delahunt, 2017).

To start the process, the researcher downloaded the codes created from ATLAS.ti into a Microsoft Excel Spreadsheet. Once in the spreadsheet, the researcher divided the codes into three categories based on the research questions. After the codes were placed into categories, the researcher created three different tabs in Excel—one for each category. Once in the category sections, the researcher started the theme process.

The researcher was looking for repeating ideas from the quotes highlighted from each transcript. After reviewing codes from each interview, the researcher started to

compile a list with a "starter idea," which is the first repeating ideas on the list of codes

(Auerbach & Silverstein, 2003). Researcher defined "starter idea" as the subtheme. The

researcher placed each code into a subtheme and then moved on to the next starter idea

until all codes were placed under a subtheme.

After subthemes were created, as illustrated in Figure 8, the researcher analyzed

the subthemes carefully while also generating ideas for themes from the literature review

(Auerbach & Silverstein, 2003) and coming up with theme(s) that answered each of the

research questions.

*Figure 8. Subthemes and Generation of Ideas. Figure 8 displays how codes went from
subthemes and themes.*

Phase 4: Reviewing Themes. After developing the first group of themes, the

researcher began the next step of reviewing themes. In this phase, each theme must be

supported by the data and "whether the themes work in the context of the entire set"

(Maguire & Delahunt, 2017, p. 3358). The main questions that were asked in phase four

are the following:

- Do the themes make sense?

- Does the data support the themes?

- Am I trying to fit too much into a theme?

- If themes overlap, are they really separate themes?

- Are there themes within themes (subthemes)?

- Are there other themes within the data? (Maguire & Delahunt, 2017, p. 3,358)

In this phase, themes are also reviewed for trustworthiness, which is established in phase four by having peer reviewers' vet the themes and subthemes. The researcher emailed five peer reviewers to have them review and vet the codes, subthemes, and themes. Three of the five peer reviewers reviewed and vetted the codes, subthemes, and themes. Feedback from peers was incorporated into improving the final themes (see appendix B).

Phase 5: Defining and Naming Themes. Phase five is the final refinement of the themes that tells a story of the data in the research (Braun & Clarke, 2006). Each theme has subthemes, which provide structure and meaning for the data (Braun & Clarke, 2006). To build trustworthiness of phase five, the researcher documented theme naming using memo notes (see appendix C) (Nowell, Norris, White, & Moules, 2017). After reviewing the peer reviewed notes (see appendix B), the researcher developed themes that answered each research question and were supported by the data. Figure 9 shows an illustration of the thematic analysis flowchart, which is a visual illustration of the process that the researcher used to come up with the themes. The flowchart was influenced by a peer reviewed article that analyzed qualitative data using a thematic analysis in palm oil refining (Salleh, Ali, Yusof, & Jamaluddin, 2017).
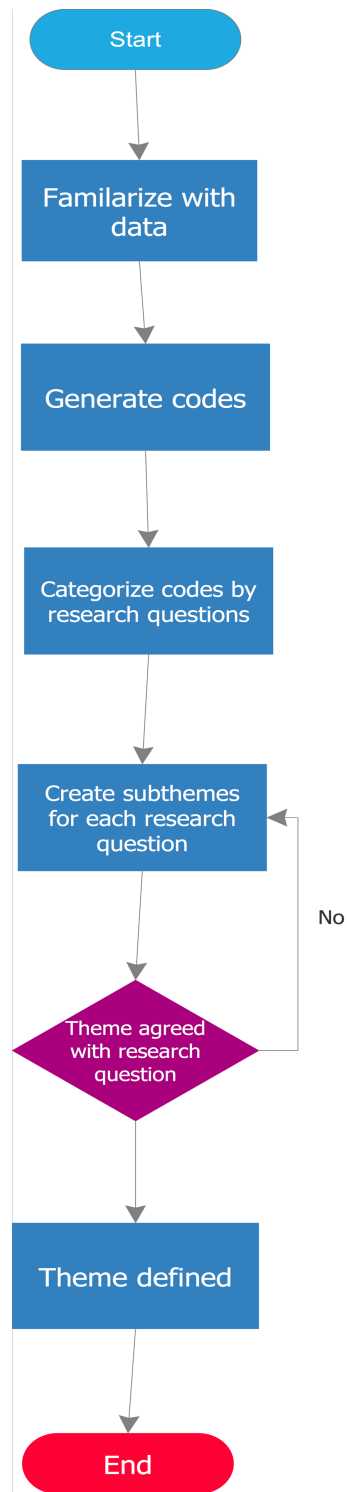
Figure 9. Thematic Analysis Flowchart. This flowchart is an illustration the process that the researcher used to come up with the themes. The flowchart was adapted from "Analysing Qualitative Data Systematically using Thematic Analysis for Deodoriser Troubleshooting in Palm Oil Refining" by Salleh, Ali, Yusof, and Jamaluddin, 2017.

Phase 6: Producing the Report. The final phase of the thematic analysis process, phase six, is about telling the story of the data to the audience (Brain & Clarke, 2006). The story in this research is chapter four. To establish trustworthiness of the data, the researcher completed a thick description of the context of the data (Nowell, Norris, White, & Moules, 2017), which is included in chapter four.

Summary

Chapter three provided details on the method use for the study. The instrument of choice for data collection was a structured interview questionnaire. Interviews were part of the data collection method with the intention of understanding how to sustain the quality of OER initiatives and how to financially sustain OER initiatives. The thematic analyses process is the process by which the researcher translates the collected data into meaningful and consumable information.

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CHAPTER IV

FINDINGS

The focus of this study was to explore how individuals at higher education

institutions are implementing and sustaining Open education resources (OER) initiatives.

The study used structured interviews with a thematic analysis approach. The purpose of

this chapter is to answer the research questions with the data collected from the

interviews. Although 17 participants were interviewed, all of them did not provide

enough information to answer the research questions. From the 17 participants who

answered the research questions, the researcher selected four for this analysis.

This chapter presents the results of the study in two parts. First, it covers the

criteria used to select the four participants whose responses were coded and analyzed.

Second, the results are presented with the research questions associated with the themes

that were developed from analyzing the data.

Criteria for Analysis of Selected Participants

Seventeen participants were interviewed for this study, and their interview

transcripts were coded and analyzed. To protect the identity of the participants, the

researcher replaced the participants' names with "Participant #." After reviewing the

transcripts and initial codes, the researcher recognized that several participants did not

provide enough data to answer the research questions. To be included in second round of

coding, and the participant had to provided enough data to answer the research questions. Hence the criterion for inclusion into the final coding process, were the following:

- Had experience with an OER initiative

- Provided data that addressed the research questions

- Were involved with an OER initiative at the time of the interview

- Worked directly or with higher education institutions

As stated earlier, initially, the researcher sent 44 interview requests. Of these, 17 individuals agreed to participate in an interview. The following is a description of the four participants who met the above criteria and were analyzed through thematic analysis.

Description of Participants

      Participant 1. This participant was a male associate professor in instructional psychology and technology at a university in the southwest region of the United States, an OER scholar, and the creator of an OER initiative. Participant 1 was also a co-founder of a creativity and design faculty group. The OER initiative is an open textbook on foundations in instructional design technology. This participant gained knowledge of OER in his graduate work and did not create an OER initiative until after being awarded tenure. He got involved with OER because it helped to achieve his goals of better online education and better social connections between people and more learner autonomy in learner agency. Participant 1 started the OER initiative because of the lack of quality materials, provide free access to material for students, update and maintain the textbook without having to wait for new editions and for the material to match his teaching. The participant's scholarly research includes published widely in his field and according to his university profile he has produced 44 published articles, cited over 1900 times based

on google scholar, published and OER initiative and co-developer of an open education badges program.

   Participant 2. This participant was a male, highly skilled project manager with expertise in educational technology and over 10 years of international experiences working with governments, higher education institutions, and Technical and Vocational Education and Training (TVET) institutions in Asia, Africa, Americas, Europe, the Pacific, and the Caribbean. Participant 2 is currently an OER advisor employed by an international intergovernmental organization based in Canada. The participant's employer allows the participant to work directly with institutions and governments to assist in mainstreaming OER to be accepted and used. This participant over five years of experience teaching and scholarly work in OER. Based on a google scholar profile participant 2 has 51 published articles that include research on OER, re-use and adaption of OER, and OER trends in Asia. This participant has international experience mainstreaming OER initiatives and has firsthand experience on what it takes to create, develop, and manage OER initiatives in higher education. Experiences include visiting countries across the Asian continent advising the governments on the benefits that OER have to the university institutions and assisting with the development of OER. Participant 2 OER initiative is working with 52 countries around the world to help governments and institutions put their OER policies together, capacity building for teachers and trainers in terms of using, reusing, and developing OER. Also included in his initiative is involved with OER course material development to develop open textbooks, and OER course material for reuse and remixing.

Participant 3. This participant was a male digital learning services librarian at a four-year institution in the southwest United States with leadership in an OER initiative. Participant 3 is a proponent of having higher education institutions reduce the course costs as much as possible. The initiative was promoting OER to faculty as part of their affordability program and putting out a call to the deans of the university to get faculty to submit proposals for creating an open education resource for their course. The affordability program was established by the university to make the cost of college affordable to students and OER is part of the program. This participant has four years of experience working directly with the OER initiative at their employer's institution. The participant got involved with OER because their employer asked them to attend a conference and, from there, help lead the OER initiative on campus.

Participant 4. This participant is a male chief information officer within a department of a university in the Midwest region of the United States. Prior to higher education participant 4 was a science teacher for 12 years. Participant started an OER initiative because of their frustrations with cost, access, and commercial publishers. The participant's leadership role has helped create a well-known national OER initiative that has been around since 2012. The initiative is an open textbook network site that provides a catalog of over 500 open textbooks. The initiative was done in order to create a space for higher education to take ownership of their academic course content. Participant 4 has experience with leading and developing OER initiatives on campuses across the United States.

Results by Research Questions

This section reports findings from the study. The research questions that guided the study were developed from the OER literature review and dissertation committee feedback. Data to answer RQ1 – RQ4 were obtained from interviews. Each participant was asked the same questions from the list provided in Appendix A. In Table 3.2, the interview data matrix provides an understanding of how the data from the interviews answered the research questions. In the following sections, data are provided for each research question.

RQ1: What makes individuals at higher education institutions embark on Open Education Resources (OER) initiatives?

The purpose of this research question was to discover the reason why institutions embark upon OER initiatives. Participant responses were analyzed according to the analysis method in chapter 3, and they led to the identification of two themes, which are presented in detail below.

Theme 1: OER initiatives are started on campus by faculty who want to control their teaching materials and scholarly publishing

During the interviews, participants indicated that one of the reasons they got involved in OER initiatives is their desire to have more control over their teaching and publication materials. Participants spoke of faculty's struggle to get quality material in the classroom, which were often followed by struggles to launch OER initiatives.

The four participants shared their insights either from firsthand experience or from instances in which they consulted with faculty on what led them to start their OER

initiative. Each of the participants discussed personal experiences with taking control of their teaching with initiating OER and publishing.

Reflection on how participants began their OER initiatives. Each participant was able to articulate how they first got started in with their OER initiative. Participant 1, who was a faculty member at a four-year higher education institution, shared,

I did not find very many pieces that I thought were really good … [that] I could use ... I had a call for authors, and I had authors write new chapters for the book. And we licensed those books as creative commons license because I couldn't find good material on my own. There did not exist good content I felt like for this style of book.

Participant 2, who was an OER advisor for an international intergovernmental organization shared how he got involved with OER after being involved in an OER project for 5 years as a co-investigator. He stated,

I've been in OER since 2008 or 2009. My first point to OER was that I started as the co-investigator for the OER Asia study…where we research the OER landscape in Asia for about 5 years…and then of course I started more and more into OER course development and OER policy and things like that.

Participant 3, who was a senior librarian working directly with faculty on OER initiatives, described a time in which the university librarian put out a call to deans of the university for faculty who are interested about open education resources stating, "…she [university librarian] contacted some of the deans, and we received six proposals for an open education textbook." Participant 3 also spoke about his experiences with one of the professors "we had one professor who adapted a textbook, pulled in some of the content,

created some of the other content, and then a faculty who created a whole new source. So, we had both the adapt, adopt, and create in that process of the courses that we had."

Participant 4, a chief operating officer in an academic department in a four-year institution, shared,

We started looking at different content and what students could benefit from and got quite frustrated when looking at the benefits of different electronic models from commercial publishers and didn't see a lot of benefit, either cost benefit or just access benefit. So, the idea of open textbook came up, and we started digging into that and then I just started trying to identify barriers in our own college of why faculty wouldn't adopt and then tried to solve them and that's been the work for the last seven or eight years now. It's basically trying to solve whatever barriers pop up. Whatever faculty say are barriers, or staff say are barriers, we're trying to solve that…

Reflection on how engaging in OER helps give control over publishing.

Participants explained how OER initiatives provide them control of publishing. Participant 1, spoke on the difficulties for his course material stating,

There are other books that are great, but I thought they were usually more advanced—more like not an introductory level material but more advanced material. There is open journal, but once again, those are journal articles about a special research study not about general topics like motivation and cognition and things like [that]. There just wasn't really good open material that I could use for the book… I thought maybe making it open it can be more easily update[d] every year and maintained more easily. So, anyway, that was the genesis of the idea …

Participant 3 shared,

> You have to look at the accessibility. How easy is it for me to reuse, revise, remix
> this material? Let's say, for example, if I have this excellent piece of material as a
> PDF and another not so excellent but closed material as an HTML. The HTML
> would be much easier for me to manipulate and remix [than] to try and do it with
> the PDF…

**Theme 2: Individuals get involved in OER initiatives either because they are
employed at an organization that has OER or come from an institution that had an
OER initiative**

A second theme that emerged from analyzing the data for this research question
was the idea that individuals start OER initiatives. These individuals often come to an
institution having held previous jobs that related to OER. As such, their past experiences
motivate continued involvement in OER initiatives. The data that follow relate to reasons
behind individuals getting involved with OER initiatives or their experiences with OER
initiatives.

Participants discussed how their employer was a reason for the OER initiative.
Participant 1 shared his reasons, "I was aware of [OER] all throughout my graduate work.
I was aware of the work of Dave Wiley. I use[d] to read articles in Tech Trends that came
out every couple months where he was advocating for open education." Participant 2
shared,

> I work with 52 countries around the world, which is the common world, where I
> help governments and institutions put their OER policies together. I then do
> capacity building for teachers and trainers in terms of using, reusing, and

developing OER. And I am also involved with OER course material development

where I help organizations, institutions, and government develop open textbooks,

OER course materials for reuse and remixing.

Participant 3 shared,

About four years ago … the university librarian asked me to attend a pre-

conference at ALA Midwinter on open education resources. That's where it

began, and from there, I've just been trying to get it more and more prominent on

our campus, because it's kind of been a hard sell in some respects.

Participant 4 shared,

How I got into open education was working in this role…in the College of

Education, and most of that role entails leading a team that's [responsible] for

academic technology … there was a point in time where the dean of the college

was very interested in mobile devices, and content was one place we thought

maybe we could innovate.

The participants shared their prior experience with open education resources as a

reason for leading an OER initiative. Participant 1 shared,

I was interested in open education but in so much as it helped to achieve other

things that I was trying to accomplish …[including] better online education, better

social connections between people, more learner autonomy in learner agency and

learning. It was those kinds of things that I cared about, and open education

became part of the solutions for those challenges.

Participant 2 shared,

I have been involved in the creation of OER from all perspectives. From the

person who is actually writing the OER, person who is actually sourcing OER,

remixing, the person who has been leading these teams, the person who has been

training people to use OER. It's not as straightforward as you may think, I have

published quite a number of papers on how to go about creating OER, using

OERs, and remixing OERs.

RQ 2: What are the benefits and challenges experienced by individuals at higher education institutions implementing and sustaining OER initiatives?

The purpose of this question was to learn of the different ways institutions sustain

OER. The following two themes emerged from the data analysis: 1) Higher education

institutions benefit from OER at three levels: faculty, students, and institutions and 2)

The challenge higher education institutions face is the ability to agree on how to

implement and sustain open education resources.

Theme 1: Higher education institutions benefit from OER at three levels: faculty, students, and institution

The data explains how OER is a benefit for higher education institutions for the

faculty, students, and the institution itself. Participant 1 shared,

I taught … the introductory course for our master students, graduate students, and

we had a textbook that we used that I thought was very good but it was expensive

and it also didn't update as quickly as I was hoping that it would update ... I was

finding that I was still collecting articles to give to students in addition to the

textbook, so they were reading the textbook plus the articles and I wanted to be

able to give my students something that contained all the writing that I wanted them to read.

Participant 2 shared, "When I do capacity building, I always point to OERs, which were developed by an institution, and OERs where an institution has put their name on it. So, at least we know that an institution will not release a piece of material as an OER without some sort of quality assurance going into it." Participant 3 shared that, "Personally, I believe that quality is in the eye of the beholder. Having said that, what I mean is that faculty really need to determine what is quality for their courses." Participant 4 shared, "Rule number one that we have is we don't define quality resources. That's a faculty member's job."

Participants provided ideas on how OER can benefit the institution academically. Participant 1 shared,

I didn't want just any chapter being part of the book. I served as an editor, and I rejected some things. I didn't allow some things in the book. I think having someone who still serves as an editorial role is important … You still have some kind of vetting service … we had my editorial work on it to try to make sure the material in the book was good material.

Participant 2 shared, "If you have a course team … rather than going through a material written from scratch, you can have them doing various tasks like looking at videos, incorporating audios." Participant 3 shared, "We learned quite a bit through that process, in that we did not have a memorandum of understanding signed by the librarian and by those parties. As a result, even though we stated explicitly that whatever product you produce needs to be completely open." Participant 4 shared,

I would say that the biggest challenge is that it's not the existing model and it takes a different paradigm of thinking. It's a big shift in paradigm. It isn't just free books. It's a shift in thinking that commercial textbook providers … is just the way it works, as people accept that rather than thinking what's the best for our students.

Data from the interview also showed a common belief from participants that OER initiatives benefited students particularly in regards to the cost of education, giving faculty academic freedom, and the institution aligns with its mission to provide access to education. Participant 1 shared, "The nice thing about OER is that you can take this open book and I can replicate and create a new version of it and take all the chapters again and then just add on some new material that's specific to my students. So, that's kind of exciting that you can do with OER."

Participant 2 shared, "I'm using this OER because OERs give me a certain amount of freedom to use this in my work. Participant 2 also shared the belief that,

basically, empowering people, empowering teachers to create their own videos [rather] than depending on someone or something else … I think the only way we can mainstream [OER] is to empower academics to [create materials] themselves. If the academic needs to depend on an education technology department, media department … if they have to have big budgets to repurpose an OER or create a video, and if they have to work with software companies to purchase licensers, to repurpose OERs, then the whole philosophy breaks down.

Participant 3 stated, "The benefits, for the student, it's a really easy sell, because they're all about saving money, so affordability really speaks to them." Participant 4 shared that,

> Basically, the benefits are that it is aligned with what we're supposed to be doing in higher education. So again, if you look at pretty much any mission statement of a college or university, it will talk about access. It will talk about educating everyone. Educating students or educating the community or educating a diverse group of people or educating, you know, and so their mission statements are always very inclusive. But when it comes to our practices and you think about textbooks, it is not inclusive for a number of reasons.

Theme 2: The challenge higher education institutions face is the ability to agree on how to implement and sustain open education resources

All participants in the study spoke about the challenges that higher education institutions have on sustaining open education resources. This theme speaks to faculty obstacles, institutional challenges, lack of united direction, and internal issues related to OER.

Participants explained that OER initiatives on campus often lack a unified direction. Participant 1 shared, "I think we need some kind of screening or editorial role that maybe organizations can help to help us find good high-quality OER. It could be crowdsourced as well." Participant 2 stated, "It [creating an OER] takes at least two, three years to do. And it takes a lot of effort, in terms of sustaining and mainstreaming OERs." Participant 4 shared, "Sustainability with OER, in my book, I think, the best

solution for a number of reasons is higher education institutions just own it, are responsible for it, and they fund it."

Participants also spoke of internal issued that institutions face when it comes to sustaining open education resources initiatives. Participant 1 shared that they become their own publisher,

[You're responsible for] all of what the traditional publisher would take care of. You just give them the book, and they take care of the rest. In this case, I had to hire and manage people to do all [the] things that a traditional publisher would do, so that took extra time and it's extra work.

Participant 2 shared, "Most of the time for my research, I've found that it cost[s] more to create an OER than to write something from scratch and put the CC license on it." Participant 3 shared that the experience from the library "were not very far along in the sustainability. We have, the library itself, has some OER, and at the library, we don't do very well at sustainability…" Participant 3 goes on share that, "Sustainability is one of those issues because there are so many different aspects of sustainability" and brings up the example of, "One of the pieces that we wrote into the call for proposals was a sustainability issue. That is, how do you plan on maintaining it into the future? That's one of the things we had in terms of experience we don't have a lot of experiences in it yet, because it's so new."

Another component of this theme was that faculty face obstacles when they want to implement and create their own open education resources. Participant 1 shared,

A lot of professional organizations I asked if they wanted to be sponsors of the book, and they didn't because it conflicts … they get revenue from commercially

published books, and an OER book will give them no revenue so what's the

incentive for them to sponsor my book… economically they don't feel like they

can support it because it would undermine their revenue sources. There's that

challenge with [getting] organizations to sponsor.

Participant 1 also makes a point about not getting tenure credit for OER initiatives,

the other challenge is that traditional universities don't give the same credit for

doing open books like they do for commercial books. If I were to go write a

commercial book and publish it with Routledge or something, I would get credit

for that and they would get excited about that. And they would publish it in their

magazine that I published a book with Routledge. And this is a textbook for the

field, and I would get credit for tenure and all those kinds of things. Open books

don't get you the same credibility toward tenure.

Participant 3 shared,

Somebody has to pay for these open resources, and that's one of the biggest

issues, is finding the money to [pay] for it. That why we went to the library board

to get that, but we don't have a steady income. The university hasn't provided a

line item for open [OER] as of yet, so we don't have a steady income.

Participant 4 share, "Remember I said how complicated publishing actually is. The

reason is because there are a lot of skill sets needed. There are copy editors. You need to

be able to create illustrations. You need to have some editorial review."

Participants share their experience on how implementation of OER is challenging

because of the lack of definition of quality. Participant 1 shared that, "I think, in general,

OER struggles. I think because it's almost too easy to create OER and throw stuff out on

the website … there's a lot of bad stuff out there; there's no good way to find the good stuff and all the bad stuff. It's just a mess right now." Participant 2 shared that, "There is no such things as quality OER. It's all about fit for purpose." Participant 2 further explained, "if you take, like, the current quality assurance mechanisms, like for example, OER commons, you get the star rating, the five-star rating, or the user-rated OERs, your perception and my perception would be completely different in terms of a piece of OER."

Participants go on to share how challenges continue at the institutional level that impact the implementation of OER. Participant 1 shared the challenge of getting anyone outside of their institution interested. They stated,

> In the textbook, the idea of the textbook was to create a corpus of articles that would be fairly general to all students from all different department[s], but one of the sections of the textbook that I originally envisioned…we would talk about the history of our department and talk about current trends and topics in our department, the current things that are faculty are studying. So, that's a section of the book that wouldn't be relevant to anyone else outside of [the institution].

Participant 2 shared, "It's a radical shift in thinking, so it takes a while to change the mindset of an institution to go down the open route in terms of utilizing OER and collaborating." Participant 2 goes on to share, "so unless you tackle that barrier up front, you know OER has become very daunting and challenging to implement."

Participant 3 shared that, "The faculty are aware of the cost of the course materials, and that they are doing their best to help students reduce the cost. The problem with that is that maybe there are a few faculty who aren't concerned about it, so they don't even worry about it." Participant 4 also shared about the institutional challenges, "I

mean faculty … they'll throw out 20 different barriers, reasons why they wouldn't adopt an open textbook but they're addressable, most of them. Most of the time, and if they're not addressable then that's just simply where things are at, at their institution and they're not quite ready for it and that's OK."

RQ 3: How are individuals at higher education institutions sustaining OER initiatives?

The purpose of this question was to understand what is influencing how institutions choose to sustain OER. The selected participants answered the questions from their experiences in sustaining OER initiatives. The following theme emerged from the data analysis: (1) Sustaining OER initiatives requires financial resources and the establishment of a sustainability model.

Theme: Sustaining OER initiatives requires financial resources and the establishment of sustainability model

The participants in the study spoke about the requirements needed to sustain OER initiatives, the challenges OER initiatives face, and how institutions need to establish sustainability models.

The selected participants spoke of a need for institutions need to establish sustainability models. Participant 2 shared that,

An OER course material might be free, but that doesn't necessarily mean that a learner can learn from the material. They might need tutoring, they might need extra support, they might need hands-on support; you know, things like that. There are new business models emerging around OERs. You give away the material for free; you charge for the expertise.

Participant 3 shared that, "Yes, sustainability is one of the biggest issues we face." Along with the challenge of sustainability, participant 3 also shares that, "We have, in the library itself, a library committee, and the charge of that committee is to get together to find ways how we can leverage library resources to support affordability on campus." Participant 4 shared that,

Well, again, I think we're looking to our community for everything really. I mean, we will provide whatever services we can that makes sense for us to do. So, for instance, professional development for people. We could provide professional development. In fact, we put out a guide on how to edit open textbooks. There's a guide out there on our website so that our member[s] can learn about best practices of keeping things up to date or editing them, right? So, what we can do is provide some expertise from our community so that other people can figure out how to do it on their own because, again, that's our ultimate goal … allow them to do all of this on their own.

The selected participants also shared how sustaining OER initiatives requires financial resources. Participant 1 shared,

I think we also need better ways of financing [OER], and I think that's something universities could take a little better role on. And instead of all the money that … every university library spends to pay for commercial content. If we took some of that money to pay for the creation of OER content, that would reduce the burden on faculty and would allow for more faculty to create OER content.

Participant 2 shared that, "If you take the example of creating an open textbook, like through an endowment or through government funding, it's basically, you know, you're

paying someone to write something and then putting a license on it. So that's just, you know, a small portion of the OER movement." Participant 3 shares that,

> About three and half years ago, we pitched to the…board an idea about open education resources, how we wanted to promote them on campus to faculty. In doing that, we received [a] much more positive reaction than we expected. We received more money promised than what we even expected.

Participant 4 shares that, "I'm still getting funding for the Hewlett Foundation but that's really being used to, now that we've grown so big, I need some kind of central staff and so it's basically funding central"

Another component of this theme is the perspective from participants that regarding how institutions face challenges in sustaining OER initiatives.

Participant 2 shared,

> Only when OERs have been embedded in all the policies and procedures of the institution will it become sustainable, and the movement will continue to happen. Otherwise, if it's just one of the projects, like pilot projects, and if the institutional policies don't change, then OERs will not become successful or mainstream in a particular institution.

Participant 3 shared a challenge when asked about experience with sustaining OER resources: "We have very little experience at this point because the program is so new." The participant also shared, "They [library] also recognize the sustainability issue and have determined that in order for them to sustain and maintain the content of that text, they're going to hire someone to do that, but the funding for that needs to come from somewhere."

Summary

The purpose chapter four was to present the data gathered from the interviews. While 17 individuals were interviewed, this chapter only focused on the four individuals who were found to have fully answered the questions. The analysis of the data revealed that OER initiatives are initiated because faculty want to take control of their teaching materials and scholarly work. Individuals come to an institution having experience with OER initiatives and are ready to start another initiative. And last, institutions need to obtain financial resources to build a sustainable OER model. OER initiatives require more than just money; they require faculty taking the initiative and the institution providing the sustainability model that will continue OER initiatives for years to come. In the next chapter, the researcher will discuss the findings and future research that should be further explored.

CHAPTER V

CONCLUSION

The research problem that this dissertation explored was how individuals at
higher education institutions are implementing and sustaining Open Education Resources
(OER) initiatives. This chapter discusses the study's findings and implications as well as
provide recommendations for future research. The chapter is organized in four parts: (a)
summary of the research; (b) discussion of the findings; (c) implications from the
research; and (d) recommendations for future research.

Summary of Research

This study focused on OER initiatives in higher education. Four participants
involved in higher education OER initiatives were interviewed. The four participants
were a senior librarian, a tenured professor, an OER advisor to an intergovernmental
organization working directly with higher education institutions, and a chief information
officer in a higher education institution. Participant were interviewed online through
Google phone, Skype, or Zoom and captured with ScreenFlow and provided personal
perspectives from their experiences with OER initiatives. The interview questions (see
Appendix A) were designed to gain an understanding of the following: the benefits and
challenges experienced by a higher education institution implementing and sustaining
OER initiatives, how higher education institutions implement and sustain OER initiatives,
and what makes higher education institutions embark on OER initiatives. Interviews

were transcribed using structural coding, and themes were developed using a six-phase thematic analysis. To make it clear the claims made in this study are only referring to participants' reports of their own experiences and expertise with OER and not intended to definitely, objectively describe a larger scale phenomenon (i.e. the general ways in which OER initiatives actually are being implemented and sustained in higher education institutions across the world).

After going through the six-phase thematic analysis approach, the researcher derived five themes: (1) OER initiatives are started on campus by faculty who want to control their teaching materials and scholarly publishing; (2) individuals get involved in OER initiatives either because they are employed at an organization that has OER or come from an institution that had an OER initiative; (3) higher education institutions benefit from OER at three levels: faculty, students, and institution; (4) the challenge higher education institutions face is the ability to agree on how to implement and sustain OER; and (5) sustaining OER initiatives requires financial resources and the establishment of a sustainability model.

Discussion of Findings

This section discusses the findings from the research that illustrate how participants' experiences led them to embark on OER initiatives, the benefits and challenges with OER initiatives, and how institutions are sustaining OER initiatives. Themes in the study were analyzed using thematic analysis approach and confirmed through a trustworthiness process of peer checking and written memos (Nowell, Norris, White, & Moules, 2017). The exploratory qualitative study method provided an in-depth analysis of the ideas, opinions, and experiences of the small group of participants of this

research who met the purposive sampling criteria and not necessarily a representative smaple of the large international population. Throughout this section, the literature review will be used to discuss the study's findings.

Embarking on OER

A key goal of this dissertation was to discover how OER initiatives are started. This study first explored the reasons why individuals embark on OER initiatives. The first theme lets us know that OER initiatives are started on campus by faculty who want to control their teaching materials and scholarly publishing. There is a sense of ownership from participants and a desire for control about what the faculty creates, which is met by OER. Participant 2 made a strong statement about the value of OER that the rest of the participants echoed: "Basically, [OER is] empowering people, empowering teachers, to create their own videos [rather] than depending on someone or something else." This sense of empowerment that comes when educators take control of their teaching and publishing, is also coupled with a desire to have flexibility in maintaining the created material. As Participant 1 shared, "I thought maybe making it open, it can be more easily updated every year, and maintained easily."

The findings that led to the creation of this theme are consisted with the literature on how OER gives educators the ability to reuse material for classroom purposes (Bissell, 2009). It is important to highlight how OER empowers educators because it allows them to share knowledge, reuse materials, and offer free access (Yuan, MacNeil, & Kran, 2008). From a creator's perspective, creative commons licenses increase flexibility and further empower individuals to create educational material (Huerta, 2006) without having to rely on a regular book publisher's schedule (Williamson, Stevens, Silver, & Clow,

78

2016). However, they do not give educators free range to copy whatever they feel is important to their educational teaching and scholarly work. Any individual working with OER understands there are limitations on what can and cannot be considered open, based on the type of creative commons license a piece of content uses (Huerta, 2006).

The appeal of OER initiatives can perhaps also be linked to academic freedom. When educators feel empowered and flexible in their teaching and scholarly work, then there is truly academic freedom. Academic freedom is threatened when individuals cannot maintain their own publishing and do as they see fit with their material. The study participants voicing a need for flexibility and empowerment directly connects to the purpose of OER and what OER can do for education. Creative commons licenses are tools that protect the freedom of educators; they let educators choose how to express their scholarly work, which may not always happen with a regular book publisher (CERI and OECD, 2007).

The concepts encapsulate in this theme however, seem to contradict some of the literature. Specifically, participants contradicted the research done with business management professors, who said their academic freedom would be threatened by having to use cheaper textbooks (Williamson, Stevens, Silver & Clow, 2016). While participants in this study stated that flexibility and empowerment are necessary to academic freedom, management professors saw this as a threat to their academic freedom (Williamson, Stevens, Silver, & Clow, 2016). Perhaps, then, the academic freedom is based on personal opinion. Educators wanting the flexibility to update their material highlights their struggle to get quality material in the classroom. OER provides the flexibility that

educators want not only to control their scholarly work but also to have the choice of selecting quality material.

Not all individuals who get involved with OER initiatives do so because of academic freedom. The findings from this study also revealed that individuals get involved because they are either employed at an organization that has OER or come from an institution that had an OER initiative, which is the second theme. This finding conveys OER initiatives do not simply occur by happenstance. Based on what the participants shared, it can be argued that institutions do see value in OER and appear to recruit individuals with experience in OER to lead these initiatives. The research showed that some individuals came to their institutions with past experiences in OER, and that experience is what motivated their involvement in OER initiatives at the institution they were working during the interview. These motivated individuals, it stands to reason, will provide higher quality assurance, helping remove doubt from those who believe that OER has no quality assurance. This is important to recognize because one of the issues with OER is the perceived lack of quality assurance (Camilleri, Ehlers, & Pawlowski, 2014; Ehlers, 2011a). Participants stated that their graduate work, current job, or previous employer provided the tools and experience they needed for OER initiatives. Having individuals experienced with OER initiatives may challenge the perception of no quality assurance and that materials produced are less of value than those of commercial publishers. Experience can bring quality assurance and lead to the establishment of the proper assessment of quality (Lane, 2008). Having experienced individuals in OER initiatives can lead to less doubt on quality assurance and increase the usage and acceptance of OER on college campuses.

Implementing and Sustaining OER Initiatives

The second research question to the study asked: What are the benefits and challenges experienced by individuals at higher education institutions when implementing and sustaining OER initiatives? The first theme that emerged when analyzing data for research question two was that higher education institutions benefit from OER at three levels: faculty, students, and institution.

According to the participants in this study, there are many challenges and benefits that higher education institutions experience when implementing and sustaining OER initiatives. Students benefit from OER because it saves them money from purchasing textbooks, whereas institutions face challenges with maintaining the initiatives. This is not the case academically, though, as faculty, students, and institutions all benefit from OER initiatives. However, they do so in different ways. A benefit from OER initiatives is that the individual controls quality. As Participant 3 stated, "Personally, I believe that quality is in the eye of the beholder. Having said that, what I mean is that faculty really need to determine what quality for their courses is." Such perspectives make it even more challenging when attempting to define "quality"; however, it does align with Wiley & Gurrell (2009) who stated "quality does not have a meaning" (p. 19). Allowing individuals to define quality is perhaps one of the appeal educators have with OER, which in turn can mitigate the pushback that educators have given OER because of the lack of quality assurance (Kimmons, 2015). Individuals taking control of the definition of quality can be a benefit; however, broadly knowing what quality is and is not with all OER can be open for further research.

An additional benefit of OER articulated by participants is being able to save students money. Researchers have long illustrated that students save a significant amount of money from OER (Hilton, Gaudet, Clark, Robinson, & Wiley, 2013; Hilton, Robinson, Wiley, & Ackerman, 2014; Sclater, 2011). For example, OER adoption can reduce a student's textbook cost from $900 per year to $0 (Hilton, Robinson, Wiley, & Ackerman, 2014), and that is one of the benefits that Participant 3 highlighted in the interview: "[OER are] all about saving money." The cost savings of OER benefits not only the student but also the institution. That is because students will not have to reduce their course loads (Hilton, Gaudet, Clark, Robinson, &Wiley, 2013; Senack, 2014) due to the financial constraints of paying tuition. OER offers access to education, and the participants confirmed this with their statements.

The challenges that come with OER initiatives deal with sustainability. This is covered by the second theme for research question two which was the challenge higher education institutions face is the ability to agree on how to implement and sustain open education resources. According to the literature, for something to be sustainable, it does not require additional funding for it to continue (Grove & Pugh, 2017), be scalable (Koohang & Harman, 2007), and link to a business model (McGill, 2013). The participants' comments agreed with the challenges stated in the literature. Participant 3 stated, "We're not very far along in the sustainability." For OER initiatives to be sustainable, administrators must make a concerted effort to accept OER and provide resources, such as staff, funding, and acceptance, on campus to sustain the initiatives.

The data also showed that there may be challenges with sustaining OER coming from the institution by not rewarding tenure credit. Participant 1 shared that, "Traditional

universities don't give the same credit for doing open books like they do for commercial books." This is supported in the literature, which mentioned that of one of the biggest concerns from faculty getting involved with OER was the lack of a reward system for developing OER (CERI and OECD, 2007; Rolfe, 2012). If the institution provides no incentive or credit to write OER, then it can be difficult to motivate a tenured track faculty member to either create or adapt an OER.

It is difficult to sustain OER projects for many reasons: institutions don't offer support, publishers feel OER threatens their bottom line (Sclater, 2011), and currently no definitive sustainability model exists to support the technology, workflow, and staff to administer the OER (Wiley, 2007). The theme to research question three was sustaining OER initiatives requires financial resources and the establishment of a sustainability mode. The common refrain from participants concerns the challenges they faced with staff availability to help with the OER; in essence, they had to become their own publishers. For OER to sustain itself, there must be a growing community of the masses (Dholakia, King, & Baraniuk, 2006). The disruption that OER initiatives can make in higher education (Sclater, 2011) is perhaps a reason why OER initiatives continue to face sustainability challenges.

Implications

The data gathered for this study show that OER initiatives can benefit faculty, students, and institutions. However, challenges still persist. One of such challenges is that OER initiatives lack financial resources and an established sustainability model. The themes from each research question not only provide evidence of how OER initiatives are

a benefit to higher education with students, faculty, and administration, but they also illustrate the challenges in establishing a sustainability model.

Sustainability is an important issue because it can lead to OER initiatives to phase out when they run out of money. It is interesting to know the insights participants provided for solving the sustainability issues. Participant 4 mentions providing professional development when asked the same question about institutions sustaining OER initiatives. Participant 1 provided the solution of having the library use some of the money it spends on commercial books to finance OER initiatives at the institution instead. One implication from the study is the need for libraries to focus their efforts on the future, which is open access material, and reduce the number of commercial textbooks they purchase. Offering a virtual library to anyone in the world where the majority of textbooks are created or adapted by an institution's faculty would be a benefit to other educators who would want to reuse or remix for their teaching. However, without a sustainability model that works for the institution, OER initiatives will continue to face challenges and need to rely on foundations, grants, and small initiatives from the universities to continue.

The findings from the research add to the body of knowledge of literature on OER. OER initiatives have been going on for the better part of this past decade and will likely increase in numbers in the future. Findings from this research—including that faculty want to control their teaching and scholarly publishing; past experience with OER gets individuals involved in future OER initiatives; and all three main groups in higher education, students, faculty and institution, benefit from OER—can be the baseline for more research on OER initiatives in higher education based on location, prestige, and

acceptance of OER by an institution's administration. Understanding why OER initiatives continue to struggle, agreeing on how to implement and sustain OER, as well as finding the correct sustainability model, could be sufficient to help institutions know how to properly implement and sustain OER initiatives in higher education. Perhaps the threat that OER initiatives have in higher education can be a reason for the lack of sustainability (Sclater, 2011). It could also be that faculty may have doubts because of the lack of quality assurance (Ehlers, 2011a; Ehlers, 2011b; Larson & Murray, 2008; Yuan, MacNeil, & Kraan, 2008; Mulder, 2007) or a preference in choosing their own textbook to use in the classroom (Williamson, Stevens, Silver, & Clow, 2016). There still needs to be a sustainability model that works for the institution itself.

OER is a way to reduce the costs of education for students, especially those who find it difficult to pay for their education. In some ways, OER has made it so anyone with a computer can create or consume educational material. However, what will allow OER to last is its quality and sustainability, and the OER community has yet to define these terms. If institutions cannot accept OER initiatives on campus because of their quality, then institutions must start adopting lower cost textbooks or, at the very least, subsidize the cost of textbooks for students. OER is not a bad thing for institutions. Institutions could still make money from OER by charging students a fixed fee for its use instead of the average $900 they spend annually on textbooks (Hilton, Robinson, Wiley, & Ackerman, 2014); that way, institutions have money to support their OER initiatives for the long run, rather than just relying on grants. The fee can support the initiative and the staff that run the day-to-day operations of the OER initiative.

Recommendations for Future Research

Based on the data collected for the study and the literature reviewed, several recommendations can be made for future research. OER initiatives are still fairly new. This newness means that there is not yet an agreed upon definitive definition on quality and sustainability. Moreover, there has not been a definitive sustainability model that any of the participants said works the best. Interviews are important but can be a challenge when individuals are having trouble themselves with OER initiatives. Not one participant could say that their initiative was running smoothly and had buy-in from the majority of their university. Not knowing why other faculty would not accept OER or had a hard time accepting OER was a missing piece to the research. A future study could explore sustainability models in higher education that examine the financials, management, and mission of the models. The focus would be to interview individuals in charge of the OER initiative get their insights and provide a working model that can be replicated in other higher education institutions. There was a lack of business professors involved in OER who could have contributed to the study. Therefore, the future study would include college of business professors in higher education in future studies related to sustainability models. The reason is because business professors can perhaps give insights on sustainability models for OER.

The thematic analysis approach was beneficial to the researcher because it got to the crux of what participants felt about OER initiatives, how they are being implemented, and how OER initiatives are sustained. For an OER initiative to work properly, there needs to be defined understanding of what quality is, what sustainability is, and how the OER initiative can self-fund without relying on foundations and grants. A future research

study needs to be done that establishes the definition of quality and sustainability. An agreed upon definition of quality and sustainability in OER can be a major benefit to the field with getting initiatives launched, getting faculty on board with OER, and administrators knowing what to measure in their initiative.

In regards to what makes individuals in higher education embark on OER initiatives, future research should focus on professors involved in OER from different departments, such as the business school, engineering, medical school, and humanities. The professors interviewed for this study were from the college of education. Diversity of participants could provide more insights on how and why professors from different fields embark on OER and see if there is consistency or divergence in their reasons. If there is a commonality for their embarking, perhaps there could be a future move toward finding a common definition of quality and sustainability.

Future research needs to focus on finding a common definition of quality. To be accepted by the majority of faculty, OER quality being in the eye of the beholder will not cut it, especially when there is doubt about quality assurance in OER. There isn't much doubt from the research and the literature that OER benefits students financially by saving them money and helps faculty by providing them with academic freedom and the flexibility to update their content. But the challenge with agreeing on how to implement and sustain open education resources needs further study.

Future research needs to be done on how administrators can establish a unified direction for OER initiatives. This was one of the problems that participants mentioned. Participants were left on their own to figure out how to sustain the OER initiative, and that cannot happen in institutions if OER initiatives are to succeed in the near future.

Administrators in charge of the tenure process should be interviewed and asked how OER can be accepted as tenure credit for tenure track faculty. The reward system needs to recognize OER as scholarly work for OER to sustain fresh scholarly work and have more individuals get involved. If OER cannot be considered for tenure credit, then how can tenure track faculty get involved with OER initiatives?

In regards to sustaining OER initiatives, future research needs to be done on how library budgets can focus on sustaining OER initiatives. If not libraries, then the institution itself can perhaps implement an OER fee and have that money sustain staff positions that focus on OER initiatives. If a study can prove that library budgets or institutional fees can benefit OER initiatives, then this is a potential solution for the issues with knowing the right sustainability model. Perhaps institutions need to look at how they can initiate a sustainability model for OER initiatives by implementing a reasonable OER fee to students.

Limitations

A dissertation by its very nature is bound and cannot address everything that concerns a topic. Hence, the researcher acknowledges potential research limitations in advance. This included participants not accepting invitations for the interview, a low interview response rate, and the limitation on the diverse background of the four participants that were analyzed. The researcher was not able to interview all of the candidates who were fit to address these issues.

Summary

OER initiatives require more than just money, and educators enjoy the freedom that OER provides to their scholarly and teaching work. The themes for each of the

research questions were analyzed, peer reviewed, and backed by evidence in the data. Using a thematic analysis brought forward a strong case for why institutions embark on OER initiatives, the benefits and challenges of implementing and sustaining OER initiatives, and how higher education institutions are sustaining OER initiatives. Work still needs to be done in OER that deals with faculty earning proper credit for producing OER initiatives, defining quality, how institutions can sustain OER initiatives, and how institutions can financially support OER for the long run. This research added to the qualitative literature on future research in OER initiatives in higher education.

REFERENCES

Auerbach, C., & Silverstein, L. B. (2003). *Qualitative data: An introduction to coding and analysis*. NYU Press.

Baxter, P., & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report, 13*(4), 544-559.

Bayne-Jardine, C., Bayne-Jardine, C. C., Hoy, C., & Wood, M. (2005). *Improving quality in education*. Routledge.

Belliston, C. J. (2009). Open educational resources. *College & Research Libraries News* May29, (7) 5, p284-287, 33.

Biddix, J. P. (2009, July 7). Qualitative research design [Web log post]. *Research Rundowns*. Retrieved from https://researchrundowns.com/qual/qualitative-research-design/.

Biernacki, P., & Waldorf, D. (1981). Snowball sampling: Problems and techniques of chain referral sampling. *Sociological methods & research*, *10*(2), 141-163.

Bissell, A. N. (2009). Permission granted: open licensing for educational resources. *Open Learning*, *24*(1), 97-106.

Bliss, T. J., Robinson, T., Hilton, J., & Wiley, D. (2013). An OER COUP: College teacher and student perceptions of open educational resources. *Journal of Interactive Media in Education*, *2013*(1).

Boyatzis, R.E. (1998). *Transforming qualitative information: Thematic analysis and code development.* Thousand Oaks, CA: Sage Publications.

Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. Thousand Oaks, CA: Sage Publications.

Brinkerhoff, D. W., & Goldsmith, A. A. (1992). Promoting the sustainability of development institutions: A framework for strategy. *World Development*, *20*(3), 369-383.

Camilleri, A. F., Ehlers, U. D., & Pawlowski, J. (2014). *State of the art review of quality issues related to open educational resources (OER)* (No. JRC88304). Joint Research Centre (Seville site).

Casany, M. J., Alier, M., & Barcelo, M. (2012, October). Integration of M-learning and LMS: A sustainability approach. In *Computers in Education (SIIE), 2012 International Symposium on* (pp. 1-6). IEEE.

Caswell, T., Henson, S., Jensen, M., & Wiley, D. (2008). Open content and open educational resources: Enabling universal education. *The International Review of Research in Open and Distributed Learning*, *9*(1). Retrieved from http://www.irrodl.org/index.php/irrodl/article/view/469/1001

Centre for Educational Research and Innovation and OECD Organization for Economic Cooperation and Development (CERI). (2007)*. Giving knowledge for free, The Emergence of Open Educational Resources*, [online report]. Retrieved from http://www.oecd.org/document/41/0,3343,en_2649_35845581_38659497_1_1_1_ 1,00.html.

Cheong Cheng, Y., & Ming Tam, W. (1997). Multi-models of quality in education. *Quality assurance in Education*, *5*(1), 22-31.

Chua, C. (2004, July). Perception of quality in higher education. In *Proceedings of the Australian universities quality forum* (pp. 181-187). Australian University Quality Agency Melbourne.

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.

Clewes, D. (2003). A student-centred conceptual model of service quality in higher education. *Quality in Higher Education*, *9*(1), 69-85.

Corcoran, P. B., Walker, K. E., & Wals, A. E. (2004). Case studies, make-your-case studies, and case stories: a critique of case-study methodology in sustainability in higher education. *Environmental Education Research*, *10*(1), 7-21.

Creative Commons Website. (2018, August 2018). Retrieved from https://creativecommons.org/licenses/.

DesSantis, L., & Ugarriza, D.N. (2000). The concept of theme as used in qualitative nursing research. *Western Journal of Nursing Research, 22*, 351-372.

De Langen, F. H. T. (2013). Strategies for sustainable business models for open educational resources. *The International Review of Research in Open and Distributed Learning*, *14*(2), 53-66.

De Langen, F. H. T., & Bitter-Rijkema, M. E. (2012). Positioning the OER business model for open education. *European Journal of Open, Distance and e-Learning*, *15*(1).

DeVries, I. (2013). Evaluating open educational resources: Lessons learned. *Procedia-Social and Behavioral Sciences*, *83*, 56-60.

Dinevski, D. (2008, June). Open educational resources and lifelong learning. In *Information Technology Interfaces, 2008. ITI 2008. 30th International Conference on* (pp. 117-122). IEEE.

Downes, S. (2007). Models for sustainable open educational resources. *Interdisciplinary Journal of E-Learning and Learning Objects*, *3*(1), 29-44.

Ehlers, U. D. (2011a). Extending the territory: From open educational resources to open educational practices. *Journal of Open Flexible and Distance Learning*, *15*(2), 1-10.

Ehlers, U. D. (2011b). From open educational resources to open educational practices. *Elearning Papers*, *23*, 1-8.

Farisi, M. I. (2013). OER On The Asian Mega Universities: Developments, Motives, Openness, And Sustainability. *Turkish Online Journal of Distance Education*, *14*(1).

Fischer, L., Ernst, D., & Mason, S. L. (2017). Rating the Quality of Open Textbooks: How Reviewer and Text Characteristics Predict Ratings. *The International Review of Research in Open and Distributed Learning*, *18*(4).

Friesen, N. (2013). Realising the open in open educational resources: Practical concerns

       and solutions. In McGreal, R., Kinuthia, W., Marshall, S., & McNamara, T.

       (Eds.), *Open educational resources: Innovation, research and practice* (pp. 79-

       90). Retrieved from

       http://oasis.col.org/bitstream/handle/11599/486/pub_PS_OER-

       IRP_web.pdf?sequence=1.

Fulantelli, G., Gentile, M., Taibi, D., & Allegra, M. (2008). The open learning object

       model to promote open educational resources. *Journal of Interactive Media in

       Education*, *2008*(1).

Geith, C., & Vignare, K. (2008). Access to Education with Online Learning and Open

       Educational Resources: Can They Close the Gap? *Journal of asynchronous

       learning networks*, *12*(1), 105-126.

Geith, C., Vignare, K., Bourquin, L. D., & Thiagarajan, D. (2010). Designing Corporate

       Training in Developing Economies Using Open Educational Resources. *Journal

       of Asynchronous Learning Networks*, *14*(3), 3-12.

Goddard, D., & Leask, M. (1992). *The search for quality: Management in education.*

       London: Paul Chapman.

Grove, M., & Pugh, S. (2017). Defining 'sustainability indicators' for higher education

       teaching and learning innovations. *Education*, *3*(1).

Harvey, L., & Green, D. (1993), Defining quality. *Assessment & Evaluation In Higher

       Education, 18*(1), 9.

Havemann, L. (2016). Open education resources. In M.A. Peters (Ed.), *Encyclopedia of Educational Philosophy and Theory.* Singapore: Springer Singapore. http://doi.org/10.1007/978-981-287-532-7_218-1.

Hendricks, C., Reinsberg, S. A., & Rieger, G. W. (2017). The adoption of an open textbook in a large physics course: An analysis of cost, outcomes, use, and perceptions. *The International Review of Research in Open and Distributed Learning*, *18*(4), 78-99.

Hilton III, J. L., Robinson, T. J., Wiley, D., & Ackerman, J. D. (2014). Cost-savings achieved in two semesters through the adoption of open educational resources. *The International Review of Research in Open and Distributed Learning*, *15*(2)

Hilton III, 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).

Hilton, J. (2016). Open educational resources and college textbook choices: a review of research on efficacy and perceptions. *Educational Technology Research and Development*, *64*(4), 573-590.

Hodgkinson-Williams, C., & Donnelly, S. (2014). Sustaining OER at the University of Cape Town: Free, but not cheap. In *Open Ed 2010 Proceedings.* Barcelona: UOC, OU, BYU. http://hdl.handle.net/10609/4843.

Hurta, M. (2006). Information ownership. In Berman, P (Editor), *E-learning Concepts and Techniques* (pp. 75-91). Retrieved from http://iit. bloomu. edu/spring2006_ebook_files/ebook_spring2006.pdf.

Hylén, J. (2006). Open educational resources: Opportunities and challenges. *Proceedings of Open Education, 4963*.

Kimmons, R. (2015). OER quality and adaptation in K-12: Comparing teacher evaluations of copyright-restricted, open, and open/adapted textbooks. *The International Review of Research in Open and Distributed Learning*, *16*(5).

Kleymeer, P., Kleinman, M., & Hanss, T. (2010). Reaching the Heart of the University: Libraries and the Future of OER. http://hdl.handle.net/2027.42/78006. Presented at the Open Education 2010 Conference, November 2-4, 2010 Barcelona, Spain.

Koohang, A., & Harman, K. (2007). Advancing sustainability of open educational resources. *Issues in Informing Science & Information Technology*, *4*.

Lane, A. (2008). Reflections on sustaining Open Educational Resources: an institutional case study. *Retrieved August*, *31*, 2010.

Larson, R. C., & Murray, M. E. (2008). Open Educational Resources for Blended Learning in High Schools: Overcoming Impediments in Developing Countries. *Journal of Asynchronous Learning Networks*, *12*(1), 85-103.

LaMorte, W. W. (2016, April 28). *Diffusion of innovations Theory*. Retrieved March 17, 2018, from http://sphweb.bumc.bu.edu/otlt/MPH-Modules/SB/BehavioralChangeTheories/BehavioralChangeTheories4.html.

Lozano, R., Lukman, R., Lozano, F. J., Huisingh, D., & Lambrechts, W. (2013). Declarations for sustainability in higher education: becoming better leaders, through addressing the university system. *Journal of Cleaner Production*, *48*, 10-19.

MacQueen, K.M., McLellan-Lemal, E., Bartholow, K., & Milstein, B. (2008). Team-based codebook development: Structure, process, and agreement. In G. Guest *&* K.M. MacQueen (Eds.), *Handbook for team-based qualitative research* (pp. 119-135). Lanham, MD: AltaMira Press.

Maguire, M., & Delahunt, B. (2017). Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. *AISHE-J: The All Ireland Journal of Teaching and Learning in Higher Education*, *9*(3), 3351-3365.

Marshall, C. & Rossman, G.B. (1999). *Designing qualitative research* (3rd ed). Sage Publication, Thousand Oaks, CA.

McConville, J. R., & Mihelcic, J. R. (2007). Adapting life-cycle thinking tools to evaluate project sustainability in international water and sanitation development work. *Environmental Engineering Science*, *24*(7), 937-948.

McGill, L. (2013). Open Educational Resources infoKit: Sustainability. Available from https://openeducationalresources.pbworks.com/w/page/26789871/Sustainability.

McGlinn, T. D. (2016). *A Study of College Professors Perception of Open Educational Resources in the Classroom* (Doctoral dissertation, Northcentral University). MIT-OCW. (2011). *MIT open courseware: 2011 program evaluation findings summary.* Retrieved from https://ocw.mit.edu/about/site-statistics/11_Eval_Summary_112311_MITOCW.pdf

Mossley, D. (2013). *Open Education Resources and Open Education.* The Higher Education Academy. Retrieved from http://dspace.vn/bitstream/11461/305/1/oer_toolkit_0.pdf.

Mulder, F. (2007). The advancement of lifelong learning through open educational

    resources in an open and flexible (self) learning context. *Accessed on February*

    26, 2017.

Namey, E. Guest, G., Thairu, L., & Johnson, L. (2008). Data reduction techniques for

    large qualitative data sets. In G. Guest & K.M. MacQueen (Eds.), *Handbook for*

    team-based qualitative research (pp. 137-161). Lanham, MD: AltaMira Press.

Ogawa, R. T., & Malen, B. (1991). Towards rigor in reviews of multivocal literatures:

    Applying the exploratory case study method. *Review of Educational*

    Research, *61*(3), 265-286.

Pan, S. L., & Scarbrough, H. (1999). Knowledge management in practice: An exploratory

    case study. *Technology Analysis & Strategic Management*, *11*(3), 359-374.

Pawlowski, J. M. (2007). The quality adaptation model: adaptation and adoption of the

    quality standard ISO/IEC 19796-1 for learning, education, and training. *Journal*

    of Educational Technology & Society, *10*(2).

Pegler, C. (2010). Building a manifesto for OER sustainability: UK experiences. In *Open*

    ED 2010 Proceedings. Barceline: UOC, OU, BYU. Accessed February 26, 2017.

    http://hdl.handle.net/10609/5141.

Pietkiewicz, I., & Smith, J. A. (2012). Praktyczny przewodnik interpretacyjnej analizy

    fenomenologicznej w badaniach jakościowych w psychologii. *Czasopismo*

    Psychologiczne, *18*(2), 361-369.

Richter, T., & Ehlers, U. D. (2010). Barriers and motivators for using open educational

    resources in schools. In *Open ED 2010 Proceedings.* Barceline: UOC, OU, BYU.

    Accessed February 26, 2017. http://hdl.handle.net/10609/4868

Rogers, E. M. (1983). *Diffusion of innovations*. Simon and Schuster: New York.

Rolfe, V. (2012). Open educational resources: staff attitudes and awareness. *Research in Learning Technology*, *20*(1), 1-13.

Saldaña, J. (2009). *The coding manual for qualitative researchers*. Thousand Oaks: Sage Publications: Thousand Oaks, CA.

Salleh, I. S., Ali, N. S. M., Yusof, K. M., & Jamaluddin, H. (2017). Analysing Qualitative Data Systematically using Thematic Analysis for Deodoriser Troubleshooting in Palm Oil Refining. *Chemical Engineering Transactions*, *56*, 1315-1320.

Santally, M. I. (2011). OERs in context-Case study of innovation and sustainability of educational practices at the University of Mauritius. *European Journal of Open, Distance and E-Learning*, *14*(1).

Schaffert, S., & Geser, G. (2008). Open educational resources and practices. *eLearning Papers*, *7*.

Sclater, N. (2011). Open educational resources: Motivations, logistics and sustainability. In *Content management for e-learning* (pp. 179-193). Springer: New York.

Shriberg, M. (2002). Institutional assessment tools for sustainability in higher education: strengths, weaknesses, and implications for practice and theory. *International Journal of Sustainability in Higher Education*, *3*(3), 254-270.

Smith, M. S., & Casserly, C. M. (2006). The promise of open educational resources. *Change: The Magazine of higher learning*, *38*(5), 8-17.

Smith, J. A., & Osborn, M. (2015). Interpretative phenomenological analysis. In J.A. Smith, Editor (3rd edition.), *Qualitative psychology: A practical guide to research methods* (pp.25-52). Sage Publications: Thousand Oaks, CA.

SPARC (2017). *OER Mythbusting.* Washington, DC: SPARC. sparcopen.org/our-

    work/oer-mythbusting

Srikanthan, G., & Dalrymple, J. F. (2002). Developing a model for quality in higher

    education. *Quality in Higher Education*, *8*(3), 215-224.

Stacey, P. (2007). Open educational resources in a global context. *First Monday*, *12*(4).

Sutton, J., & Austin, Z. (2015). Qualitative Research: Data Collection, Analysis, and

    Management. *The Canadian Journal of Hospital Pharmacy*, *68*(3), 226–231.

Toman, M. A. (1992). The difficulty in defining sustainability. *The RFF reader in*

    environmental and resource policy.

U.S. Bureau of Labor Statistics. (2016, August 30). College tuition and fees increase 63

    percent since January 2006. *The Economics Daily: U.S. Bureau of Labor*

    Statistics. Retrieved from https://www.bls.gov/opub/ted/2016/college-tuition-and-

    fees-increase-63-percent-since-january-2006.htm.

Vos, R. O. (2007). Defining sustainability: a conceptual orientation. *Journal of Chemical*

    Technology and Biotechnology, *82*(4), 334-339.

Wiley, D. (2007). On the sustainability of open educational resource initiatives in higher

    education. *Centre for Educational Research and Innovation (CERI) for the*

    project on Open Educational Resources. www.oecd.org/edu/oer

Wiley, D., & Gurrell, S. (2009). A decade of development…. *Open Learning*, *24*(1), 11-

    21.

Wiley, D. (2014). The Access compromise and the 5th R [Web log post]. Retrieved

    February 24, 2016. https://opencontent.org/blog/archives/3221.

Williamson, S., Stevens, R. E., Silver, L. S., & Clow, K. E. (2016). Sticker shock:

 Management professors perspectives on the rising cost of college textbooks.

 Administrative Issues Journal: Connecting Education, Practice, and

 Research, *1*(1), 130-139.

Yin, R.K. (1984). *A case study research: Design and methods.* Beverly Hills, CA: Sage.

Yin, R. K. (1993). *Applications of case study research*. Sage Publishing; Beverly Hills,

 CA.

Yuan, L., MacNeill, S., & Kraan, W. G. (2008). Open Educational Resources-

 Opportunities and challenges for higher education. *Educational Cybernetics:*

 Reports. Paper 1. Accessed February 26, 2017.

 http://digitalcommons.bolton.ac.uk/iec_reports/1.

Zainal, Z. (2007). Case study as a research method. *Jurnal Kemanusiaan*, (9), 1-6.

APPENDICES

APPENDIX A

Interview Questionnaire

1. Please tell me a little bit about yourself and how you came to be interested in Open Education Resources?

2. Can you tell me about your Open Education Resource (OER) initiative?

3. What led you to start the initiative?

4. What have been your experiences with creating OER?

5. What are some of the challenges and benefits that you have noticed?

    a. Have there been any benefits?

    b. Have there been any setbacks?

6. How have you been financially supporting the initiatives?

7. How do you define quality resources in OER?

8. What are your perceptions of using OER in regard to quality of resources?

9. What resources (e.g., physical, websites, databases) do you use for creating OER content?

    a. How has your selection of resources changed or stayed the same since you started creating OER content?

10. How do you define sustainability in OER?

11. What are your experiences with sustaining OER resources?

12. How do you sustain OER resources?

APPENDIX B

Peer Reviewers

Peer reviewer #1, *I looked at the materials that you provided to me. I really liked the excel spreadsheet. It helped bring everything together for me. Based on my surface level understanding of what you are here I agree with codes and themes.*

Peer reviewer #2, *In your memo - it looked like you wanted to move from codes to categories to themes. Some of these look like your codes. I think that you should have fewer categories than codes after you have analyzed your data. Overall, I think your subtheme structure looks fine. It may be possible to consolidate a couple of them together, but depending on what your participants shared in their interviews it may not.*

Peer Reviewer #3
Subthemes

1) Approaches to creating Open Education Resources_Subtheme
   a) establish a sense of quality when creating open education resources (potentially should be in #9)
   b) faculty should decide on quality of open education resources (potentially should be in #9)
   c) fit for purpose for quality content of material (difficult to tell what this one means, but may belong in #9 or #13)
   d) make open education resources work for the institution (potentially should be in #11)
   e) rating quality of OER content based on fitting my purpose (potentially should be #3 or #9)
   ***This subtheme and #11 are very similar. Could you combine the two?*
2) Approaches to sustaining open education resources on campus_Subtheme
   a) Agree with all
3) Benefits of Open Education Resources for Faculty_Subtheme
   a) Agree with all
4) Benefits of Open Education Resources for Students_Subtheme
   a) Agree with all
5) Benefits of Open Education Resources to Institutions_Subtheme
   a) Agree with all
6) Challenge with Accepting Open Education Resources_Subtheme
   a) Agree with all
7) Challenge with Creating Open Education Resources_Subtheme

a) challenge with finding reliable open education resources (potentially should be in #6)
b) challenge with open education resources sustainability comes down to time and money (potentially should be in #8)
c) faculty did not select open education resources textbook because would not work for their teaching (potentially should be in #6)
d) financially supporting open education resources through campus and salary (potentially should be in #8)
e) institutions will fail in open education resources if they do not plan (potentially should be in #2)
f) open education resources has become a challenge to implement (potentially should be in #6)
g) quality OER does not exist (potentially should be in #9)
h) traditional universities do not give tenure credit (potentially should be in #6 or #11)
i) challenge with sustainability of open education resources because of lack of experience (potentially should be in #6 or #7)
j) Challenge with Financially Sustaining Open Education Resources onCampus_Subtheme
***This section discusses several issues with sustainability but not all deal with financial sustainability. Can you create another sub theme that would include challenges with sustainability not related to finance?*

8) Defining quality content for open education resources_Subtheme
   a) several steps needed in order to create an open education resources (potentially should be in #1 or #11)
9) Establishing methods to creating open education resources_Subtheme
   a) Agree with all
10) Institutions won't advance Open Education Resources on campus_Subtheme
   a) Agree with all
11) Reasons for Launching Open Education Resources_Subtheme
   a) leaving students out because outsourcing materials to others (This doesn't seem to fit in this sub theme, but I don't really see one that it would fit into.)
12) Started OER because Lack of Quality Content_Subtheme
   a) Agree with all
13) Started OER because of employment/studies_Subtheme
   a) Agree with all

APPENDIX C

Memos

Initial memo

Today I separated the interviews into five groups to make it easier to start coding. The situation I came about was the interview with Participant 8 and Participant 10. The interviews were together and I have to separate them into two groups because one is an administrator and the other is an instructional designer. I wrote down the number of people I reached out too and the number of people that responded, did not respond, and declined that way I can show my efforts in getting interviews. Initial reading of the transcripts without coding, based on the first phase of thematic analysis, had me develop several observations that will help me code and later on theme the codes. I am observing that some of the individuals are not answering the research questions. Perhaps I need to re-read the transcripts carefully or add a few more individuals to interview.

First memo

Today, I coded the first interview using the steps from the Qualitative Data book (Auerbach & Silverstein, 2003) and journal articles I read on coding and thematic analyses. I am using the structural coding process (Saldana, 2009) that I read from in *The Coding Manual for Qualitative Researchers*. The structural coding process was recommended for thematic analysis (Saldana, 2009).

I do not have access to the coding software at the moment because I am waiting for the company to confirm my status as a student for the student rate. However, I started to code and the coding was done in three highlight colors. Reason for the three colors was to reflect the three sub questions of the main question in order to not get lost in the data. Yellow was for question one, blue for question two and green for question three. I used the color purple to highlight orphan text (Auerbach & Silverstein, 2003) that is not related to the questions but can potentially use to back up the material at a later date. The codes were kept short and simple. I am seeing a pattern in this interview of faculty not wanting to use OER and that the library has had to put up the money to support OER. It is surprising to me that the scholar who pushed for OER home institution does not push for OER and lacks the infrastructure to maintain OER on campus. Code words used were affordability, access, saving students money and faculty incentive. The codes were focused on why BYU embarked on OER, which they don't use the word OER, how its sustained, and what the challenges and benefits

are of OER. I still need to find one or two professors from outside a different institution in order to diversity my professors pool.

Second memo

Today I coded participant 5 from (omitted) and the steps that I took to figure out librarians take on open education resources. I reviewed the transcript to focus on embarking on OER, challenges and benefits, and sustaining OER. Coding was done for participant 5 from (omitted) and similar cases from participant 3 in regards to sustaining OER and the challenges faced in the institutions. Participant 5 did not bring up students as much as participant 3 did. Participant 5 brought up the faculty with the challenges the library faces in getting the faculty to finish creating the OER and buy in from the institution. I do see a challenge with coding because I am having trouble coming up with the names for codes so I did the best I could with sticking to similar names of the codes to make it easier when I am done.

Third memo

Today, I coded participant 12. I coded based on finding keywords or phrases such as starting, embarking, challenges, benefits, and sustaining. So instead this is what I did there was not much from participant 12 because of the lack of experience but did provide insight on how pitching OER to her colleagues got an initiative started and finding funding through an endowment specifically for librarians. What caught me by surprise was the initiative the librarian took to get OER on campus. The steps that I took were reading the transcript before coding and finding a pattern and then coding the transcript after review. What I realized is that the lack of experience with OER reduces the amount of coding. One thing that I will say is that institutions have to give tenure credit to faculty who successfully create, publish or edit an OER textbook. All 101 courses should be required to have an OER textbook and optional for others but strongly encouraged.

Fourth memo

This is what I did today, I coded participant 11 based on higher education institutions, sustainability related to higher education institutions and what makes them embark in OER. I coded words that related to what I was finding. I did not find much from an institution perspective only perceptions. The interviewee did a good job of giving information but for future reference I need to do a better job of vetting the interviewee and make sure they have experience with creating OER and actually from higher education institutions not just associated.

For participant 14 I was lost in thinking whether or not the interview was good for the dissertation because the organization itself is housed in a university but the organization is not a higher education institution. I coded based on the embarking, benefits and challenges, and sustaining OER initiatives.

Participant 13 did not provide any specific information in regards to higher education so I will have to leave it alone for now.

Looking back the people I interviewed I let them fully aware know that his was related to higher education and they have no reason to be forced into answering the questions.

Participant 2 gave valuable information about the institution perspective. I coded based on the words of embarking, institutions, OER, policy, challenges and benefits. Ishan has experience with creating OER and working with institutions on OER initiatives. This is what I did, I look at the keywords and phrases that touch on embarking, challenges, institutions, and benefits.

For participant 1, this is what I did, I coded based on the open education resources book the professor created but I was unsure about the (omitted) is that considered OER? That is a question to ask my advisor because I did not code any of the (omitted). I coded based on the criteria I set out with embarking, challenges, benefits, and sustaining in higher education.

Participant 10 interview was cut short because of time schedule. I coded based on the creation of a resource he created. The embarking was a challenge because he had to do it after tenure. Challenges with implementing OER is from the higher- ranking individuals not considering OER tenure credit worthy.

Fifth memo

Today, I coded participant 6 and this what I did, I coded based on the experiences with creating OER and sustaining OER on campus. The professor brought up the embarking in OER because of the vulnerable students. Sustaining OER takes more than just money it also takes time and assistance with creating the OER from places like the center for teaching and learning. There has to be faculty buy in and also from the institutions, which I coded as challenges with open education resources in institutions.

This is what I did with participant 4, I coded based on the embarking, benefits and challenges with sustaining OER initiatives. I am realizing that I have to focus on initiatives more and not just OER. I created a code with initiatives at the end in order to focus on the research questions.

Participant 7, I coded based on the research questions, the benefits and challenges of OER initiatives, sustaining and embarking. Participant 7 brought up student equity and giving students a voice in OER. Sustainability is making sure the links are up to date not just about money.

Participant 9, I coded based on her experience as a publisher and instructional designer. Participant 9 gave a perspective of how faculty and students benefit from OER and did not give much on challenges or sustainability. I did have to separate participant 9 from the original interview done with participant 8 but I wonder what would happen if I had interviewed participant 9 by herself instead of with her boss. I coded based on the research questions relating to benefits of challenges and sustaining OER resources. The theme that I found with participant 9 is accessibility and equity for students and the freedom faculty have to teach their own way with being able to create or adapt content.

Participant 8, as a VP in higher education provided insights into the sustaining of OER resources and how the major costs is the labor part with having a staff member focus on OER. Money from OER comes from the institution and from the state. The funding is used to adopt and adapt but not to create OER, which is something I coded. I coded based on the embarking and sustainability. No creation of OER resources.

Sixth memo

In today's coding with participant 17 I was looking for keywords that related to embarking, challenges, benefits, sustaining OER initiatives, which is how I coded as well. I did not see anything that jumped out other than the optimistic approach of getting the OER textbook accomplished but it took longer than usual, which goes back to what participant 14 said about taking twice the amount to create an OER textbook. Participant 17 is another professor who did not get my question about "what are your perceptions of using OER in regard to quality of resources" which is the fourth or fifth person not to understand the question. Participant 17 embarked on OER because of the stipend and the challenge of writing an OER textbook but I wonder if getting tenure had anything to do with embarking in OER? If tenure had anything to do with the OER would it had been different if not tenure would have been awarded?

This is what I did with participant 16 I was looking for keywords related to embarking, challenges, benefits, and sustaining. Participant 16 provided information on challenges of sustaining OER because of her personal experiences with creating OER content. Participant 16 is not incentivized to create OER other than helping her community. There is no faculty incentive to create OER which is interesting that she would still embark on OER. Participant 16 did bring up the need for reputable human capital with experience to maintain OER content. The steps that I took to code participant 16 where the same for the others looking for the keywords that would get the main points of the research questions.

Seventh memo

After reviewing the 107 codes from the themes that I created I had to go back and delete the double codes on the quotations, I realized I failed to count the number of double codes but as a result I deleted 7 codes from the 107 codes I created. The 7 codes that are left blank were not necessary and realizing one code has potential for further research "open education resources not being ADA compliant," which I recall being a major issue with MOOCs from a conference I presented at.

The 7 codes left without quotations include:
1. Cognitive load of open education resources
2. Collaborating in creating an open education resource
3. Colleague told about open education resource initiatives
4. Not the same resources as publishers

5. Open education resources not being ADA compliant
6. Personal opinion of sustaining open education resources
7. Promoting open education resources with faculty

The codes are repeating themselves with the codes already created and not necessary to create double codes, I go with the code can't serve two masters because than how do you formulate a theme from the code if the quotation has two codes.

Eighth memo

A new file was created after discussion with my advisor the situation that occurred with my codes. After discussion about my subthemes and themes my advisor warned me about my codes sounding like themes and not actual codes. After back and forth my advisor and I decided to work on 5 interviews, one from each group.

I selected the individual from each group based on their expertise in the open education resources and experiences in either organizing, creating, administering or starting an OER initiatives for an organization or institution. With the exception of group 5 each group had people to select. Group 5 is instructional design group and I only had one individual in the group but the educators' information is valuable because the educator has publishing experience and worked for a major publishing company.

I had already coded the interviews by I recoded the interviews based on the conversation with my advisor. This time I coded based on the context of open education resources and that each code reads after the quotation. For example, if you read the code "accessibility in content" the reader should get a sense that the code is about accessibility in the open education resources content. I did not code based on a theme instead the code focuses on the research and the analyzing of the research. 72 codes in total.

The next step is to review the codes with my advisor and then place into subthemes. The pattern I am starting to see is the advantages and disadvantages of OER both from a student's perspective and faculty perspective. This is what I did to code, I reviewed my first coding process and did away with simple, similar, theme codes. This time I coded based on whether or not I can tell the code was about the quotation and if the code was related to the overall research. There was information that was important to the research that was not found in the first coding process.

Ninth memo

Today I coded based on the review from my advisor wanting to see more codes in my interviews. I coded based on able to get a sense from the research questions. I read the answers to every question and seeing if the individual answered the question and if the answer related to the research. If the answer related to the research it was coded if not than there was still coding done which will later on be decided if needed. There are now 201 codes from the five

interviews. I am having difficulty coding participant 9 because it was short due to having the person interview with another person.

Tenth memo

The person should look at the code and it answers the interview question. Deleted participant 9 because interview was in a group that was only one person, the publishing background of the person has nothing to do with the research. The persons interview was not sufficed with information because it was done with another person. 187 codes in total from four participants.

Memo for phase 5:

After looking back at the peer review feedback, discussion with my advisor and rereading my subthemes I redeveloped my themes. I really paid attention to make sure that the themes made sense and that the themes were supported by data. I am going back to work on my themes and following the process set in the literature that I read about themes.

APPENDIX D

Informed Consent Form

INFORMED CONSENT

Study Title: Explore how higher education institutions are implementing and sustaining Open Education Resources (OER) initiatives.

Principal Investigator: Jose L. Fulgenio   **Co-Investigator:** Dr. Tutaleni Asino

This consent form will give you the information you will need to understand why this dissertation research study is being done and why you are being invited to participate. It will also describe what you will need to do to participate as well as any known risks, inconveniences or discomforts that you may have while participating. We encourage you to ask questions at any time. If you decide to participate, you will be asked to sign this form and it will be a record of your agreement to participate. You will be given a copy of this form to keep.

➤ **PURPOSE AND BACKGROUND**

You are invited to participate in a dissertation research study to explore OER implementations in higher education. The information gathered will be used to better understand how higher education institutions are implementing and sustaining OER initiatives. You are being asked to participate because you are a student currently a recognized individual in the field of OER over the age of 18.

➤ **PROCEDURES**

If you agree to be in the study, you will be asked to participate in one brief interview. The interview will last approximately 45-minutes. During the interviews, you will be asked about your experiences with OER, defining quality in OER, financially sustaining OER, and perceptions of OER, and what led you to OER. The interview will be audio-recorded and the researcher may take notes as well.

➤ **RISKS**

Some of the questions asked may make you uncomfortable or upset. You are always free to decline to answer any question or to stop your participation at any time.

➤ **BENEFITS**

There will be no direct benefit to you from participating in this study. However, the information that you provide may help understand OER initiatives.

➤ **EXTENT OF CONFIDENTIALITY**

Reasonable efforts will be made to keep the personal information in your research record private and confidential. Any identifiable information obtained in connection with this study will remain confidential and will be disclosed only with your permission or as required by law. The members of the research team and the Oklahoma State University Office of Research Compliance (ORC) may access the data. The ORC monitors research studies to protect the rights and welfare of research participants.

Approved: 06/06/2018
Protocol # ED-18-71

Your name will not be used in any written reports or publications which result from this research, unless you have given explicit permission for us to do this (remove if not applicable to your study). Data will be kept for three years (per federal regulations) after the study is complete and then destroyed.

➢ **PARTICIPATION IS VOLUNTARY**
You do not have to be in this study if you do not want to. If you volunteer to be in this study, you may withdraw from it at any time without consequences of any kind or loss of benefits to which you are otherwise entitled.

DOCUMENTATION OF CONSENT
I have read this form and decided that I will participate in the project described above. Its general purposes, the particulars of involvement and possible risks have been explained to my satisfaction. I understand I can withdraw at any time.   I have received a copy of this form.

_____   _____
Printed Name of Study Participant   **Signature** of Study Participant   Date

_____   _____
Signature of Person Obtaining Consent   Date

APPENDIX E

Recruitment Email

RECRUITMENT EMAIL

Greetings.

My name is Jose Fulgencio and I am a doctoral candidate working with Dr. Tutaleni Asino at Oklahoma State University. We are conducting a research study on how higher education institutions are implementing and sustaining Open Education Resources (OER) initiatives. I am emailing to ask if you would like to be in a 45-minute interview session for this dissertation research. The questions pertain to your experiences with OER, sustainability and quality of OER. Participation is completely voluntary.

If you are interested, please email me at: jose.fulgencio@okstate.edu

If you have any questions, please do not hesitate to contact me (jose.fulgencio@okstate.edu) or Dr. Tutaleni Asino (tutaleni.asino@okstate.edu).

Thank you for your time.

Jose L. Fulgencio
Doctoral Candidate
Oklahoma State University

Approved: 06/06/2018
Protocol #: ED-18-71

VITA

Jose L. Fulgencio

Candidate for the Degree of

Doctor of Philosophy

Dissertation: IMPLEMENTATION OF OPEN EDUCATION RESOURCES IN HIGHER EDUCATION: EXPERIENCES OF SCHOLARS, LIBRARIANS, ADMINISTRATORS, AND ADVOCATES

Major Field: Educational Technology

Biographical:

Education:

Completed the requirements for the Doctor of Philosophy in Educational Technology at Oklahoma State University, Stillwater, Oklahoma in December, 2018.

Completed the requirements for the Master of Science in Entrepreneurship at Oklahoma State University, Stillwater, Oklahoma in 2013.

Completed the requirements for the Master of Arts in Political Science at Oklahoma State University, Stillwater, Oklahoma in 2012.

Completed the requirements for the Bachelor of Arts in Political Science at Northeastern Illinois University, Chicago, Illinois in 2010.

Experience:

Graduate Teaching Assistant at Oklahoma State University

Professional Memberships:

Association for Educational Communications and Technology