

Accuracy and Quality of Open Educational Resources:

A Phenomenological Study

by

Andreas Rambow

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Andreas Rambow

Approved by:

Dissertation Chair: Amanda Evans, Ph.D.

Committee Member: Cathy McKay, Ed.D

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Andreas Rambow

Abstract

College textbook prices rose by 1,041% between January 1977 and June 2015. This percentage increase represented three times the rate of annual inflation. College and university instructors consider the move to open educational resources (OERs) as an attempt to lower the cost of higher education in the United States. The selection of open educational resources represents a challenge in the absence of a standard set of selection criteria. Instructors have different perspectives about the accuracy and quality of open educational resources. Mezirow's (1981) theory of transformative learning underpinned the study. The purpose of this qualitative hermeneutic phenomenological study was to explore perspectives about the accuracy and quality of OERs among instructors who have experience in applying Quality Matters' (QM) standards in online course design and who have adopted and used OERs in online undergraduate courses. This research study employed a qualitative methodology with a hermeneutic phenomenological design. Sixteen voluntary participating faculty members were interviewed using Zoom. The audio files transcribed to text documents were the primary data source. Open and axial codes emerged from the interviews in a line-by-line review of each transcript leading to sentences or sentence fragments indicative of the faculty members' responses. Faculty members cited cost, social equity, and lifelong learning as the main reasons to switch to OERs. The faculty members' lived experiences using open educational resources in online undergraduate classes are discussed, analyzed, and presented. The research study presents implications for leadership and recommendations for future research.

Dedication

This thesis is dedicated to my dear wife and friend, Katinka. Her support was instrumental every single day over the past five years, and her patience spoke volumes. There was not a single day or week without any mention of the dissertation. She was confident in my abilities to finish this journey from the first day, while I continued to have doubts until the very end. Her relentless support helped me cross the finish line.

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Chapter 1: Introduction

The cost of higher education increases around the globe and may deprive people worldwide of educational opportunities, as many potential students may no longer be able to afford higher education (Hodgkinson-Williams & Arinto, 2017). The deprivation of higher education represents a severe economic problem (Mitchell, Palacios, & Leachman, 2015) because high tuition rates deter students from remaining enrolled (Mulhern, Spies, & Wu, 2015), which leads to economic inequality and a reduction in career opportunities (Torraco, 2018). College tuition rates increased by 106% between 1987 and 2010 in the United States (Gordon & Hedlund, 2016). Between January 1977 and June 2015, college textbook prices rose by more than three times the rate of annual inflation, a total increase of 1,041% (Popken, 2015). On average, students spent \$1,200 in U.S. dollars on books during the 2014–2015 academic year (Chiorescu, 2017). More recent assessments of college costs in 2018 in the United States showed college attendance costs had surged eight times faster than wages (Maldonado, 2018). The price of attending a four-year program at a U.S. college or university increased to \$104,480. At the same time, median wages rose from \$54,042 to \$59,039 between 1989 and 2016, which demonstrates a disconnect between rising costs of education and the ability to afford college attendance (Maldonado, 2018). Included in the rising costs of postsecondary higher education is the purchase of textbooks. Student loan debt in the United States amounted to approximately \$1.31 trillion in 2016 spread over nearly 44.2 million borrowers (E. Martin, 2017), and the Bureau of Labor Statistics reported textbook prices rose by 88% between 2006 and 2016 (Del Valle, 2019).

In two different studies, researchers found 65% of students in the United States do not buy a textbook due to the high costs despite concerns for earning good course grades (Butcher &

Moore, 2015; Chiorescu, 2017). Increasing costs for commercially produced materials, including textbooks, are the primary reason for the adoption of open educational resources (OERs; Hilton, 2016; R. Miller & Homol, 2016). Open educational resources can help mitigate rising tuition costs (Salem, 2017) and consist of educational materials and resources available to anyone free of charge for reuse, adaption, and redistribution with few or no restrictions under a license (Butcher, 2015). College instructors use OERs to minimize the cost of textbooks (Abramovich & McBride, 2018). In the absence of a shareable set of criteria for the selection of quality OERs, the perspectives about the accuracy and quality of OERs among college instructors and administrators vary (McMurtrie, 2017).

College instructors may find the selection of OERs time-consuming (Bleichmar, 2018). Bias can exist in the selection of OERs, and further research into the perspectives about the accuracy and quality of OERs is necessary (Hilton, Gaudet, Clark, Robinson, & Wiley, 2013). Themes arising from the perspectives about the accuracy and quality of OERs can lead to the creation of a shareable set of criteria for the selection of quality OERs. The shareable set of selection criteria can provide benefits to the community of colleges and universities planning to select and use quality OERs in online undergraduate courses in the future. This chapter presents the background of the study, the statement of the problem, the purpose, and significance of the study, the research questions, the theoretical framework underpinning the study, the definitions of terms, the assumptions, the scope and delimitations, the limitations, and concludes with a chapter summary.

Background of the Problem

Costs for college attendance in the United States have risen substantially over the past 27 years (Maldonado, 2018), and the costs of attending higher education institutions continue to

increase (Schoen, 2015). College tuition at public and private schools rose approximately three times faster than the annual rate of inflation between 2007 and 2018 (K. Gibson, 2019). Student debt amounted to \$1.4 trillion in 2018, surpassing credit card and auto loan debt (Maldonado, 2018). College costs have surged for a variety of reasons including an increase in the demand for higher education, a lack of financial aid, and cuts in state funding.

Further reasons for college cost increases include rising demand for instructors, a lack of funds to pay faculty members, and ballooning services for students (Hoffower, 2019). Many college students find a university degree has become less desirable compared to 10 years ago (Hoffower, 2019), and Seltzer (2017) asserted increases in college tuition fees generate questions regarding the affordability of higher education among families in the United States. High upfront costs raise concerns about the return on the educational investment (Seltzer, 2017). For example, the University of Chicago is the first university in the United States to charge more than \$80,000 in college fees per year, room and board included (DeGeurin, 2019).

College costs include the purchase price for textbooks (Kagan & Green, 2019). Textbook costs have increased by 812% over the past 35 years (Zook, 2017). Zook further noted the entire textbook industry represents a value of \$7 to \$10 billion, with five leading textbook publishers controlling 80% of the market. A market control of this magnitude constitutes an oligopolistic structure (Greenlaw, Shapiro, & Taylor, 2018). Larivière, Haustein, and Mongeon (2015) noted the formation of an oligopoly among academic journal publishers. The top five journal publishers had a combined market share of more than 50% of all scientific papers published in 2013 (Larivière et al., 2015). Oligopolistic structures exist if a few firms dominate an entire market. Such a market structure can result in monopolistic profits in the case of collusion (Greenlaw et al., 2018).

Textbook prices have increased four times faster than the annual inflation rate since 2006, and 30% of college students use financial aid funds to purchase textbooks (Zook, 2017). High textbook prices have created subeconomies leading to used textbook sales, rentals, and in extreme cases, piracy (Zook, 2017). Many colleges and universities have started considering OERs a viable alternative to replacing expensive commercial textbooks without a sacrifice in quality (Ikahihifo, Spring, Rosecrans, & Watson, 2017). Barriers remain in the selection of OERs as the resources vary in quality and accuracy (McMurtrie, 2017). Instructors have different perspectives about OERs arguing there are not enough resources for a subject area, the OERs are too hard to find, and there is a lack of a comprehensive catalog of resources (Blumenstyk, 2016).

Pounds and Bostock (2019) found several barriers in the selection and use of OERs in a study on the aquaculture and fisheries sector. These barriers included academic competition between colleges and faculty members, a low degree of awareness about and availability of OERs, copyright issues, concerns about the quality of OERs, and technical limitations for sharing. Pounds and Bostock concluded college OER initiatives have the potential to support the amelioration of a skilled workforce in the aquaculture and fisheries sector. Berti (2018) argued the use of OERs changes the landscape in higher education. While OERs and practices are tools for professional development, researchers know little about the application and adoption of OERs in languages other than English. Berti indicated more research is necessary to increase the awareness and visibility of OERs for less ubiquitous languages to support open education.

Belikov and Bodily (2016) analyzed and coded the responses of 218 faculty members in the United States concerning the adoption and use of resources and found three main categories indicating barriers to the approval of OERs: lack of information, lack of discoverability, and confusion of OERs with digital resources. Belikov and Bodily pointed out future research is

necessary to develop a better comprehension of addressing and overcoming these barriers. An analysis of the use of OERs in Brazil presented a review of the perspectives of teacher and student authorship of OERs (da Silva, de Campos Pinto, do Egito Nunes, & de Melo Braga, 2017). Da Silva et al. (2017) commenced with a bibliographical theme inquiry and continued with mapping the importance of OERs for basic education, a review of the history of OERs, public policies, and copyright laws under a Creative Commons license. Da Silva et al. argued the production of a selection guide can contribute to the facilitation of OER adoption and implementation.

Miao, Mishra, and McGreal (2016) noted a lack of control regarding quality and accuracy in the OER sector and concluded there is a need to assess the quality and accuracy of OERs. M. T. Martin (2018) interviewed faculty members to obtain a better understanding of what the instructor experiences when looking for OERs. While M. T. Martin noted recent studies show instructors favor the use of OERs to ease students' financial burden, the current use of OERs does not reflect this conviction. Little knowledge exists where and how to find quality OERs. The location, selection, adoption, and use of OERs represent a "disorienting dilemma" (V. Wang, 2018), as instructors have to find new ways of selecting course materials. Mezirow's (1981) theory of transformative learning addresses the concept of a disorienting dilemma (Sill, Harward, & Cooper, 2009) and underpins the study. Instructors need a set of tools for the selection, adoption, and use of OERs. Future research can focus on methods to ameliorate the procedures to find and customize OER as a substitute for commercial textbooks, leading to the problem statement discussed next.

Statement of the Problem

The problem is no standard set of criteria exists for the selection of quality OERs in

online undergraduate courses. Instructors who consider the adoption of OERs have concerns about the accuracy and quality (Butcher, 2015; McMurtrie, 2019), which lead to the deterrence of adopting OERs (Seaman & Seaman, 2017). The background of the problem is rooted in the different quality levels of OERs (Yuan & Recker, 2015), as many colleges and universities have started OER initiatives to replace expensive commercially produced resources with open source content in an attempt to lower the cost of higher education (Jung, Sasaki, & Latchem, 2016). The importance of the problem is the potential to provide instructors in higher education with a consistent set of criteria for the selection of quality OERs. The extent of the problem is while individual selection criteria exist, the selection criteria are not consistent across colleges and universities or by discipline (L. Fischer, Ernst, & Mason, 2017). This inconsistency impacts colleges and universities in the United States, which have started or are in the process of starting, an OER initiative. Leaders and administrators of these colleges and universities need a consistent set of criteria for the selection of quality OERs to overcome concerns about the accuracy and quality and can help to build confidence in the selection of quality OERs. Gaps exist in the practice of selecting and adopting OERs due to the lack of a consistent set of criteria for the selection of quality OERs (L. Fischer et al., 2017; S. Woodward, Lloyd, & Kimmons, 2017). Few published case studies exist demonstrating a comprehensive selection and adoption process from the faculty member's perspective (S. Wang & Wang, 2017).

Purpose of the Study

This research study was based on a qualitative methodology with a hermeneutic phenomenological design. The purpose of this qualitative hermeneutic phenomenological study was to explore perspectives about the accuracy and quality of OERs among instructors who have experience in applying Quality Matters' (QM) standards in online course design and who have

adopted and used OERs in online undergraduate courses. The sample size of the study consisted of 16 voluntarily participating instructors who had selected, adopted, and used OERs in online undergraduate classes using interviews as the research instrument. The voluntary participating faculty members were recruited from member universities and colleges subscribing to QM in the United States.

The research was necessary to create, based on the explored perspectives, a standardized set of selection criteria for quality OERs for use by colleges and universities. In the absence of the study, colleges and universities may have a limited toolset for the selection of quality OERs. Colleges and universities may continue to rely on the use of commercial educational resources because commercial publishers maintain sophisticated marketing channels and couple expensive textbooks with ancillary materials, which make the adoption of commercial resources convenient and easy for instructors (Annand & Jensen, 2017).

Students are more concerned about the cost of textbooks than tuition fees, and the cost of books impacts what type of courses students take (Stein, Hart, Keaney, & White, 2017). In the absence of OERs, commercial textbook providers continue to benefit from the sale of textbooks for education (Pitt, 2015). This study has the potential to provide the entire community of colleges and universities wishing to adopt OERs with a selection guide for quality OERs for use in online undergraduate classes. The provision of instructional materials in the form of OERs can help mitigate the annual increase in college attendance costs and support students, for example, who are homeless or food insecure (Burke, 2019) as outlined by a study conducted by Goldrick-Rab, Baker-Smith, Coca, and Looker (2019). This study represented the most extensive annual assessment of basic needs security among college students in the United States and has identified a need for OERs. Moreover, the research added to the current academic discourse about the use

of OERs in higher education.

Significance of the Study

The use of OERs in higher education is increasing (McGreal, 2017). Rising textbook prices force many colleges and universities to consider the selection, adoption, and use of OERs to remain competitive in the global industry of higher education. One of the nation's forerunners in the use of OER is the University of Maryland University College (R. Miller & Homol, 2016), now University of Maryland Global Campus (UMGC), the world's largest provider of online education measured in terms of total student enrollments (UMGC, 2019). UMG's leadership determined the move to OERs would help alleviate some of the rising costs in 2014, and UMG's complete move to OERs was a signal the market is ready for a complete move away from commercially produced materials and to OERs (Vignare & Brosch, 2014). UMG's students saved approximately \$17 million on textbook purchases in the first year after the implementation of the OER policy (Schwartz, 2017), and the move to OERs resulted in increased student enrollments (McKenzie, 2018).

While college instructors recognize a move to OERs can help alleviate some of the rising costs of college attendance, disagreements exist as to quality standards of OERs (Almendro & Silveira, 2018). Early adopters of OERs following UMG's move have established criteria for the selection of quality OERs. Still, the adoption of OERs has fallen short of expectations in large due to uncertainties about the *fit for the intended purpose* (Jung et al., 2016), which refers to instructor uncertainty whether an OER is a good selection for a specific course.

The importance of the study was rooted in the examination of the perspectives about the accuracy and quality of OERs among a larger sample of instructors. This larger sample of instructors was selected from different colleges and universities whose faculty members have

adopted and used OERs in online undergraduate courses. This sample established a research foundation at a broader base and captured a more comprehensive array of themes. College instructors provided input regarding perspectives about the accuracy and quality of OERs resulting in emerging themes. These emerging themes provided intuitional insight into the lived experiences of adopting and using OERs in online undergraduate classes. The results of the study can help create a coherent and cohesive set of selection criteria for quality OERs for online undergraduate courses among colleges and universities in the United States and worldwide.

Beneficiaries of the study results may comprise individual colleges or universities and professional organizations at the national level, including QM and the Open Learning Consortium. In addition, organizations such as the Organization for Economic Cooperation and Development (OECD), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the World Bank may benefit from the results of the study at the international level. The research findings address several gaps in the practice of selecting and adopting OERs due to the lack of a consistent set of criteria for the selection of quality OERs. The creation of a standard set of selection criteria for quality OERs can help lower social inequality, which results from high textbook costs.

Research Questions

This research study used a qualitative methodology with a hermeneutic phenomenological design to examine the perspectives about the accuracy and quality of OERs among instructors who have adopted and used OERs in online undergraduate courses and to answer the following research questions:

Research Question 1: What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs?

Research Question 2: What are the perspectives of online instructors using OERs in online undergraduate classes on the use of OERs?

Research Question 3: What are the perspectives of online instructors using OERs in online undergraduate classes on the content of OERs?

The above questions were developed using Jung et al.'s (2016) 25-item framework as a foundation. The framework's authors granted permission for use (see Appendix A). In the study, interviews were used as a data collection tool.

Theoretical Framework

Mezirow's (1981) theory of transformative learning is the most widely studied adult learning phenomenon (Nerstrom, 2014), a master key to transformation (Biasin, 2018), and a perspective transformation tool (Rahman & Hoque, 2017). As such, Mezirow's theory underpinned the research study. Transformative learning requires individuals to reason *out of the box* (V. Wang, 2018), to consider emancipation as a learning process (Leggett, Wen, & Chatman, 2018), and to aid as a frame of reference in the research of modern open education including OERs (Deimann & Farrow, 2013). Developed by American sociologist and former professor emeritus of Adult and Continuing Education at Teachers College, Columbia University, Mezirow's (1981) theory of transformative learning is a constructivist theory. Learners interpret and reinterpret personal experience to create meaning and learning (Mezirow, 1981). Transformative learning addresses two types of learning, *instrumental* and *communicative*. Instrumental learning emphasizes learning using problem-solving techniques, and communicative learning helps explain how individuals learn by communicating feelings, needs, and desires (Mezirow, 1991). Structures having a *meaning* form the theory's key element. Mezirow (1991) defined meaning as predispositions coming from conventions determining

peoples' expectations and argued meanings are a combination of concepts, beliefs, judgments, and feelings leading to a particular interpretation (Mezirow, 1994).

The reflective process guides the creation of meaning. Reflection entails critiquing one's expectations acquired throughout childhood to determine whether the expectations are still valid for adults. Reflection has similarities to problem-solving, and Mezirow (1991) noted adults concentrate on the problem's context, solution, and premise. This concentration guides the development of a better understanding of oneself and leads to a better awareness of peoples' learning (Mezirow, 1991). Leading researchers have elaborated on Mezirow's theory and discovered commonalities with other theories, for example, Knowles' (1984) theory of andragogy (Taylor, 2017). Simsek (2012) noted transformational learning could have profound changes to one's life, feelings, perspectives, and behavior.

Transformative learning is an adult learning theory employing disorienting dilemmas to challenge students' thinking (Hidalgo, Koebernik, & Williams, 2018). Students use critical thinking and reasoning to assess if the underlying beliefs and assumptions about the world are accurate. Mezirow used the theory to define how individuals develop and apply critical self-reflection to consider the beliefs and experiences (Kitchenham, 2008). Mezirow was interested in peoples' worldviews and what leads people to change the individual perspective of the world (Christie, Carey, Robertson, & Grainger, 2015). Kroth and Cranton (2014) argued the reconsideration of perspectives is where transformative learning links the research questions to the perspectives of instructors using OERs in online undergraduate classes.

Definitions of Terms

Various significant terms appear in this dissertation. To help the reader understand the significance of each one, the following represents a list of essential terms and the related

operational definition in summary form. The terms help the reader understand the methods and goals of the research and describe aspects of the theoretical framework, literature review, and findings based on the data. The terms are the following:

Accuracy is measuring precision and absence of errors of a specific process or object (Camilleri, Ehlers, & Pawlowski, 2014).

Disorienting dilemmas occur in the experience of conflict in a relationship (L. J. Green & Mälkki, 2017).

Disruptive innovation is an innovation helping to create a new market and value network to disrupt an existing market or value network. Researchers in business and technology use this term to describe innovations improving products or services in ways consumers have not expected (Christensen, 2016).

Massive open online courses (MOOCs) are a phenomenon in the field of distance and online education and linked closely to ideals in independent and adult learning (Mota & Scott, 2014).

Open access refers to free and unrestricted access to online research outputs, including research articles and books. Open access content is free and open to all with no access fees charged (Zhadko & Ko, 2020).

Open education occurs when educators share knowledge and ideas globally utilizing the internet (Patel & Parsley, 2015).

Open educational practices (OEPs) describe practices to include the creation, use, and reuse of OERs. OEPs include sharing open pedagogies and teaching practices (Cronin, 2017).

Open educational resources (OERs) consist of learning materials such as textbooks, presentations, and quizzes shared under an open copyright license (Patel & Parsley, 2015).

Open and distance learning is a concept focused on having open access to education and training. Open and distance learning frees learners from the constraints of time and place and offers flexible learning opportunities to individuals and groups of learners (Ghosh, Nath, Agarwal, & Nath, 2012).

Quality is an exception, perfection, fitness for purpose, value for money, and transformative (Harvey & Green, 1993).

Quality Matters (QM) is a global organization serving as the leader in the field of quality assurance in online and distant teaching and learning environments (Quality Matters, 2018).

Transformative learning theory involves deep, constructive, and meaningful learning going beyond the simple acquisition of knowledge, supports critical thinking, and enables learners to consciously make meaning of one's lives (Simsek, 2012).

Assumptions

Assumptions form an essential basis in research to describe the scope, delimitations, and limitations of a study (Verma & Abdel-Salam, 2019). The underlying assumption for this study included honest and open answers to the interview questions asked. The study depended on the voluntary participation of 16 instructors, who have adopted and used OERs in online undergraduate classes. The selected interview participants for the study were faculty members who had adopted and used OERs in online undergraduate classes and demonstrated experience in using QM's validated standards in making teaching and learning judgments in one's own and peers' online courses. Faculty members may be employed at institutions having QM memberships such as large university systems but lack an awareness of QM. Such faculty members do not possess the skills in using professional judgment in the application of QM tools and processes. This selection process ensured faculty members could apply judgment using QM

standards.

The sample consisted of instructors from online undergraduate programs of colleges and universities having a membership with QM throughout the United States. The participants expressed personal opinions and experiences regarding the adoption and use of OERs in online courses. The study's benefits were identified through the research and data analysis process leading to perspectives about the accuracy and quality of OERs in online undergraduate courses.

Scope and Delimitations

The study's scope and delimitations consisted of the use of Zoom as an interviewing software to collect the instructor's perspectives about the accuracy and quality of OERs. The selected interview participants for the study were voluntarily participating faculty members who have adopted and used OERs in online undergraduate classes. Furthermore, the selected faculty members needed to have been current QM peer and master reviewers and have possessed demonstrated experience in using QM's validated standards in making teaching and learning judgments in one's own and peers' online courses.

The sample consisted of 16 instructors from online undergraduate programs of the colleges and universities having a membership with QM throughout the United States. The participants expressed personal opinions and experiences regarding the adoption and use of OERs in online undergraduate courses. Due to the geographical distance between the research site in Europe and the instructors in the United States, communication via a videoconferencing software was necessary to bridge the geographical distance. The geographical location for the interviewees was the United States, and the minimum time zone difference was six hours between the U.S. Eastern and the Central European time zones with the Central European time zone being six hours ahead. The study depended on the voluntary participation of 16 instructors

who have adopted and used OERs in online undergraduate classes. The study employed a qualitative methodology and a hermeneutic phenomenological design to provide the boundaries for the research study. The results of the study may be generalizable to other online instructors in the United States and worldwide who wish to adopt and use OERs in online undergraduate classes. The results of the study can help in the creation of a selection guide for quality OERs. The use of Mezirow's (1981) theory of transformative learning underpinned the research study and allowed for the determination of valid and reliable data concerning the research questions.

Limitations

Research can create a bias (Theofanidis & Fountouki, 2019) due to conditions unknown at the time of the study. Researcher bias could have existed as a result of the prior work as a course facilitator and reviewer at QM from 2007 to 2018. The sample for the study was drawn from QM's subscribing colleges and universities, and the researcher's prior work at QM could have created a bias due to the quality-driven aspect of online course reviews. The interview questions could have been reflective of previous work experience influencing the design and composition. The interview questions presented in Appendix B were peer-reviewed by an external team of professional researchers familiar with the use of interview questions in qualitative research.

The perspectives about the accuracy and quality of using OERs in online undergraduate classes can differ from one instructor to the next. Instructors may be subject to local selection criteria of OERs or other conditions influencing the responses on the experience and perspectives of OERs during the interviewing process. Emerging themes generated from the instructor responses in the research process provide a basis for comparison with other similar studies (Jung et al., 2016; Neely, Tucker, & Au, 2016). The research entailed limitations, and reasonable

efforts were made to anticipate potential concerns. The instructors' responses may not provide a foundation for transferability to a larger group of users of OERs. Other possible restrictions to the study's results may include a better understanding and explanation of only the individual instructor's experience of selecting and adopting OERs in online undergraduate courses.

Chapter Summary

The purpose of Chapter 1 was to introduce the research study, to cite the problem and state the background of the problem, to present the significance of the study, to list the research questions, to set the theoretical framework underpinning the study, and to define operational terms. Furthermore, the chapter outlined the assumptions, the scope, delimitations, and limitations of the research study. The cost of education is rising globally and denies people educational opportunities (Hodgkinson-Williams & Arinto, 2017), which results in serious economic problems (Mitchell et al., 2015). Tuition rates at colleges and universities increased in the United States by 106% between 1987 and 2010 (Gordon & Hedlund, 2016), and textbook prices rose by 1,041% between January 1977 and June 2015, which reflected more than three times the rate of annual inflation during the same period (Popken, 2015). More recent assessments of the costs of attending college revealed an eightfold increase in comparison to the rise in wages (Maldonado, 2018). Student loan debt in the United States amounted to \$1.31 trillion in 2016, which affected 44.2 million borrowers (E. Martin, 2017), and the Bureau of Labor Statistics noted an 88% increase in textbook prices between 2006 and 2016 in the United States (Del Valle, 2019), which led to the need of adopting OERs.

The results of the study have the potential to provide a foundation for the creation of a standardized set of selection criteria for quality OERs for use by college and university leaders who consider the adoption and use of OERs in online undergraduate classes. In addition, the

results can provide a basis to assist scholars with OER research at the international level. The theory of transformative learning, as developed by Mezirow (1981), underpins the study. Chapter 2 introduces the concept and need for OERs, outlines the literature search strategy, explains the theoretical framework underpinning the study, gives a synthesis of the available literature for the past five years (including gaps in the research), and concludes with a chapter summary.

Chapter 2: Literature Review

There is no standard and shareable set of criteria for the selection of quality OERs in online undergraduate courses among colleges and universities in the United States and worldwide. There are concerns about the accuracy and quality among educators who have adopted and used OERs (Butcher, 2015; McMurtrie, 2019). The purpose of this qualitative hermeneutic phenomenological study was to explore perspectives about the accuracy and quality of OERs among instructors who have experience in applying QM standards in online course design and who have adopted and used OERs in online undergraduate courses.

The rising cost of higher education around the globe disadvantages people worldwide (Hodgkinson-Williams & Arinto, 2017). High tuition rates and textbook prices deter student enrollments at colleges and universities, which lead to a severe economic problem (Mitchell et al., 2015). The situation can lead to economic inequality (Mulhern et al., 2015) and reduced career opportunities (Torraco, 2018). College tuition rates increased by 106% between 1987 and 2010 in the United States (Gordon & Hedlund, 2016), and between January 1977 and June 2015, college textbook prices rose by more than three times the rate of annual inflation, a total increase of 1,041% (Popken, 2015). Researchers found 65% of students in the United States do not buy a textbook despite concerns for earning good grades (Butcher & Moore, 2015; Chiorescu, 2017). Increasing costs for commercially produced materials, including textbooks, are the primary reason for the adoption of OERs (Hilton, 2016; R. Miller & Homol, 2016). OERs have added free learning opportunities to the higher education sector, but faculty members may experience difficulties and obstacles in the selection process of OERs, including quality control issues (Al Abri & Dabbagh, 2018).

Research is necessary for the creation of a set of selection criteria for quality OERs.

There is a gap in the practice of selecting and adopting OERs due to the lack of a consistent set of criteria for the selection of quality OERs (L. Fischer et al., 2017; K. M. Woodward, 2017). Few published case studies exist demonstrating the comprehensive selection and adoption process from the perspective of faculty members (S. Wang & Wang, 2017). Debattista (2018) synthesized the online course assessment criteria of four different rubrics provided by the University of Illinois, California State University, the University of Malta, and QM. None of these rubrics addressed the provision of instructional materials in the form of OERs. Debattista encouraged the use of OERs to help students meet learning outcomes without any technical, financial, or administrative barriers.

The literature review addresses the search strategy, the underlying theoretical framework of the study, and the synthesis of the researched literature. The review of the current literature provides insight into the following:

- the definition of OERs;
- origins of OERs and the development over time;
- the reasons for the use of OERs;
- sharing OERs and Creative Common licensing requirements;
- OERs and attitudes;
- impact studies of OERs;
- the use of OERs in massive open online courses;
- the flipped classroom and the use of OERs;
- the role of college and university libraries;
- the international use of OERs;
- OERs and micro-credentialing;

- social media and the use of OERs;
- adult education and lifelong learning;
- institutional support and faculty development;
- Universal Design for Learning, student performance, and contrary literature; and
- gaps in the literature.

The chapter concludes with a summary of major themes and current knowledge of the topic, a restatement of how the current study fills an identified research and practice gap in the literature, and a transition to the next chapter discussing the research methodology.

Literature Search Strategy

Greyson et al. (2019) argued a literature review should be comprehensive and requires a systematic search and screening process. Using this approach, the literature review provided relevant material relating to the selection, adoption, and use of OERs in higher education. Relevant material consisted of peer-reviewed articles, reports, documents, websites, peer-reviewed open access journals, books, book sections, encyclopedias, conference papers, magazine and newspaper articles, dissertations and theses, publications and reports published by the OECD and the Commonwealth of Learning (CoL), and blog posts. Researched material presented either fundamental or seminal value, or both, and described the historical development and use of OERs over time. Relevant literature was obtained through the online databases of EBSCO/Academic Search Complete using the online libraries of the University of Maryland Global Campus and Webster University.

Other articles and relevant information were obtained through additional databases including MERLOT, QM's online research library, Educause, and ResearchGate. Reviews of relevant materials using Google Scholar or Google Search identified appropriate sources by

scrolling through the search results. Each time a relevant article surfaced, the article was added to the Zotero referencing management program to obtain a database with relevant material to compose the literature review. The search procedure was conducted using appropriate keywords and filters. In connection with the term OERs, relevant keywords included *open educational practices, higher education, colleges and universities, Quality Matters, perspectives, massive open online courses (MOOCs), role of librarians, international use of OERs, micro-credentialing, Quality Matters Rubric, flipped classroom, perspectives, theoretical framework, transformative learning, social media, adult education and lifelong learning, Universal Design for Learning, and student performance*. The literature search strategy, in combination with the theoretical framework, provided the basis for this literature review.

Theoretical Framework

This study used the theory of transformative learning (Mezirow, 1981) as a theoretical framework. Researchers use a theoretical framework to explain the research path and to position the research firmly within a theoretical construct (Dickson, Emad, & Adu Agyem, 2018). Theoretical frameworks give research more meaning, make research more acceptable in the field, and ensure generalizability. In addition, theoretical frameworks provide direction, give momentum to research questions, improve empiricism, and augment the rigor of the research. Imenda (2014) stated the use of a deductive attitude to the literature review leads to the use of theories and the selection of a theoretical framework. Evans (2007) argued the absence of a theoretical framework can weaken research, and readers may have difficulties following the purpose and importance of the study. Consequently, the research may become inaccurate and inappreciable as a contribution to science (Dickson et al., 2018). Grant and Osanloo (2014) noted the theoretical framework adds essential aspects to the research process. The development of a

topic, the composition of the research questions, the contextualization of the literature review, the identification of the research gap, the methodology and design, and the analysis of the collected data require theory-driven thinking (Grant & Osanloo, 2014).

Mezirow's (1981) theory of transformative learning underpinned the research study. This theory requires learners to think out of the box (V. Wang, 2018), examines emancipation as a learning process (Leggett et al., 2018), and serves as a frame of reference in the research of contemporary open education including OERs (Deimann & Farrow, 2013). The theory of transformative learning is a constructivist theory and holds learners interpret and reinterpret personal experience, which is central to creating meaning and learning (Mezirow, 1981). The theory addresses two types of learning: (a) instrumental learning and (b) communicative learning. Instrumental learning focuses on learning employing problem-solving, and communicative learning encompasses how individuals learn by communicating feelings, needs, and desires (Mezirow, 1991). Structures with a meaning form the main component of the theory. Mezirow (1991) defined *meaning* as predispositions coming from assumptions. These assumptions determine peoples' expectations. Meanings are a combination of concepts, beliefs, judgments, and feelings leading to an interpretation (Mezirow, 1994).

The reflective process guides the creation of meaning. Reflection entails critiquing one's assumptions assimilated throughout childhood to ascertain whether the assumptions are still valid for adults. Reflection has similarities to problem-solving, and Mezirow (1991) noted adults focus on the content of a problem, problem-solving, and the premise of a problem. This focus guides the development of a better understanding of oneself, leading to a better understanding of peoples' learning (Mezirow, 1991). E. W. Taylor (2017) noted leading researchers have elaborated on Mezirow's theory and discovered commonalities with other theories; for example,

Knowles' (1984) theory of andragogy. Simsek (2012) noted transformational learning could have profound changes to one's life, feelings, perspectives, and behavior.

Transformative learning is an adult learning theory utilizing disorienting dilemmas to challenge students' thinking (Hidalgo et al., 2018). Students are encouraged to use critical thinking and questioning to consider if the underlying assumptions and beliefs about the world are accurate. Mezirow used the theory to describe how people develop and use critical self-reflection to consider the beliefs and experiences (DeAngelis, 2019). Mezirow was interested in peoples' worldviews and what leads people to change the view of the world (Christie et al., 2015).

Christie et al. (2015) taught a class to present transformative learning in action and described the experience of teaching adult women in a course for vocational educators. As the instructors, Christie et al. injected many new course ideas presenting disorienting dilemmas and asked the students to write down the experiences throughout the course. Moving out of one's comfort zone is an essential criterion for the theory to work and transform learning (Lamers & Admiraal, 2018).

Scholars have used the theory of transformative learning extensively in research because the theory is reliable and has an undoubted status (Kang & Cho, 2017). The theory is prevalent to help understand impactful learning experiences, and the frequent use has led to diffusion to adapt to different kinds of learning outcomes (Hoggan, 2015). Steyn (2017) used a qualitative study to investigate the learning experiences of teachers at a South African elementary school's math department using open-ended questionnaires. The responses indicated collaboration among teachers improved the teachers' professional lives, the necessity of effective communication, and trust and respect in the working relationships confirming existing research. Steyn indicated more

research is necessary for the exploration of the contextual factors promoting the division of knowledge and skills among teachers at the school.

Innovative instructors want to be able to experiment with new ideas in the classroom (M. Henderson, Henderson, & Romeo, 2015). New ideas can create disorienting dilemmas because the learners face a different teaching style or the instructor uses new teaching materials such as OERs. Gravett (2004) recommended the provision of opportunities for critical thinking, for relating to one another in the classroom, and for acting on the new beliefs for transformational learning to be active. Critical thinking is vital to question traditional assumptions, and the student-to-student relationship in the classroom helps learners to exchange ideas and acting on new beliefs strengthens the learners' confidence (Gravett, 2004).

The integration of OERs in a classroom challenges traditional views on the use of course materials and represents a disruptive innovation (Vanasupa et al., 2017) because the use of OERs is still in a state of infancy (Zhadko & Ko, 2020). Business firms use disruptive innovation to replace products with a high degree of market saturation. Firms introduce an updated version of the product to ensure corporate economic growth into the future and to stay competitive in the global marketplace. This process includes academic institutions such as Southern New Hampshire University (Christensen, Raynor, & McDonald, 2015). Disruptive innovation can lead to transformational learning (Kimmel, 2017) because students and instructors develop a new mindset concerning the adoption and use of OERs in the classroom.

Leggett et al. (2018) conducted one of the few studies examining OERs using Mezirow's (1978) theory of transformative learning. Leggett et al. combined Mezirow's theory and digital and critical participatory action research to perform an analysis of the effectiveness of OER integration into a criminal justice course and to reflect on the use of OERs in support of student

learning. Mayorga (2014) introduced digital and critical participatory action research to define a strand in the nascent field of digital social science integrating digital and social media into critical participatory action research. The data of this study showed students were in a better position to complete technical assignments leading to practical learning at both the individual and team level. Learners engaged in self-reflection after the successful completion of the project. The learners could see personal contributions and how the contributions led to the completion of the project. Open educational practices, in combination with OERs, provide a holistic lens looking at the process beyond the classroom (Leggett et al., 2018).

OERs have entered higher education (Berti, 2018), and Al Abri and Dabbagh (2018) conducted a literature review of 34 articles published between 2010 and 2017. The reviewed articles focused on the education possibilities and benefits of OERs. Abri and Dabbagh found the awareness of OERs among students and faculty to be low. Potential users of OERs encounter difficulties locating appropriate materials in addition to facing quality control issues. The use of OERs faces acceptability issues, and more problems can arise as the use of OERs continues to rise among students and faculty (Al Abri & Dabbagh, 2018).

Research Literature Review

The research base for OERs is broad and has no clear focus. Researchers have examined different avenues to review the opportunities OERs provide. Most of the available literature came from open access or open-source databases. Commercial databases have provided little research-based material for the literature review, making the use of open access material viable for the literature review. Research is still necessary either in areas where research has been started, but remains incomplete, or in areas not researched hitherto. Many peer-reviewed articles on OERs are not research studies but have informational or summarizing value limiting

comparative analysis. This kind of value is indicative of the research in the use of OERs (Hilton, 2016). Clinton (2019) suggested future research on OERs would provide insight into the lived experiences of faculty members and students using OER. L. Fischer, Hilton, Robinson, and Wiley (2015) and Robinson (2015) explained further research could assist in the development of an understanding of conflicts in specific findings relating to the use of OERs. The significant lack of research studies in specific areas investigating the use of OERs limited comparative analysis in this literature review.

The Definition of Open Educational Resources

The William and Flora Hewlett Foundation is a significant player in the provision of OERs and provided the first definition of OERs for teaching, learning, and researching (Butcher, 2015). Open educational resources are in the public domain under an intellectual property license permitting free use and repurposing (Bliss & Smith, 2017). David Wiley, a professor at Brigham Young University, created the Common Creative licensing framework for the use of OERs (Hilton et al., 2013). This licensing framework grants users free and perpetual permission to use OERs provided users reference the creative work of the original developer. Wiley coined the term *5R activities* outlining the use of OERs (Wiley, 2014). The 5R activities are (a) retention, (b) reuse, (c) revision, (d) remix, and (e) redistribution. Retention refers to the right to make, own, or control copies of the content (e.g., downloading, duplication, storing, and managing). Reuse represents the right to use OERs in a variety of contexts, for example, in the classroom. Revision refers to the adaptation, adjustment, modification, or alteration of the content. Remixing permits the user to combine original and revised content with other OERs, and redistribution of OERs provides the opportunity to share the open material with students in the classroom at no cost.

The Origins of Open Educational Resources and the Development Over Time

The origins of OERs lie in the concept of *learning objects* (Weller, 2014), which refer to the reuse of digitally structural materials. The idea of reusing digitally structured materials did not develop further due to difficulties in discoverability and interoperability (Mishra, 2017), which led to the open education movement. Researchers of OERs divide the history and origins of OERs into two periods. The first period started in 1994 and ended in 2004. The National Science Foundation provided a grant in 1994 led by James Spohrer, which resulted in the creation of the first OER repository in 1997 named MERLOT. In 2017, MERLOT hosted more than 40,000 curated and rated items, and educators could share intellectual content over the web for use by others (Bliss & Smith, 2017). Open access initiatives grew from a tiny beginning in 1993 to the creation of PLOS in 2001. PLOS is the largest open access journal database, which hosts more than 11,000 open journals worldwide (Rae & Hincks, 2018). The Budapest Open Access Initiative of 2002 helped to lift the concept of OERs to an international level. The combination of these three events formed the foundation of the rise of OERs (Budapest Open Access Initiative, 2012).

The second period of OERs, which started in 2004 and is ongoing, involved the William and Flora Hewlett Foundation. The founder of the company Hewlett-Packard, William Redington Hewlett, established the privately funded foundation in 1966 and is a contributor to OERs in the United States (Elkind, 2015). The foundation's objectives were long-term and focused on the promotion of free educational materials for all. These long-term objectives embedded three approaches regarding the use of OERs. These approaches were the support of quality OER content providers in developed and developing parts of the world, the creation of infrastructure and removal of barriers to OERs, and the development of a world movement for

OERs. As a result of these efforts, Catherine Ngugi, the creator of the African Virtual University's Research and Innovation Facility, founded OER Africa, a project of the South African Institute for Distance Education, to support OER users and communities across Africa (Bliss & Smith, 2017). International organizations such as the OECD, CoL, the Asia-Pacific Economic Cooperation, and UNESCO support OER efforts and initiatives financially (Bliss & Smith, 2017).

The Reasons for the Use of Open Educational Resources

The use of massive open online courses (MOOCs) for the past decades gave rise to the emergence of OERs (Weiland, 2015). A leading contributor to OERs was the Massachusetts Institute of Technology (MIT) by launching its OpenCourseWare site (Rodríguez, Pérez, Cueva, & Torres, 2017). The goal was to make learning materials available free of charge to anyone and have the ability to change, modify, or redistribute the material (Bonk, Lee, Kou, Xu, & Sheu, 2015). Many colleges and universities started or continued this process by using OERs to cut college costs and to make higher education more affordable for students (Thompson & Cotton, 2017). Despite the move forward, many faculty members are not aware of OERs and do not know where to find or locate the resources (Hilton, 2016). Adopting an open access textbook is intellectually more demanding for an educator in comparison to adopting a commercial book (S. Wang & Wang, 2017). Furthermore, universities have no financial incentive to provide support unless such activity is grant-funded (Jhangiani & Biswas-Diener, 2017). Faculty members who look for OER material for courses receive little support.

Sharing Open Educational Resources and Creative Common Licensing Requirements

Van Acker, Vermeulen, Kreijns, Lutgerink, and van Buuren (2014) found a large percentage of instructors shared OERs in the Dutch educational system. This system was limited

to sharing materials having low complexity, such as texts or images. In addition, instructors shared resources two times more often interpersonally compared to online sites. The instructors owned the copyrights to the created materials and were reluctant to make the materials available outside the informal networks, although a clearly defined licensing framework exists for OERs. The creator of an OER can apply a Creative Commons license (Cronin, 2017). The creation of OERs represents an investment of time and creative effort to engage students. Ultimately, the rewards of such efforts are coming back to the instructor. Mardis and Ambavarapu (2017) found personalization of OERs is a possibility to give students a way to explore, create, and demonstrate knowledge mastery.

Open Educational Resources and Attitudes

Anderson, Gaines, Leachman, and Williamson (2017) found instructors cited concerns about cost and exploitation of labor, while Mishra (2017) reported a frequent lack of institutional support. These instructors felt uncomfortable using OERs in the absence of a support mechanism. Cooney (2017) argued educators could harness available technology and best practices to improve the teaching and learning experience with OERs and to develop new competencies. Cooney pointed out the lower costs of reproducing open license material. The different uses of OERs have the potential to influence student learning outcomes. The investigation of student and instructor perceptions can help explain the conflicting views among instructors regarding the use of OERs.

Impact Studies of Open Educational Resources

Few studies are available discussing the impact of OERs on student learning outcomes in specific courses (Grewe & Davis, 2017). Colvard, Watson, and Park (2018) reported instructors who adopt OERs are providing a framework for collective savings of millions of dollars over

several years. The investigators found improved grades at the end of the course by observing a decrease in the grades of *D*, *F*, and *W*. The grade of *D* represents the lowest passing grade at the undergraduate level in the United States and a failure for graduate students. The grade of *F* indicates a failure, and the grade of *W* represents a withdrawal from a course for both college levels. Course grades improved, and *D*, *F*, and *W* grades decreased at a higher rate for students who received financial aid in the form of a Pell grant. Part-time students and underprivileged populations were positively affected. Educational leaders in the state of Georgia, under the Affordable Learning Georgia project, investigated the impact on student learning outcomes. OERs contributed to student savings, and the use of OERs did not negatively impact learning outcomes (Croteau, 2017). Grewe and Davis (2017) researched the impact of OERs at the community college level. The researchers found a positive correlation between OERs and student achievement, but online sites such as Khan Academy do not show any differences in student performance (Kelly & Rutherford, 2017).

The Use of Open Educational Resources in Massive Open Online Courses

Educators use OERs in the design of MOOCs (Jemni, Kinshuk, & Koutheair, 2017). MOOCs represent a low-cost method of providing higher education to students (Reich & Ruipérez-Valiente, 2019), and college administrators consider MOOCs to remedy educational disparities (Hansen & Reich, 2015). Hansen and Reich examined 68 MOOC courses at the MIT and Harvard University between 2012 and 2014 and found participants enrolling in these courses came from affluent neighborhoods and had a better education than the U.S. average student. Students with more significant resources had a higher likelihood of obtaining a certificate. There was a significant difference in the completion rates between more and less affluent students

among adolescents and young adults. Hansen and Reich raised concerns MOOCs are increasing rather than decreasing economic disparity.

MOOCs represent the next step in the use of OERs (Hayman, 2018). Piedra, Chicaiza, López-Vargas, and Caro (2015) argued the inclusion of semantic web technologies enhances the use of OERs. The use of semantic web technologies refers to the extraction of OER material from distributed repositories (Pauwels, Zhang, & Lee, 2017). Linking OERs can lead to a new generation of OERs and automate tasks and processes by converging free educational material into a new variety of learning materials (Piedra et al., 2015).

The interest in adopting OERs and OEPs grows (Czerniewicz, Deacon, Glover, & Walji, 2017). OER and OEP practitioners require continuous professional development to be able to judge the quality and suitability of OERs and OEPs. College and university administrators offer MOOCs to address this need (Karunanayaka, Naidu, Rajendra, & Ariadurai, 2018). Educators and administrators view MOOCs as a disruptive innovation inviting large numbers of learners to enroll in and complete college courses at no cost. The design of most MOOCs with high student numbers is challenging compared to a regular online course with smaller student counts. Many MOOCs have a content-driven design to transmit knowledge and deviate from the traditional way of generating knowledge. Karunanayaka et al. (2018) created four continuous professional development MOOCs at the Open University of Sri Lanka. The purpose was to assist with the integration of OERs and OEPs using scenario-based learning. Three attributes align with scenario-based learning: a learning scenario, learning activities, and assessment tasks. The combination of these attributes enables a learner to assume critical roles in an authentic learning scenario and to develop competencies supported using OERs. Karunanayaka et al. suggested to move away from focusing solely on subject matter expertise and to concentrate on in-situ

problem-based learning instead (Karunanayaka et al., 2018). In situ problem-based learning refers to problem solving in a real-life setting.

Flipped Classroom and Use of Open Educational Resources

Many colleges and universities have started adopting the flipped classroom approach (Abeysekera & Dawson, 2015). The flipped classroom is a learner-centered approach (Gilboy, Heinerichs, & Pazzaglia, 2015), which has replaced much of the traditional lecture approach to teaching. Sun, Wu, and Lee (2017) studied the use of the flipped classroom using OpenCourseWare as course materials and how students engage in self-regulation. The sample consisted of 181 first-year students in a physics course. The students could choose to be a member of the experimental or control group. The findings of the study showed no significant difference between the two groups regarding self-regulation. Students in the experimental group showed higher scores in the category for help-seeking. Sun et al. concluded the flipped classroom creates a learning environment for students to seek external help proactively.

A group of undergraduate students at Zhejiang University, China, took part in a study investigating the effectiveness of OERs in the flipped classroom (Y. Li, Zhang, Bonk, Zhang, & Guo, 2017). Fifteen students majoring in education participated in a blended and web-based college course. During the first five weeks, the students enrolled in a Coursera course entitled *Emerging Trends & Technologies in the Virtual K-12 Classroom*. During the next six weeks, students studied in a Sakai-based course and completed an assignment using OER-related material. Coursera and Sakai are online learning platforms using OERs (Chauhan et al., 2015). The results of the study showed students advanced through four stages: being unfamiliar, understanding, adapting, and becoming skilled. Student emotions shifted from being nervous to relaxed, and the use of OERs helped in confidence-building.

Role of College and University Libraries

College and university libraries have traditionally been an integral part of higher education institutions. Library staff members at Athabasca University viewed the provision of library services as critical for student success and student retention rates (Kinyens, 2018). Jesmi and Swaroop Rani (2019) argued libraries should have a focus on innovation to remain places of interest to the student, for example, by providing expert librarians to help users find and organize information.

Library administrators have become social agents resulting from the emergence of the information age (Herrera-Viedma & Lopez-Gijon, 2013), and the future of library services is unthinkable without information technology services (Tait, Martzoukou, & Reid, 2016). For example, librarians at Eastern Carolina University and Kansas State University help researchers navigate legalistic frameworks regarding the use of OERs (Seibert, Miles, & Geuther, 2019). Educational materials can be open and free for use but are subject to licensing agreements researchers may not know. Library administrators at both universities introduced a proactive initiative helping users to navigate through the proper use of OERs.

Librarians and educators tend to view OERs as a recent trend, but educators have used OERs since the 1990s (Godwin, 2016). The recent increased interest in the use of OERs stems from rising textbook costs (Straumsheim, 2017). Trained college and university librarians have experience in the evaluation of open content. The librarians serve as content curators for colleges planning to adopt OERs and offer professional development to aid faculty members with the integration of OERs in college classes (Welz, 2017). Welz further noted the expertise of the school's librarian is necessary for the proper curation of OER content. Utah State University librarians have created a process of identifying courses suited for the adoption of OERs.

Librarians help faculty members with integrating relevant OERs (Davis, Cochran, Fagerheim, & Thoms, 2016), confirming the librarian's role in the adoption process of OERs (McCoy, 2017).

Many OER resources are stored in online library repositories. OER repositories consist of collections of OERs and materials accessible openly through the worldwide web. Atenas and Havemann (2013) analyzed 80 repositories containing OERs using 10 quality indicators derived from the review of pertinent literature and found the use of these repositories difficult due to the inconsistency of the design of the repositories. Atenas and Havemann recommended further research into the design of repositories. In a more recent study, Hazra and Das (2018) reviewed and assessed the quality of several selected online learning repositories using different parameters. The analysis showed none of the selected repositories achieved a full score using a point system in the assessment suggesting more research is necessary.

International Use of Open Educational Resources

Straumsheim (2016) reported the use of OERs was rising worldwide, and international adoption was increasing. Findings of the largest and most comprehensive set of studies entitled *Adoption and Impact of OER in the Global South* revealed key research results on the use of OERs in 21 countries in South America, Sub-Saharan Africa, and South and Southeast Asia (Hodgkinson-Williams & Arinto, 2017). Hodgkinson-Williams and Arinto identified several key challenges preventing students from attaining a degree. These challenges included unequal access to higher education, differing qualities of OERs, the level of teaching and student performance, increasing costs, and concerns about the sustainability of higher education. Hodgkinson-Williams and Arinto recommended the introduction and use of OERs to address these challenges. In another study covering South America, Rodés, Gewerc-Barujel, and Llamas-Nista (2019) analyzed the social representations among university teachers concerning the

development, use, and reuse of OERs in the teaching disciplines using grounded theory. Rodés et al. selected 12 cases from Latin American universities and found the creation of OERs is mainly intrinsic, for example, by contributing and sharing. Instructors emphasized the evaluation of the OERs to engage in a continuous improvement process, but tensions arose about the commercial use and misappropriation of somebody else's work (Rodés et al., 2019). Members of a research team of the Research on Open Educational Resources for Development project examined and proposed ways to address the needs for the adoption of OERs in the Global South using Archer's (2003) social realist theory (Research on Open Educational Resources for Development, 2017). Within the framework of the Research on Open Educational Resources for Development project, the Global South initiative aimed to provide empirical evidence for the adoption of OERs and to improve educational practice, policy, and research in developing countries. The members of the research team proposed mapping OERs with learning objectives, the rollout of MOOCs, the inclusion of teacher professional development, and social inclusion.

Education is not a right, but a privilege in parts of the world where access to educational resources is competitive (Thomas & Napolitano, 2017). Access to educational resources is only granted to a privileged group of students and educators having an acceptable social status. The general public and learners without an acceptable social status have limited to no access. An increasing number of colleges and universities in the networked world have started sharing digital resources, but small countries are at a disadvantage. Members of small countries often do not speak English and have limited resources to create and adopt OERs, such as in Croatia (Krelja Kurelovic, 2016). More adaptation to local OER needs is necessary to cover and overcome language barriers (Krelja Kurelovic, 2016). In another study addressing a language barrier, Olivier (2018) discussed the need to give the Afrikaans language more consideration in

research. Afrikaans is the language spoken in South Africa and Namibia (Olivier, 2018).

Afrikaans is an old Dutch dialect spoken by the White settlers who came from the Netherlands and Flanders, Belgium, in the mid-1600s (Louw, 2004). There has been an increased interest in the use of Afrikaans for scientific and research reasons. Olivier chose and studied 22 websites inductively from a database of 1,873 websites using document analysis. The criteria for the selection of the websites were linked to OERs. Olivier used Krajsco's (2016) OER criteria for foreign language learning in the analysis. Olivier's findings showed Afrikaans language teaching resources adhered to some of the OER characteristics in design, content, and technical aspects, but not to all. The resources did not meet standards when examining attitude, knowledge, and competence. Moreover, the selected resources did not follow didactical principles concerning goals, activities, and tasks. Olivier argued extensive research and development is necessary to advance Afrikaans as a language for science.

S. Henderson and Ostashevski (2018) replicated a study by Kursun, Cagiltay, and Can (2014) to understand the barriers to adopting, administering, and accepting OERs. An understanding of these barriers is vital in support of growth and success of global education. In the original study, Kursun et al. surveyed MIT OpenCourseWare faculty members on the perceptions of barriers to OERs, incentives, and benefits. The replication study included international participants. The replication process provided insight into the reality of perceptions of barriers, incentives, and benefits of OER among international educators. Findings of the study showed barriers to OERs stem from a lack of incentives, the presence of institutional policies, and a need for more support for the creation of OERs (S. Henderson & Ostashevski, 2018).

In another replication of a previous study, Mays (2017) explored the potential OERs can provide to support pedagogic transformation in the African university system. The original study

focused on four African universities. These universities were African Nazarene University, the Open University of Tanzania, the University of Pretoria, South Africa, and the Free State University, South Africa. Mays' (2017) study focused on African Nazarene University near Nairobi, Kenya, with an emphasis on the period of 2015 to 2016 to provide a foundation for African Nazarene University's strategic planning process of 2017. This study was the result of a multi-year study implemented by OER Africa. OER Africa is a collaborative network missioned with the development of critical cognitive skills and competencies in higher education to contextualize OER practices among higher education institutions in Africa (OER Africa, 2019). The key finding of this study was the suggestion individual involvement with OERs does not move to an institutional focus unless the individual engagement aligns with the overall mission, vision, and business model of the university (Mays, 2017).

The CoL is a leading global organization in charge of the promotion and development of distance education and open learning (CoL, 2019). The organization's headquarters is in Burnaby, Canada. CoL is the only global intergovernmental organization addressing the needs of open learning. In connection with the William and Flora Hewlett Foundation, CoL conducted a study to collect baseline data from institutions located in the Commonwealth. The Commonwealth operates in many countries across the globe in Africa, Asia, the Caribbean and Americas, Europe, and the Pacific (CoL, 2020).

The goal was to research the development, the (re)use of OERs, the availability of support, and challenges concerning the use of OERs. As part of the study, the research administrators distributed a survey about OER training activities. Faculty members of vocational institutes had a higher rate of participation (64%) compared to faculty of open universities (54%). Faculty members who had not participated in any training program had the highest user

rate of OERs (47%). Faculty without training became aware of OERs through self-study (39%), and 43% had heard about OERs through colleagues.

The research report *Open Educational Resources in the Commonwealth 2016* (Phalachandra & Abeywardena, 2016) indicated gaps in the development of OERs in the Commonwealth. Respondents indicated 65% had used OERs, and 60% used OERs to supplement the college lessons. The use of OERs resulted in cost savings in 68% of the cases. Faculty members liked to check the quality, authenticity, and credibility of an OER before use, and open licensing was important. Additional findings suggested the main challenges in the use of OERs are a lack of information on the quality of OERs and the frugality of video and audio formats. Lack of time, lack of awareness, and slow internet connections contributed further to the barriers of using OERs. The availability of search engines and repositories added to the willingness to adopt OERs. Respondents used Google 89% of the time to search for OERs compared to other search engines. The OER Commons (36%), Wikimedia Commons (32%), and the CoL Directory of Open Educational Resources (23%) were among the repositories used the most (Phalachandra & Abeywardena, 2016).

In another study under the auspices of the CoL, the Saide's African Storybook Initiative (Saide, 2019) tested an alternative of publishing information. The project provided openly licensed stories for use and the tools to translate stories for use under an open license. This initiative had its roots in Kenya, South Africa, Lesotho, and Uganda in the academic years of 2014 and 2015. The project extended to new countries, and going the "open way" has the potential of producing stories needed in the language of students to practice and learn how to read OERs. The open licensing approach of the African Storybook Initiative added to the possibility of stimulating and encouraging the use of OERs (Welch & Glennie, 2016).

Open Educational Resources and Micro-Credentialing

There is a shift in global education due to sociocultural, political, economic, and technological changes (Jónasson, 2016). Micro-credentialing has gained attention in recent years, and college and university administrators have introduced micro-credentials to meet the needs of a growing and educated workforce (Veletsianos, 2016). Educators have started rethinking the organization of education in the presence of new technologies. New ways of learning and acquiring knowledge provide the foundation for researchers and policymakers to consider a more extensive array of emerging approaches to higher education. These approaches include competency-based learning and assessments, OERs, the flipped classroom, and micro-credentials (Veletsianos, 2016).

Bossu, Fountain, Smyth, and Brown (2016) discussed the concept of open design and the use of OEPs in the Australian higher education system. Bossu et al. argued a broader conception of learning outcomes is necessary to support micro-credentials and prior learning assessment and recognition. University administrators have started adopting OEPs in curriculum design to address the various needs of adult learners. These needs include cultural diversity, digital literacy, different institutional settings, open platforms, open licensing, and a response to the complexity of learners' personal learning environments. The use of open pedagogy, as introduced by Bossu et al. (2016), empowered the learner to pursue a selected learning path driven by the professional needs of the learner. Learners were committed to engaging in co-creation of knowledge resulting in the bestowal of a digital artifact such as a badge or micro-certificate (Bossu et al., 2016).

Economic success requires education (Madsen & Murtin, 2017), and new credentialing methods in higher education have provided new options to demonstrate mastery of learning

outcomes (Nodine, 2016). The validation of such certificates poses problems because the knowledge gained from online courses does not have a common credentialing platform (James, 2017). The acceptance of coursework from online platforms or MOOCs disrupts the traditional educational process for financial reasons. The use of micro-credentials provides an opportunity for innovation and marketing (Ifenthaler, Bellin-Mularski, & Mah, 2016). New jobs in the global economy require an advanced degree, and job applicants would need marketable job skills (Lemoine, Wilson, & Richardson, 2018). Career skills are not static but necessitate lifelong learning. Online courses and micro-credentialing provide the needed platform. Job seekers can determine the structure of lifelong learning and choose where, when, and how to learn (Oosi et al., 2019). The credentialing process requires colleges and universities to deal with accrediting agencies and other governing bodies because online learning entails new challenges. There is no accrediting agency providing an official evaluation of skills acquired online (Cunningham, Key, & Capron, 2016). The accomplishment of personal learning online represents an acknowledgment of participatory experience and the recognition of newly acquired skills.

The MacArthur Foundation created and funded the Mozilla Open Badges Project in 2011 (D. Gibson, Ostashewski, Flintoff, Grant, & Knight, 2015) with a network of other partners. The aim was to develop an alternative way of recognizing learning wherever it would take place, either within or outside a formal educational setting using OERs. Open Badges defined technical specifications and requirements to earn a badge for the issuer and the earner (Open Badges, 2016). The bestowal of micro-credentials has become an essential method of recognizing learning outside the traditional classroom for work-related accomplishments and economic rewards (DeMonte, 2017) but represents a rift from the traditional recognition of degrees. The use of digital badges encourages online learners to enroll in courses (Chou & He, 2017), but

micro-credentials lack universal recognition. Researchers have questions about the real benefits and whether micro-credentials can revolutionize the way colleges and universities provide education (Lemoine et al., 2018). Singer (2018) argued micro-credentials should not be seen distinctly but should be a building block in the creation of other credentials. Adult learners would take more control of personal education, covering needed skills and interesting topics, leading to self-directed and lifelong learning in a changing economy.

In a research study at the Open University in the United Kingdom, Law (2019) investigated the challenges of reusing OERs and how the motivations of OER users can be better supported. Over the five years of the study, Law surveyed formal students and informal learners based in the United Kingdom. The study showed general problems with the usability of OERs. Respondents expressed a need for the certification of courses and learning opportunities using OERs to combat the prohibitive costs of higher education in the United Kingdom. Law recommended an improvement of the design and curation of OERs for those students unable to afford formal study and to combine the use of OERs and micro-credentials.

MIT has introduced a micromaster's program by launching the site edX.org (MIT, 2019). Learners enroll in the program to help prepare for future employment and attain additional qualifications (Goodman, Melkers, & Pallais, 2018). UNESCO has published a report on digital credentialing (Chakroun & Keevy, 2018). Chakroun and Keevy pointed out digital technologies create new opportunities for skills development and recognition. New learning methods emerge to deal with the increasing demands in education and the global marketplace. The competition between robots and humans dominated the discussion. The research failed to address the needs for education, credentialing methods, and the need to validate broader learning outcomes when lifelong learning becomes ubiquitous. The digitization of information requires the development

of new learning materials and new ways of assessing and certifying knowledge and skills (Chakroun & Keevy, 2018). Open data contribute to open learning, and institutions of higher learning can help influence the new landscape of open education—for example, using micro-credentials (Oswald, Behrend, & Foster, 2019). Kanwar (2018) argued micro-degrees could become as important as full degrees, and faculty members will engage in lifelong learning to keep up with the fast-paced changes.

Blessinger and Bliss (2016) suggested open assessment resources represent an addition to OERs and have identified six dimensions of higher education services for the future. These dimensions are content, interaction, assessment, credentialing, support, and technology. The fourth dimension, credentialing, is a significant product of higher education and involves micro-credentials. Blessinger and Bliss viewed credentialing as an articulation agreement supporting credit transfer among colleges and recognition of prior learning. The current infrastructure for credentialing represents a map of summative but not formative assessment needed to monitor the ongoing process of a learner. The micro-credential framework would support formative assessments, for example, in the form of competency-based learning leading to micro-certifications (Blessinger & Bliss, 2016).

Social Media and Use of Open Educational Resources

The use of social media in higher education is on the rise and creates new possibilities for the delivery of open course content (Devi, Gouthami, & Lakshmi, 2019; Parusheva, Aleksandrova, & Hadzhikolev, 2018). The University of Virginia, in partnership with Distance Education of Africa and Coursera, has provided six business courses online to 450 learners in 20 different countries in Africa. A team of researchers and educators at the University of Virginia learned from the analysis of more than 2,200 support emails on how to leverage OERs.

Furthermore, the results provided a framework to offer massive open online courses and integrate social media platforms such as WhatsApp and Facebook in the course offerings. This combination empowered mentors and aided in the development of support teams. Palmer (2018) argued there are opportunities for the creation of local and regional online learning resources, the development of flipped classroom cohorts, and partnerships with local businesses. These partnerships have resulted in the creation of new business opportunities, job promotions, and networks of learners (Palmer, 2018).

Social media are a powerful driver to initiate changes in teaching and learning practices (Serdyukov, 2017). Manca and Ranieri (2016) conducted a study in Italy surveying the Italian academic staff across the country. The purpose of the research study was to identify the use of social media in daily teaching practice. The voluntary participants responded to survey questions regarding the frequency of use, the motivation to use social media, and any obstacles in the use of the tools. The tools included Twitter, Facebook, LinkedIn, ResearchGate, Academia.edu, blogs, wikis, podcasts, YouTube, Vimeo, and SlideShare. The results of the study showed limited and restricted use of social media and little inclination to integrate social media into the classroom due to cultural resistance, pedagogical concerns, and organizational constraints (Manca & Ranieri, 2016).

Little research exists concerning the role of social networking in the use of OERs (Cronin, 2017; Zourou, 2016). Users of OERs want to engage socially to combine meaningful learning with formal and informal learning contexts (Cha & So, 2020; Sclater, 2016). Zourou (2016) conducted a study to determine if and how social networks permit open educational practice focusing on language learning and teaching. Zourou collected responses to an open-ended questionnaire between June and August 2014, and 18 volunteers responded. The responses

were analyzed using a content analytical framework covering three dimensions: the value of the social dimension in open educational practice, social network affordances, and open learning pedagogies. The study showed the role of social networks favors public sharing of content, but the reluctance to share and restrained institutional mindsets prevented the idea of open educational practice. The reuse of OERs, along with versioning and content mixing, may contribute to a heightened awareness of OER and lift the reluctance to share the content among OER users (Zourou, 2016).

Firat, Altınpulluk, Kılınç, and Büyük (2017) researched the relationship between open education and the use of social media in Turkey using Facebook because educators and students use the social site. Firat et al. located all pages and groups related to open education and accessed a total of 207 groups and 521 pages for social network analysis. The analysis involved the density and centrality features for groups. Turkish Facebook users accessed pages and groups related to study programs, job opportunities, and student services more frequently than other information. Students found well-structured Facebook pages appealing, and the sites reached a high level of popularity in a rather short amount of time (Firat et al., 2017).

College administrators and educators have little knowledge if OERs generate educational outcomes in particular concerning student learning performance (Sutherland & Jalali, 2017). Sutherland and Jalali performed a literature review in the field of medical education to assess the state of knowledge about social media and OERs. In a search of major publication databases from 2012 to 2017, Sutherland and Jalali used keywords referencing social media and medical education while restricting the search to peer-reviewed, English language articles. The authors of the chosen manuscripts had to have used evaluative methods and conducted empirical research. The search strategy resulted in a total of 13 studies. The authors of the selected studies had

researched the use of Facebook, Twitter, and YouTube in undergraduate medical education courses. The results showed the use of Facebook promoted collaborative online communities, but YouTube provided little educational value due to the unverified content added each day (Sutherland & Jalali, 2017). Extant published research provides information about the use of social media, but the impact of social media is still unclear. There is a lack of empirical studies measuring the impact of social media in medical education (Sutherland & Jalali, 2017).

There is a growing interest among OER researchers to find out how practices of educators in the higher education sector progress toward open pedagogy using OERs as a form of social media (Blomgren, 2018; Kaatrakoski, Littlejohn, & Hood, 2017). Kaatrakoski et al. drew on the theories of self-regulated learning and cultural-historical activity theory to investigate how open educational practice evolved using interview data. The findings of the study showed OEPs did not easily fit into the current educational system. Tensions arose, showing educators need a support system in place to balance the traditional form of education and emerging forms of open education (Kaatrakoski et al., 2017).

Adult Education and Lifelong Learning

Many adult learners struggle with concepts of mathematics due to math anxiety (Lai, Zhu, Chen, & Li, 2015). Misra (2018) argued lifelong learning of mathematics is a necessity in adult learning. Efforts are necessary at the personal, societal, institutional, and governmental levels to help adult learners overcome practical challenges. The provision of OERs can provide such an opportunity. Misra described OERs to be an innovative practice supporting any education using free resources. Many OERs become increasingly available in different languages to address cultural needs and speakers of languages other than English. The combination of these characteristics makes OERs a valuable resource to promote lifelong learning of mathematics

among adult learners (Misra, 2018). Chiappe and Adame (2017) added lifelong learning is a progressive process and the enlargement of open access makes an essential contribution to this process.

The move to OERs started in 1994, and the use of OERs is proliferating. Members of entire nations and institutions embrace the view educational content belongs to learners and should be open and accessible. OERs can help in a significant way to promote lifelong learning by providing inclusive and equitable access. Literacy is a significant problem in the United States among minorities and can prevent the country from advancing in a global knowledge-based economy (Ntiri, 2016). The use of OERs can assist in the construction of knowledge and skills (e.g., literacy in adult education) and contribute to the sustainable development and lifestyles of lifelong learners (McGreal, 2017).

The Ginigoada Foundation is an Australian non-government organization dedicated to helping nationals of the country of Papua New Guinea to attain education as adult learners (Kidu, 2018). Members of the country's government recognized a lack of educational opportunities for members of the population living in urban areas or squatter settlements. Schools in the country were too expensive, preventing children from attending, and outside these areas, opportunities for education were even less. In the founding days of the organization, the popularity of the program led to the creation of a bus fleet to take learners outside local communities to other provinces in Papua New Guinea. High numbers of enrollments and graduation rates confirmed the success of the project (Kidu, 2018).

Africa, as a continent, faces a growing proportion of older adults making education a lifelong endeavor (Milana, Webb, Holford, Waller, & Jarvis, 2017). The provision of free learning opportunities is vital to ensure continuous learning in the African culture. Principles of

lifelong learning in Africa form the foundation of education along with the use of OERs to move away from commercial to informal and free learning environments. Informal and free learning environments are necessary to provide adequate opportunities for learning. Lifelong learning and indigenous African learning are widely accepted, but OERs have relevance because there is a lack of the propagated use of OERs in Africa (Milana et al., 2017).

Institutional Support and Faculty Development

Faculty development and institutional support are necessary to promote the implementation of OERs (Maarop & Embi, 2016). Current research into institutional support and faculty development has shown the development and implementation of quality OERs require considerable time and human management resources. McGowan (2019) conducted a content analysis of a stratified sample of U.S. university websites. All the universities were regionally accredited. McGowan wanted to assess the current state of institutional mechanisms to support faculty members who considered the implementation of OERs. The study revealed universities and colleges had made progress in support of faculty members. Examples included mini-grants, stipends, checklists, and mechanisms to help in the decision-making process, but there was no broader funding base for OERs. McGowan's research has shown libraries and teaching centers share institutional sponsorship. Due to a lack of knowledge about ownership and licensing in the field, McGowan recommended shared governance and the use of data-driven initiatives to provide faculty support.

Members of a Chinese research team investigated the use of OERs by faculty members at Zhejiang University to find out which barriers existed in the development and use of OERs (Guo, Zhang, Bonk, & Li, 2015). Guo et al. randomly selected 360 faculty members to complete a survey. The results showed few faculty members use OERs, and a lack of time and skills

prevented the faculty members from the development of quality OERs. Both results portrayed a negative image of OERs, and Guo et al. concluded more serious efforts are needed for the improvement of OER awareness and development in China.

The civil war in the eastern part of Ukraine has resulted in problems in higher education, and students and academics have moved to the western part of the country (Pikulicka-Wilczewska & Uehling, 2017). The students enrolled in distance learning classes due to the unavailability of face-to-face courses. Universities offered online classes on a large scale but within a brief amount of time and resource constraints. While the needed infrastructure was present, online teaching skills and faculty development in online teaching did not exist. The Swiss National Science Foundation has funded a project development program in Turkey as an open educational resource (Adnan, Kalelioglu, & Gulbahar, 2017). Developers called the project *e-Tutor* and created open content in the English, Ukrainian, and Russian languages to help support university staff to teach online (Adnan et al., 2017). The program ran as a “train-the-trainer” course and has made significant contributions to online learning initiatives in the Ukraine (Adnan et al., 2017).

Hayman (2018) conducted a study at a government-funded postsecondary institution during the Academic Year 2017–2018 in Ontario, Canada, using a mixed-methods approach. Ajzen’s (1991) theory of planned behavior guided the study. Hayman wanted to determine the feasibility of an awareness and support strategy to help increase the adoption of OERs among postsecondary instructors in Ontario. The use of OERs in the classroom presented a new teaching experience for many instructors, and Hayman engaged in a dialogue as part of a professional development program. The participants determined the usefulness of the awareness and support strategy based on the expressed perspectives (Hayman, 2018).

Universal Design for Learning

The universal design for learning (UDL) is a framework designed to meet the different needs of diverse learners (Ralabate, 2011). In educational settings, concepts of diversity and inclusion are essential, and the use of OERs plays an important role (McGreal, 2017). Okolo, Clemente, and Daley (2019) engaged in a review of 126 UDL peer-reviewed articles published between 2000 and 2017, covering an array of early childhood through postsecondary education. Okolo et al. found a consistent increase in the quantity and quality of UDL research over time. Peer-reviewed articles appear in a variety of research journals, but articles for this review stemmed mainly from journals targeting special or technology educators. Technology played an important role in more than two-thirds of the studies under review. The research questions in the articles and the nature of the research varied in predictable ways suggesting generalizations regarding the impact and efficacy of UDL are unproductive. Future research on UDL should focus on the application and alignment of UDL technology in less predictable ways using a greater variety of participants and educational contexts (Okolo et al., 2019).

Inclusive education provides all learners with equal opportunities using UDL (Navarro, Zervas, Gesa, & Sampson, 2016). UDL addresses the needs of accessibility to educational materials, and instructors have choices in the selection of OERs available through OER initiatives. Navarro et al. noted college administrators expect instructors to be able to select OERs to meet the needs of diverse learners to deliver inclusive learning experiences. The ability to select appropriate OERs calls for the development of specific competencies. One such competency is the Competence Framework for Inclusive Teachers (CFIT). The CFIT is a framework enabling educators to design and select OERs to apply UDL principles (Majoko, 2019). The completion of a CFIT professional development program by the instructors added

competencies to the design of inclusive learning experiences for the students (Navarro et al., 2016). Kourbetis and Boukouras (2014) identified a gap in the creation and use of open educational materials addressing the needs of students, who are deaf, at the national level in Greece. The project *Design and Development of Accessible Educational & Instructional Material for Students with Disabilities* promotes the development of open educational materials beyond the current elementary school level to meet the need of students who are deaf. Current OERs neglect and underrepresent students who are deaf. The accessibility of open textbooks creates equal opportunities for learning and participation in the educational setting (Kourbetis & Boukouras, 2014).

Challenges arise translating UDL into practice (Riviou & Nikolaos, 2015). UDL promotes diversity and inclusion, but there is a need for more professional development. The UDLnet network bridges the gap between theory and practice and provides a collection of best practices under the UDL framework (Kouroupetroglou et al., 2015). The goal of the European-based UDLnet network is to contribute to the amelioration of teacher practice combining computer skills with UDL practice. While it is easy to develop an understanding of UDL principles, the implementation on a large scale proves cumbersome. The collective implementation of UDL requires collaborative planning among instructors with a different background in curriculum knowledge and skills. Ongoing innovation within the UDLnet network is necessary to create a collection of best practices for UDL open to the broader community of teachers and students (Riviou & Nikolaos, 2015).

Student Performance and Contrary Literature

In one of the most critical studies undertaken to date in the use of OERs, L. Fischer et al. (2015) compared 4,900 students in OER courses to 12,000 students in non-OER courses and

found grades were comparable with mixed effects on student completion rates and grades. In another study, Robinson (2015) found students using OERs had, on average, lower grades compared to students using commercial textbooks, mainly in business and psychology classes. Studies of the impact of OERs have mostly focused on the natural sciences and mathematics courses with little to no research available in the humanities or social sciences (Lawrence & Lester, 2018). Lawrence and Lester noted further research is necessary to see if OERs have different impacts in specific college courses.

Chiorescu (2017) found OERs provide the potential to save money on course materials. The use of OERs showed no significant difference between grades in math classes before and after the introduction of OERs. Y. M. Choi and Carpenter (2017) introduced free course materials into a college class on human resources and ergonomics, as many students did not buy the prescribed textbook. The research results showed a significant difference for midterm grades before and after the introduction of OERs. Compared to grades before the use of no-cost materials, final exam grades have dropped but have since remained stable. In the analysis of the final course grades, Y. M. Choi and Carpenter found no significant differences between the classes.

Gaps in the Literature

The literature review revealed a gap in the practice of selecting and adopting OERs due to the lack of a consistent set of criteria for the selection of quality OERs (L. Fischer et al., 2017; S. Woodward et al., 2017). S. Wang and Wang (2017) noted few published case studies exist demonstrating the comprehensive selection and adoption process from the faculty member's perspective. The creation of a set of selection criteria for quality OERs can help college and university educators to select and adopt quality OERs for use in online undergraduate classes.

Chapter Summary

The theory of transformative learning underpinned the study. The literature review showed a lack of research studies in the field of OERs limiting a comparative analysis relevant to the study. Many educators and administrators have a limited understanding of OERs and development over time. The literature provided relevant information in the sections on the definition of OERs, the origins of OERs, and the development over time. Many reasons exist for the use of OERs. The goal is to lower the rising costs of higher education, but there are challenges in the selection, adoption, and use of OERs. The research showed further a lack of knowledge of how to share OERs. Educators and administrators should apply the requirements of the Creative Commons license allowing the mix and reuse of OERs. Attitudes about OERs vary and range from skepticism to enthusiasm among educators using OERs.

Researchers have investigated the impact of OERs in the college classroom and MOOCs. Most research results show no significant difference in grades in the college classroom. The literature showed the use of MOOCs appeals dominantly to students from affluent backgrounds. Students having more resources available were more likely to complete coursework in a MOOC class. The flipped classroom caters to the needs of adult learners. Adult learners like to take charge of the learning process and complete the required assignments online. The physical classroom engages learners in activities reinforcing the course material under the facilitation of a subject matter expert. The role of libraries has changed with the advent of OERs. While the primary role of a library and the staff once was to assist students and professors with research, the presence of OERs has added responsibilities to the library staff. For example, librarians now act as curators and administrators of repositories of OERs and provide faculty development to instructors and educators required to adapt and use OERs in the classroom.

OERs play an essential role in the rest of the world. Various international initiatives exist to promote the use of OERs—for example, in Africa, Asia, and Latin America. Organizations such as the African Virtual University or CoL offer courses helping students save money on textbook purchases. OERs offer educational opportunities to those who cannot afford education. Qualifications include college degrees, certifications, and, lately, micro-credentials. The micro-credentialing sector is growing, and OER support plays a vital role. Micro-credentials represent micro-degrees and offer professionals the opportunity to earn additional qualifications without enrolling in a full degree program. Micro-credentials provide recognized education at a low cost making this training economically attractive to organizations.

Educators have introduced social media as OERs into education. The use of Facebook, Twitter, Instagram, or WhatsApp contributes significantly to education without raising costs. Students use social media to complete assignments, to communicate with each other, or to participate actively in online classes. Many accreditation agencies require the inclusion of lifelong learning concepts in adult education. OERs can help in a low-cost manner. Colleges and universities have engaged in institutional support and faculty development in combination with an approach to UDL. Instructors and educational administrators need support in the selection and adoption of OERs while addressing the needs of diversity and inclusion at the same time. Two large-scale studies reported mixed student outcomes as a result of the use of OERs (Fischer et al., 2015; Robinson, 2015). The literature review concluded with a discussion of gaps in the practice of selecting and adopting OERs. These gaps provided the foundation of the research study.

Chapter 3 provides an overview of the research methodology used for the study. The literature review in this chapter provided the framework for the underpinning research methodology and design. The use of a qualitative methodology and a hermeneutic

phenomenological design helped answer the research questions listed in Chapters 1 and 3.

Chapter 3 further outlines the role of the researcher; provides a presentation of the research procedures including instrumentation and data collection; explains the data analysis, reliability, and validity; and informs the reader of the ethical procedures applicable to research involving human subjects.

Chapter 3: Methodology

The purpose of this qualitative hermeneutic phenomenological study was to explore perspectives about the accuracy and quality of open educational resources among instructors having experience in the adoption of OERs in online undergraduate courses. These instructors needed to have experience in the application of Quality Matters' (QM) quality standards in online course design, experience in the use of OERs in online undergraduate classes, and be QM peer or master reviewers or both. The combination of these three attributes was important in the conduct of the study.

The term accuracy measures the precision and the absence of errors in the selection of OERs (Camilleri et al., 2014), and the term quality indicates to what extent an open educational resource is fit for purpose (Kawachi, 2014). Fitness for purpose references the fulfillment of expectations, stems from the manufacturing industry, and many educational quality agencies have adopted the term (Jung et al., 2016). Fitness for purpose is the most appropriate way of assessing the quality of OERs across four dimensions (Jung et al., 2016). The four dimensions are purposes, ease of use, content, and pedagogy.

The use of OERs is increasing, and many colleges and universities have started OER initiatives to lower the cost of college attendance in the United States (Abramovich & McBride, 2018). For example, the University of Maryland University College (UMUC), now University of Maryland Global College, was the first large university in the United States to adopt and use OERs in 2015 (Ekowo, 2017). The adoption of OERs saved students approximately \$17 million in the first year (Schwartz, 2017).

This study used a qualitative methodology with a hermeneutic phenomenological design. The purpose of this qualitative hermeneutic phenomenological study was to explore perspectives

about the accuracy and quality of open educational resources OERs among instructors who have experience in applying QM standards in online course design and who have adopted and used OERs in online undergraduate courses. Online instructors employed at institutions with a QM membership served as the population, and online instructors who have applied QM standards in development or review of an online course provided the sample for this study to answer the following research questions:

Research Question 1: What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs?

Research Question 2: What are the perspectives of online instructors using OERs in online undergraduate classes on the ease of use of OERs?

Research Question 3: What are the perspectives of online instructors using OERs in online undergraduate classes on the content of OERs?

These research questions were developed using Jung et al.'s (2016) 25-item framework as a foundation. The authors of the framework granted permission (see Appendix A). This chapter will further discuss the research design and rationale, the role of the researcher, the research procedures (including population, sample selection, and instrumentation), the data collection and data analysis process, the reliability and validity procedures, and the ethical procedures in research involving human subjects. The chapter will conclude with a summary.

Research Design and Rationale

The study employed a qualitative methodology and a hermeneutic phenomenological design. The use of qualitative research methods is warranted if the factors under investigation are subjective and difficult to measure quantitatively (Meunier-Beillard, Ecartot, Rigaud, & Quenot, 2017). Researchers use qualitative methods for the description of complex phenomena in the

natural environment and the investigation of knowledge and understanding (Mohajan, 2018). Qualitative researchers do not quantify or measure but collect data from interpreting and comprehending a phenomenon. The purpose of qualitative research is to add knowledge to the existing body of literature for an academic and intellectual discourse by way of describing an observed phenomenon in a population of interest. Qualitative research is not designed to provide generalizable findings (Wu, Thompson, Aroian, McQuaid, & Deatrck, 2016).

The findings of qualitative research can form the foundation for the construction and development of new theories (Meunier-Beillard et al., 2017). Using qualitative research, an investigator can attempt to make sense of reality and provide a description and explanation of the social world. Qualitative research helps to construct or reexamine the theoretical foundations in the social sciences (Morse & Field, 1996). Creswell (2012) argued qualitative research provides the best basis for research studies with unknown variables and a need for exploration.

Edmund Husserl, a German philosopher, is the founder of phenomenology and argued an investigator could best experience phenomenology with human consciousness (Moran, 2014). Scientists have labeled Husserl's approach "descriptive phenomenology" (Rodriguez & Smith, 2018). The phenomenological research design centers around gathering "perspectives" (Groenewald, 2004), as expressed in the research questions. A researcher using descriptive phenomenology describes experiences and sets aside any perceptions to enter the world of the research participant without any presumptions (Padilla-Díaz, 2015). Phenomena can only occur in the natural world and do not need a clear definition or design for explication (Coffin, 2018; Vagle, 2014).

Several different methods of phenomenology exist (Sloan & Bowe, 2014). The selection of the correct phenomenological method for qualitative research is essential to arrive at reliable

research results (Kaivo-Oja, 2017). The focus of this phenomenological study was hermeneutic phenomenology representing an interpretative approach (D. W. Smith, 2018). Hermeneutic phenomenology encourages interpretation (Davidsen, 2013). Martin Heidegger was the first to use hermeneutic phenomenology and viewed phenomenology as a further development of understanding (Kakkori, 2009). Heidegger used the term *Dasein* in phenomenology (Ormiston & Schrift, 1990). This term abstractly references the experience of existence being peculiar to human beings (Kisiel, 2017), and the presence of *Dasein* helps researchers understand and interpret other beings (Martínková & Parry, 2016).

Heidegger's initial interest was nested in the field of theology and changed later to philosophy (Hung, 2020). Much of Heidegger's work was based on Husserl's initial exploration of phenomenology (Horrigan-Kelly, Millar, & Dowling, 2016). Heidegger was more interested in the nature of *being* and focused on the human experience and how the experience is lived (Neubauer, Witkop, & Varpio, 2019). Human beings are actors in this world and focus on relationships between the individual and the individual's *lifeworld* (Neubauer et al., 2019). Lifeworld refers to the undeniable influence of the world on individuals. In Heidegger's view, an individual's experience is the result of a person's personal history and culture. Individuals cannot experience a phenomenon without using the experience as a benchmark.

The purpose of hermeneutic phenomenology is the creation of an understanding of the deeper layers of human experience lying beneath the individual's surface. Hermeneutic phenomenologists study individuals' narratives to understand the role and the daily lives of the individuals, and a researcher's knowledge and experience are guides in the process of inquiry and the phenomenon worthy of investigation. The use of an unbiased approach to the data collection process is inconsistent with the philosophical roots of hermeneutic phenomenology.

Heidegger encourages researchers to acknowledge preconceptions and reflect on how the subjectivity influences the analysis process (Neubauer et al., 2019). Hermeneutic researchers are attentive to the participants' descriptions of the phenomenon and make interpretations deduced from the lifeworld experiences (Eddles-Hirsch, 2015).

In this study, hermeneutic phenomenology allowed for the gathering of perspectives and lived experiences concerning the accuracy and quality of OERs among colleges and universities subscribing to QM to answer the research questions. The executive director of QM placed a notice about the study and the specific need for participants within QM's peer (PR) and master reviewer (MR) resources sites to which all QM reviewers have a subscription. QM's former director of research informed the PRs and MRs QM had vetted the study. The post on the PR and MR resource sites included information about the study and why the study would be of interest to other reviewers. All PRs and MRs received a letter explaining the study, the required commitment, the need to interview QM reviewers, and confirmation the study was approved by the dissertation committee. Selected PRs and MRs teaching online undergraduate classes were interviewed about the perspectives on the accuracy and quality of OERs using unstructured in-depth phenomenological interviews.

Testing interview questions using peers is important (McGrath, Palmgren, & Liljedahl, 2019). Poorly designed interview questions and a failure to review interview questions critically can lead to poor research results (Young et al., 2018). The members of a team of four external subject matter experts experienced in the conduct of qualitative research using interview questions and holding terminal degrees validated the study's interview questions. The team provided original independent peer-review input to improve the quality of the interview questions, to reduce bias, to add clarity, and to avoid ambiguity. Following the review and

feedback, the interview questions were revised and updated. Due to the geographical distance between QM, the research site, and the selected PRs and MRs, the interviews were conducted virtually using Zoom. The interviews were audio-recorded for later transcription, coding, and analysis. Selected faculty members were able to express personal perspectives and lived experiences about the accuracy and quality of OERs. Mezirow's (1981) theory on transformative learning provided the underpinning framework and support for the study, as OERs impact transformative learning (Leggett et al., 2018).

Role of the Researcher

Sauro (2015) defined four different roles a qualitative scholar can assume: complete observer, observer as a participant, participant as an observer, and complete participant. The sociologist Raymond Gold developed these roles in 1958, which represent the norm for many types of qualitative research (Sauro, 2015). The scholarly roles extend over a continuum. Based on the descriptions provided by Gold (1958), the role of participant as observer was assumed. Gold defined this role for scholars who fully engage with the research participants. The research participants see scholars more as a friend or colleague but respect the scholars' roles as researchers (Sauro, 2015).

The researcher has worked with QM in various capacities since 2007 as an online course facilitator and online course reviewer to assess the quality of online and blended-learning courses using the QM RubricTM. Both roles ended in the summer of 2018. The researcher knows the members of QM's top management personally and has no supervisory relationship with any QM member, does not hold any power positions, and exercised respect, responsibility, trust, and confidentiality with the participants during the research process. Another essential role is to set

aside any prior presumption, prejudice, or judgment to be able to conduct an objective analysis of the information provided by the participants.

The study was conducted with a sample of 16 online undergraduate faculty members who are QM online course reviewers. Interviews were conducted via Zoom due to the geographic dispersion of the participants and the research site in Europe. To ensure reliability and validity, the interviews and data collection process relied on observation and limited participation. Both reliability and validity refer to the credibility of a qualitative research study (Bashir, Afzal, & Azeem, 2008), and scholars can best establish credibility by employing triangulation using multiple methods such as interviews and recordings (Bashir et al., 2008). Professionalism between scholars and the participants, complemented by the need to obtain the data during the research process, limit the potential bias (J. Smith & Noble, 2014).

Qualitative research involves the process of bracketing (Tufford & Newman, 2012). Bracketing involves two types of researcher engagement (C. T. Fischer, 2009). The two engagements are to set aside researcher assumptions and to revisit the data hermeneutically. The two engagements represent an ongoing process and help researchers develop comprehension of the aspects of the topic under investigation. Any assumptions by means of bracketing and revisiting the data have been set aside as suggested by C. T. Fischer (2009).

Research Procedures

The following procedures were used to inform voluntary participating instructors about the research study and narrow the substantial population. The same procedures served for the implementation of an interview protocol, the collection of data, data organization, and analysis of data within an adequate amount of time. The use of proper research procedures was the foundation for the administration of the study in the allotted time frame.

Population and Sample Selection

QM provides services to a population of more than 1,300 subscribing colleges and universities worldwide with most member institutions based in the United States (Quality Matters, 2018). As such, the QM community provides a large population of online undergraduate faculty members. To facilitate the study, an official letter was sent to the executive director of QM addressed to all QM PRs and MRs. The letter explained the study, the required commitment, the need to interview QM reviewers, and confirmed the dissertation committee had approved the study (see Appendix C).

After receipt of the official letter addressed to all QM PRs and MRs, the executive director of QM agreed to place a notice about the study and the specific need for participants within QM's PR and MR resources sites. All QM reviewers have a subscription to these sites. QM's former director of research informed the PRs and MRs QM had vetted the study (see Appendix D).

Interested PRs and MRs wishing to participate in the study made contact directly via email. The sample consisted of 16 voluntarily participating QM PRs and MRs to achieve thematic data saturation. Participants were selected on a first-come, first-serve basis from the population of current PRs and MRs subscribed to the QM PR and MR websites hosted in Moodle, an open-source learning management system. Selected PRs and MRs teaching online undergraduate classes were interviewed regarding the perspectives on the accuracy and quality of OERs using unstructured in-depth phenomenological interviews.

The interview questions were validated by four external subject matter experts having experience in the conduct of qualitative research (see Appendix B) in response to a call for external subject matter experts (see Appendix E). Interested participants were informed of the

study following standard Institutional Review Board (IRB) regulations of American College of Education, including informed consent (see Appendix F) and the ability to withdraw from the study at any given point in time without any consequences of any kind. All interactions were handled confidentially, and participant data were anonymized.

The interviews were audio-recorded using Zoom to permit later transcription, coding, and analysis. The time frame for the invitational procedure was 15 working days. The number of responses received, 16, served as the basis for purposive sampling. Gentles, Charles, Ploeg, and McKibbin (2015) recommended purposive sampling for the identification of participants who have lived the experience under research. This method is widely used in phenomenology (Palinkas et al., 2015). Phenomenological research requires about 10 participants (Moser & Korstjens, 2018). More extensive studies can require a higher sample size to lead to more reliable research results. The minimum desired sample size required by American College of Education consisted of 15 to 20 participants to achieve thematic data saturation. Thematic data saturation is essential because different participants have different opinions, and a larger sample size ensures most of the perceptions are uncovered (Mason, 2010).

The sample consisted of instructors from online undergraduate programs of QM member colleges and universities throughout the United States. Selected instructors were informed of the study, the necessity of receiving informed consent, an explanation of the confidentiality process, and the time frame of the study. The selected instructors were contacted to schedule a mutually convenient date and time for the interview via Zoom.

The selected interview participants for the study were faculty members who have adopted and used OERs in online undergraduate classes and demonstrated experience in using QM's validated standards in making teaching and learning judgments in one's own and peers' online

courses. Faculty members may be employed at institutions having QM memberships such as large university systems but lack an awareness of QM. Such faculty members do not possess the skills in using professional judgment in the application of QM tools and processes. This selection process ensured faculty members could apply judgment against QM standards. Making judgments against QM standards helped set quality benchmarks in the interviewing process. QM standards guide the development, evaluation, and improvement of quality online courses (Ding, Gao, & Lu, 2017; Kearns & Mancilla, 2017).

Instrumentation

The selected faculty members of the participating colleges were asked to identify courses in the college's undergraduate online programs. Voluntarily participating instructors of the selected colleges and universities were interviewed about perspectives on the accuracy and quality of OERs used in online undergraduate courses. The instructors were asked to sign an informed consent document before the interview process. The interviews were encrypted by default. The selected instructors did not receive a copy of the interview questions before the actual interview to avoid preparation of answers because the use of unstructured interview questions is closer to a conversation than an interview and serves the interest of the interviewer (Jamshed, 2014). Questions are generated instantaneously in an unstructured interview, and the set of questions is not planned (Jamshed, 2014).

The interviews were conducted using the interview protocol refinement (IPR) framework (Castillo-Montoya, 2016). The framework provided a process consisting of four steps. The steps were to ensure interview questions aligned with the research questions, to construct an inquiry-based conversation, to receive feedback on interview protocols, and to pilot the interview protocol. The use of the IPR method contributed to an improvement of the data quality generated

using research interviews and strengthened the reliability of the interview protocols. Researchers should establish content validity before the interviewing process starts (Grosse, 2002). Creswell (2012) argued a researcher could best achieve content validity if a panel of experts identifies the interview questions as being valid. Outside subject matter experts experienced in the conduct of qualitative research using interviews as a tool and instrument established content validity for this study. The unstructured in-depth phenomenological interview questions (see Appendix B) related to answering the research questions were developed and designed to create a future framework of ramifications for instructors selecting and using OERs.

Data Collection

Englander (2012) noted interviewing participants has become the primary data collection procedure in qualitative research involving human subjects. Researchers use phenomenological qualitative studies to capture and analyze reality from individuals' narratives based on experiences and feelings and to produce in-depth descriptions of the phenomenon under investigation (Yüksel & Yıldırım, 2015). The data collection should have a broad definition, be open in its initial phase, and flexible during the data collection process (Moser & Korstjens, 2018). This study used unstructured in-depth interviews to explore the lived experiences of individuals related to the phenomenon (Creswell, 2012). Interviews are useful to explore experiences, views, opinions, or beliefs about a phenomenon. Individual participants' accounts can provide insight and develop an understanding of underlying structures and beliefs (J. Green & Thorogood, 2014). The use of unstructured interviews does not require a preconceived theory or idea. Such interviews can start with a simple opening question, such as "What is your experience with the use of open educational resources?" (Gill, Stewart, Treasure, & Chadwick, 2008). Such unstructured interviews progress based on the initial response, and researchers

recommend the use when there is a need for significant depth and a different perspective of a known subject matter.

Faculty members of the participating colleges using OERs were asked to identify courses in online undergraduate programs, and, using unstructured in-depth phenomenological interviews, instructors of the selected colleges and universities were interviewed professionally regarding perspectives on the accuracy and quality of OERs in online undergraduate courses. The Zoom videoconferencing platform was used to conduct the interviews. The use of remote interviewing and modern communication software reduces the amount of time and costs in the data collection process (Bolderston, 2012). Interviews were scheduled for an anticipated 45 to 60 minutes but were allowed more time, when required, to capture the full story of each participant. The interviews were audio-recorded for later transcription, coding, and analysis using the qualitative data analysis (QDA) software program NVivo. The software has a built-in upload tool for coding and analysis using encryption.

The standard for data retention in social sciences is 10 years (Hartas, 2015). Other scholars have an opportunity to examine or challenge the data or to extend the analysis. Collected data for this study were stored via password-protected and encrypted computer files and backed up to an external storage disk to avoid accidental data loss. Participants had the opportunity to check the responses for accuracy and resonance using the process of member checking as a follow-up procedure. Member checking is a validation process in qualitative research involving participants to ensure the trustworthiness of the results (Birt, Scott, Cavers, Campbell, & Walter, 2016). The participants were thanked again for the participation in the study and provided the opportunity to exit the study. The study's goal, purpose, and intended

outcome were reiterated, and the participants reassured of maintaining confidentiality (Given, 2008).

Data Preparation

Creswell (2012) recommended data organization and the preparation of the raw data for analysis using a QDA computer program. NVivo was used. NVivo does not analyze the data but aids in the analysis (Zamawe, 2015). The original data consisted of audio files and were transcribed to word processing files first for import into the QDA program.

The Zoom communication software can record audio files in two different ways, either in the cloud or on a local hard drive. For the maintenance of anonymity and confidentiality, the audio files were saved to the local hard drive. The Zoom software stores any recorded audio file in the document folder by adding a Zoom directory. The files are stored using the day and time stamp as a reference. The files were renamed using the file name FacultyMemberX, where the letter X stands for the participant number. For example, the audio file created by interviewing Faculty Member 1 was named FacultyMember1. The renamed files were uploaded to NVivo for transcription using encryption. Upon completion of the study, the audio files were stored on an external compact disk using 128-bit encryption.

The selected QDA computer program, NVivo, was used to combine the answers from each faculty member to the interview questions. For example, the answers of each faculty member to interview question 1 were combined into a single Word file. This process continued until all answers were combined in separate Word files for open and axial coding. The Word files were saved with a unique file name identifying each participant by number. For example, the answers of the first faculty member to all interview questions were saved as FacultyMember1.docx.

Data Analysis

The principal data source for this study consisted of transcripts of audio-recorded interviews. Scholars transcribe audiotapes verbatim in a phenomenological study and type out the recordings adequately to provide a correct textual replication of the interview. The transcriber concentrates on the words of the interviewees. This process entails revisiting the tapes and rereading and analyzing the transcripts. The transcriptions of the interviews were sent back to the participants to check for accuracy and resonance using the process of member checking before the start of the coding process. Member checking is a validation process in qualitative research involving participants to ensure the trustworthiness of the results (Birt et al., 2016).

The data were analyzed using line-by-line examination leading to open and axial codes. Wildemuth and Zhang (2016) recommended the use of open and axial coding for data analysis when using interviews as a data collection tool. Open coding was used to determine and generate provisional labels for the data chunks summarizing what happened. Open coding required reading through the data sets several times and recording examples of interviewees' words. The data chunks were axially coded to identify connections among the open codes in a second step (Gallicano, 2013). Axial coding connects the dots and identifies relationships among the open codes to find connections.

Three rounds of coding were conducted. The initial coding process was completed in NVivo by combining the answers all voluntarily participating faculty members had provided to a particular interview question. For example, all 16 answers to Interview Question 12 were combined in a single Word document. The same process was applied to all other interview questions from 13 to 27. Interview questions 2 to 11 were used to create faculty member profiles.

Interview question 1 has not been addressed in the data analysis because the question contained the name of the participants.

In a second coding process, each transcript was read line by line, and open codes emerged. Open coding refers to the identification of segments in a transcript (Chandrasegaran, Badam, Kisselburgh, Ramani, & Elmqvist, 2017). Lindlof and Taylor (2002) recommended line-by-line reading to seize broad ideas in the text, and codification brings the lived experience closer to the research participants (Williams & Moser, 2019). *Emic* and *etic* annotations and memos were created by reading line by line. The emic perspective of qualitative educational research symbolizes the internal language of a specific belief and seizes interviewees' meanings of the real world (Olive, 2014). The etic perspective demonstrates an external view of the real world and mirrors structures and principles developed to assess themes across different cultures (Willis, 2007). Educational scholars deem the etic perspective more applicable because nuances can only be understood when living within a specific culture (Godina & McCoy, 2000). The combination of emic and etic memos and annotations led to the creation of open codes.

In the third round of coding, the open codes were combined to axial codes, looking for common words and themes in the participants' answers. Axial coding connects the dots among the open codes by identifying relationships among the open codes (Gallicano, 2013). The responses were mixed and varied widely. The differences in the responses put restrictions on comparing answers from faculty members. The broad array of individual responses limited the classification of specific themes or words, leading to a more widespread collection of open and axial codes represented by sentences or sentence fragments. Blair (2015) found no one way to code correctly. The concept of interrater reliability was used, and a professional at Vesalius College, Brussels, Belgium, was asked to review the transcripts, coding process, and outcome to

provide unbiased input to increase reliability. Appendix G contains the coding matrix for the study organized in a manner as recommended by Gallicano (2013).

Triangulation

Qualitative researchers use data triangulation to add credibility to a qualitative research study (Salkind, 2016). Data triangulation involves the use of multiple data sources or approaches to the performance of data analysis (Carter, Bryant-Lukosius, DiCenso, Blythe, & Neville, 2014). The interviews for this study were composed of general interview questions, combined with questions relating to the purpose, ease of use, and content of OERs (see Appendix B) to gain multiple perspectives of the phenomenon under study and to validate the data.

Reliability and Validity

Reliability and validity are separate ideas (Trochim & Donnelly, 2008), but the two concepts were considered together in this hermeneutic phenomenological study. Qualitative research possesses different paradigms, and defining reliability in qualitative research is challenging (Leung, 2015). Reliability in qualitative research refers to consistency (Noble & Smith, 2015), and investigators accept a certain margin of variability for results provided the methodology and epistemology yield similar data sets (Leung, 2015). Silverman (2010) suggested five methods to enhance the reliability of qualitative studies. These steps are (a) refutational analysis, (b) permanent data comparison, (c) full use of data, (d) use of the deviant case, and (e) use of tables. A researcher should confirm the accuracy of the data during the extraction process, preferably with peers for triangulation purposes. The analysis and scope of the data are comprehensive, and the investigator should use the Popperian dictum of falsifiability to assess the reliability (Persson, 2016). The Austrian-born philosopher Sir Karl Raimund Popper made the general claim falsifiability is a criterion demarcating science from nonscience (Kragh,

2013; D. Miller, 1997), and the notion of falsifiability is a testable method to ascertain whether a theory or technique represents scientific knowledge (Notturmo, 2015).

The concept of validity in qualitative research refers to the appropriateness of the tools, processes, and data researchers have chosen (Leung, 2015). Validity in qualitative research is essential to assess whether the research question for the desired outcome is valid, whether the choice and design of the methodology are valid, whether the sampling and data analysis are appropriate, and whether the results and conclusions of the study are valid for the chosen context (Leung, 2015). Researchers can use first-tier triangulation consisting of fellow researchers or second-tier triangulation consisting of a review of resources and theories. Documented audit trails of research material and respondent verification add to the validity of qualitative research (Carcary, 2009). Bowen (2009) recommended an audit trail to elevate the rigor, to add to the transparency of qualitative research, and to create trustworthiness. Audit trails follow no specific format (Bowen, 2009). Appendix H displays a sample audit trail to allow readers to verify the research path undertaken in this qualitative study, while Appendix I contains the permission to use the sample layout.

This study used member checking for the establishment of credibility and dependability. The participants of the study had the opportunity to review the recorded data, including transcripts of audiovisual recordings or any other information having been analyzed. The involvement of the participants in the review process added to the internal validity and dependability of the research study. The interview sessions using Zoom concluded by reiterating the need for informed consent, privacy, and confidentiality, as recommended by Bolderston (2012). The interviewees participated continuously and reviewed the transcripts before analysis in NVivo.

Creswell (2012) noted thoughts and opinions of research participants could be unreliable and inconsistent. This study employed the concept of interrater reliability and asked fellow professionals to provide an unbiased view and review of the data to increase reliability (H. A. Taylor, 2018). Interreliability is the process of using two or more observers, coders, or examiners to review data and address the issue of consistency in qualitative research (Lange, 2011). The minimum desired sample size of 15 to 20 participants ensured thematic data saturation to warrant underlying themes can emerge. To provide rich and thick descriptions (Creswell & Miller, 2000), this study used a constructivist perspective to contextualize the participants. The American anthropologist Clifford Geertz adopted the term “thick descriptions” from the British philosopher Gilbert Ryle and provided a framework for the interpretation of culture where investigators dive into the social actions and behaviors of participants (Clark & Chevrette, 2017).

The constructivist perspective forms the foundation of a self-directed process to construct meaning taking place in interaction (Sercu, del Carmen Méndez García, & Prieto, 2005). Support had been provided in the research process of this study allowing the participants to interact to establish transferability. Transferability refers to generalization or external validity (Sundler, Lindberg, Nilsson, & Palmér, 2019) and the use of delimiters aids in transferability (S. J. Miller & Kirkland, 2010). Delimiters set boundaries (Biddix, 2018) and allow other researchers to transfer or replicate the findings within a narrowly defined population and context.

Dependability refers to the stability of findings over time (Korstjens & Moser, 2018). This study involved the selected participants in the evaluation of the research findings, interpretation, and recommendations of the study. All three elements were supported by the data the participants provided. Confirmability is necessary to verify the findings are not the fabrication of a scholar’s imagination (Korstjens & Moser, 2018). Other scholars could be

interested in confirming the findings of the study. Member checking and participant involvement were used to ensure the findings from the study were derived from the data. The research relationship with the participants was professional and efficient, and a reflective journal was maintained for the duration of the study to gather qualitative evidence of the study's development (Bashan & Holsblat, 2017). This study followed Ortlipp's (2008) recommendation to keep a reflective journal to make the contextualization of the research visible and a recognized part of the research process. The use of a reflective journal aided in writing the research findings.

Ethical Procedures

Qualitative research presents ethical challenges (Orb, Eisenhauer, & Wynaden, 2000), and the failure to address and consider ethical issues in phenomenological research puts the participants at risk (Walker, 2007). Voluntary participants in the study were subject to informed consent to meet the legal requirements of phenomenological research and to uphold ethical procedures (Grady, 2015). Participants were informed of the research study, the research and the procedures of the research, the risks and benefits, the voluntary nature of participation, the steps to protect confidentiality during and after the study, and a statement offering the withdrawal from the study at any given point in time without any consequences (Manti & Licari, 2018).

Qualitative researchers face the challenge of maintaining confidentiality for presenting detailed accounts of social life (Kaiser, 2009). The interview sessions using Zoom were confidential and participant information anonymized (Surmiak, 2018). The audio files were password-protected and stored on secure and authorized servers. Access was granted on a need-to-know basis only. Informed consent forms were scanned, encrypted, and stored on authorized and secure servers, including a backup of all digital files. The digital data will be retained for a minimum of 10 years (Hartas, 2015) upon termination of the study and publication of findings.

Pertinent information about the study was provided to American College of Education's IRB.

Ethical issues about a researcher's workplace, conflicts of interest, and power differentials are an integral part of phenomenological research (Aluwihare-Samaranayake, 2012; Quinney, Dwyer, & Chapman, 2016). The study's connection with QM was explained in the section about the role of the researcher, and there were no existing supervisory or power functions within the QM community. As such, there were no conflicts of interest.

Summary of Population and Sample Selection

The following steps were used in the identification and recruitment process of voluntary participants for the study. The IRB of American College of Education approved the study as outlined in the dissertation proposal. Upon approval, an official letter was sent to the executive director of QM (see Appendix C) to inform the study was approved by the dissertation committee and the IRB. After receipt of the official letter, the executive director of QM placed a note about the research study into the QM PR and MR resource sites to which all QM reviewers were subscribed (see Appendix D) for the purpose of recruiting 15 to 20 voluntary participants. The former director of QM research announced the study was vetted by QM. The note placed in the PR and MR resource sites hosted on Moodle, an open-source learning management system, informed the PRs and MRs of the purpose and importance of the study, the contribution to the field of OERs, the required time commitment, and the necessity to interview QM course reviewers.

The PR and MR sites together were home to 3,053 course reviewers from which the sample of 16 voluntary faculty members was drawn using purposive sampling. Interested faculty members were asked to make contact via email to demonstrate an interest to serve as voluntary participants in the study. Voluntary participating faculty members were recruited on a first-come,

first-serve basis. Using informed consent, the recruited faculty members were asked to read and sign the informed consent document (see Appendix F) to follow standard research procedures involving human subjects.

Chapter Summary

The purpose of this qualitative hermeneutic phenomenological study was to explore perspectives about the accuracy and quality of OERs among instructors who have experience in applying QM standards in online course design and who have adopted and used OERs in online undergraduate courses. Faculty members who were employed at higher education institutions in the United States and who held a membership in QM served as the population from which the sample was obtained. A qualitative methodology and a hermeneutic phenomenological design were used to gather the perspectives and lived experiences concerning the accuracy and quality of OERs among online instructors who were employed at an institution having a QM membership. The chapter addressed the role of the researcher, the research procedures, the data analysis process, the maintenance of reliability and validity in phenomenological research, ethical procedures about the study, and concluded with a restatement of the identification and recruitment of participants. This phenomenological study has the potential to provide guidelines for the selection of quality open educational resources for online undergraduate faculty members who wish to adopt and use open educational resources in online undergraduate courses based on a set of QM standards. Chapter 4 will discuss, describe, and interpret the results of the study.

Chapter 4: Research Findings and Data Analysis Results

Costs for university attendance in the United States have increased considerably over the past 27 years (Maldonado, 2018), and the costs of attending higher education institutions continue to rise (Schoen, 2015). University tuition at public and private schools increased approximately three times faster than the annual rate of inflation between 2007 and 2018 (K. Gibson, 2019). Student debt totaled \$1.4 trillion in 2018, which exceeded credit card and auto loan debt (Maldonado, 2018). The rising costs of university attendance and attainment of a college degree require higher education administrators to consider alternative educational resources. These alternative educational resources can come, for example, in the form of open educational resources (OERs) to help manage the rising costs of higher education in the United States and to remain competitive in the global higher education sector.

The problem is no standard set of criteria existed for the selection of quality OERs in online undergraduate courses. Instructors who considered the implementation of OERs had worries about the accuracy and quality of OERs (Butcher, 2015; McMurtrie, 2019), which led to the discouragement of embracing OERs (Seaman & Seaman, 2017). The background of the problem is rooted in the diverse quality levels of OERs (Yuan & Recker, 2015). Numerous colleges and universities have started OER initiatives attempting to replace costly educational resources with open-source content to lower the cost of higher education attendance (Jung et al., 2016).

The purpose of this qualitative hermeneutic phenomenological study was to explore perspectives about the accuracy and quality of OERs among instructors who have experience in applying QM standards in online course design and who have adopted and used OERs in online undergraduate courses. Selection criteria included experience in applying quality standards in

online course design and adoption and use of OERs in online undergraduate courses. The research was necessary to provide, based on explored perspectives, a foundation for the creation of a standardized set of selection criteria for quality OERs. This standardized set of selection criteria is intended for college and university leaders and administrators aiming to use and adopt OERs. In the absence of the recommendations based on the study's findings, colleges and universities may have no toolset for the selection of quality OERs. College and university leaders may continue to rely on the use of for-profit educational resources because commercial publishers maintain multiple marketing channels and pair expensive textbooks with ancillary materials, which makes the adoption of commercial resources convenient and easy for instructors (Annand & Jensen, 2017).

The following research questions guided the study:

Research Question 1: What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs?

Research Question 2: What are the perspectives of online instructors using OERs in online undergraduate classes on the use of OERs?

Research Question 3: What are the perspectives of online instructors using OERs in online undergraduate classes on the content of OERs?

The research findings and data analysis results section of this chapter present information on the data collection procedure, the data analysis process, and the research results. Furthermore, this section addresses the concepts of reliability and validity specific to this study. This section concludes with a summary recapitulating the answers to the research questions and provides a transition to Chapter 5.

Data Collection

Quality Matters (QM) provides services to a population of more than 1,300 subscribing colleges and universities worldwide with most member institutions based in the United States (Quality Matters, 2018), and a large population of U.S. online undergraduate faculty members. An official letter was submitted to the executive director of QM addressed to all QM peer reviewers (PRs) and master reviewers (MRs). This letter explained the study, the required commitment, the need to interview QM reviewers, and confirmed the dissertation committee had approved the study (see Appendix C). Identification as a fellow QM reviewer was provided as a rationale for posting the request to the PR and MR resource sites, along with an explanation of why the study would be of interest to other QM reviewers.

In response to a call for external subject matter experts in the conduct of qualitative research (see Appendix E), the interview questions were validated by four external experts (see Appendix B). Due to the geographical distance between QM, the research site, and the selected PRs and MRs, the interviews were conducted virtually using Zoom. Interested participants were informed of the study following standard IRB regulations of the American College of Education and the ability to withdraw from the study at any given point in time without any consequences of any kind.

After receipt of the official letter addressed to all QM PRs and MRs (see Appendix C), the executive director of QM agreed to place a notice about the study and the specific need for participants in QM's PR and MR resource sites. All QM reviewers had a subscription to these sites. QM's former director of research informed the PRs and MRs QM had vetted the study (see Appendix D). The director of quality assurance at QM posted the notice in the Moodle site, reaching 3,053 PRs and MRs.

PRs and MRs interested in participating in the study responded to the posted note via email. The prescribed sample size consisted of 15–20 voluntary PRs and MRs to achieve thematic data saturation. The qualifying participants were selected on a first-come, first-serve basis from the population of current PRs and MRs subscribed to the QM PR and MR websites hosted in Moodle, an open-source learning management system. Selected PRs and MRs teaching online undergraduate classes were interviewed on perspectives on the accuracy and quality of OERs using unstructured, in-depth phenomenological interviews. A total of 25 volunteers responded initially within a three-week time frame after the placement of the notice about the study into the QM PR and MR resource sites in June 2020. Some faculty members who had expressed an initial interest in participating did not respond to follow-up emails and were excluded from the sample. The final number of participants interviewed was 16. The selected participants were presented with the informed consent form (see Appendix F), and all selected faculty members signed the document. All signed informed consent documents were received before starting the interviews with the selected voluntarily participating faculty members. The interviews were audio-recorded with encryption using Zoom for later transcription, coding, and analysis.

The 16 responses received served as the basis for purposive sampling. Gentles et al. (2015) recommended purposive sampling for the identification of participants who have lived the experience under research and argued this method is widely used in phenomenology (Palinkas et al., 2015). Phenomenological research requires about 10 participants (Moser & Korstjens, 2018). More extensive studies can require a higher sample size to lead to more reliable research results. Thematic data saturation is essential because different participants have different opinions, and a large enough sample size ensures most of the perceptions are uncovered (Mason, 2010). The

selected interview participants for the study were faculty members who had adopted and used OERs in online undergraduate classes. The interviewees had to have demonstrated experience in the use of QM's validated standards in making teaching and learning judgments in one's own and peers' online courses.

This selection process ensured faculty members could apply insight on the QM standards. Faculty members' abilities to making judgments about QM standards helped set quality benchmarks in the interviewing process. QM standards guide the development, evaluation, and improvement of quality online courses (Ding et al., 2017; Kearns & Mancilla, 2017). There were no deviations of any kind from the data collection plan presented in the research methodology chapter of the original dissertation proposal. There were no significant or unusual events or circumstances during the data collection period.

Data Analysis and Results

Each interview was conducted following the protocol established in the methodology chapter. The interviews lasted between 30 to 45 minutes each and were recorded using Zoom communication software. The faculty members were reminded the interviews would be recorded. Once turned on, Zoom displayed a recording icon in the upper left corner of the webcam screen, making the faculty members aware the interview process had started. The study was explained again to the participants, including the informed consent requirement, how the research questions had been organized, and how the information would be securely stored. Each faculty member was invited to say as much or as little as necessary to answer each question. Each question was read to the faculty member. After the transcription of the interview, the participants were provided with the opportunity to participate in member checking. Member checking is a process in qualitative research allowing interview participants to review the interview transcript for

correctness and approval (Harper & Cole, 2012). Each participant received a copy of the transcript for review and member checking.

The Zoom recording was stopped after the interview, and each participant was informed the recording process had been stopped. Upon exiting a recorded interview, the Zoom software created a video file and audio file and saved each in the Document folder of Microsoft Windows using a date and time stamp. The files were renamed to maintain anonymity. Each faculty member who participated in the interviews was assigned a number (e.g., the audio file of the first interview was renamed “FacultyMember1.m4a,” the audio file of the second interview was renamed FacultyMember2.m4a”). This process continued until all audio files were renamed. The video files created during the interview were stored on an external and password-protected storage device. Each audio file was then uploaded into NVivo, a qualitative data analysis software program, for transcription. The upload processes were encrypted using 128-bit SSL technology to maintain confidentiality and anonymity. The transcription module was not part of the base software and was available separately. Automatic transcription software can have an error rate of more than 20% (Bokhove & Downey, 2018), which required a careful review of each transcript for errors and correction. Each transcript was reviewed for errors, and corrections were made as needed. The corrected versions of the transcripts were sent to the interviewees for member checking. Some interviewees made minor corrections and returned the edited versions of the transcripts. The interviewees were notified not responding indicated acceptance of the transcripts as written.

All 16 transcripts were uploaded into NVivo for an initial coding process. The responses of each participant to a specific interview question were combined manually. Three rounds of coding were conducted. The initial coding process was completed in NVivo by combining the

answers all participating faculty members had provided to a particular interview question. For example, all 16 answers to Interview Question 12 were combined in a single Word document. The same process was applied to all other interview questions from Interview Questions 13–27. Interview Questions 2–11 were used to create faculty member profiles. Interview Question 1 was not analyzed because the question contained the name of the participants, and the informed consent agreement with the participants' necessitated anonymization. The NVivo software had coding limitations (Gorra & Kornilaki, 2010). These limitations included the number of possible characters for a code name and the constraint to sort and categorize these lengthy codes. All initial coding results were exported to Microsoft Word documents for further coding organized by faculty responses to each interview question.

In a second coding process, each transcript was read line-by-line, and open codes were noted. *Open coding* refers to identifying segments of the transcripts, which creates an opening theme (Chandrasegaran et al., 2017). Lindlof and Taylor (2002) recommended line-by-line reading to capture broad ideas in the text, and codification brings the experience closer to those who are involved (Williams & Moser, 2019). Emic and etic annotations and memos were completed through the line-by-line reading process. The *emic perspective* of qualitative educational research represents the internal language of a specific culture and captures participants' meaning of the real world (Olive, 2014). The *etic perspective* represents an external view of the real world and reflects structures and criteria developed to assess themes across different cultures (Willis, 2007). Educational scholars deem the etic perspective more appropriate because nuances can only be captured within a culture when residing in a specific culture (Godina & McCoy, 2000). The combination of emic and etic memos and annotations led to the creation of open codes.

The coding process should be in alignment with the research process (Newman & Covrig, 2013; Womack, 2019). Fereday and Muir-Cochrane (2006) noted deductive coding should be used if the codes are based on a priori research questions and a theoretical framework. The codes within the research and interview questions were grouped to demonstrate the alignment process. Answers to interview questions online represent a balancing act between asking and answering behavior (E. Choi & Shah, 2017), and interviews are part of social dimensions and interactions (Warren, 2012). Social dimensions and interactions influence the construction of the truth, and individuals who perceive the interviewing process cooperatively tend to see the truth as more subjective (Fisher, Knobe, Strickland, & Keil, 2017), which lead to answers the faculty members believe to be the truth.

In the third round of coding, the open codes were combined into axial codes for the identification of common words and themes in the participants' answers. Axial coding identifies relationships among the open codes (Gallicano, 2013). The responses were mixed and varied widely. The variation of the responses put limitations on the ability to compare answers from faculty members. The broad spectrum of individual responses limited the identification of specific themes or words, which led to a more extensive collection of open and axial codes represented by sentences or sentence fragments. Blair (2015) found no one way to code correctly. The concept of interrater reliability was used, and a professional at Vesalius College, Brussels, Belgium, was asked to review the transcripts, coding process, and outcome to provide unbiased input to increase reliability. This professional had a terminal degree, experience in qualitative coding, and served on several external dissertation committees. Appendix G contains the coding matrix for the study organized in a manner as recommended by Gallicano (2013). Figure 1 represents the coding process.

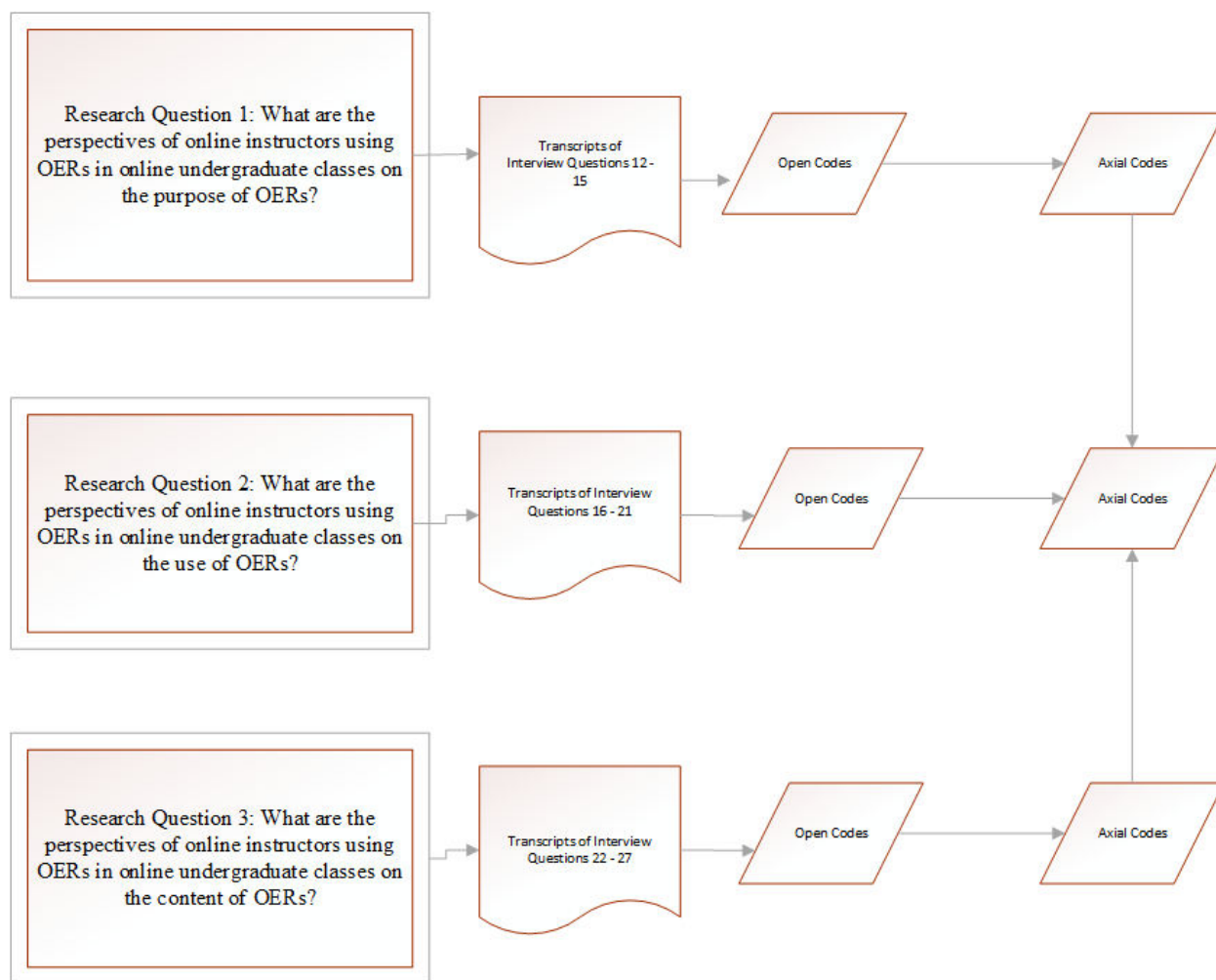


Figure 1. Coding process of research and interview questions.

Faculty Members' Profiles

Voluntarily participating faculty members were drawn from the population of the QM community in the United States. Sixteen faculty members were sampled and interviewed using the research and interview questions mentioned in this research study and shown in Appendix B. Table 1 summarizes the faculty members' profiles with respect to gender, age, faculty role, and the number of years teaching online overall and for the current institution.

Table 1

Participant Demographics I

General Questions (GS)	Gender	Age	Faculty Role	Years Teaching Online	Years Teaching Online for Current College
FM 1	Other	43	Adjunct Professor	15	5
FM 2	Female	49	Full-time	15	12
FM 3	Female	65	Assistant Professor	7	7
FM 4	Female	51	Full Professor	15	14
FM 5	Female	37	Assistant Professor	8	6
FM 6	Female	49	Associate Professor	10	10
FM 7	Female	47	Full-Time Lecturer	13	13
FM 8	Male	52	Associate Professor	11	6
FM 9	Male	45	Professor	7	7
FM 10	Female	54	Coordinator for Math and Science	12	8
FM 11	Female	54	Instructor	7	4
FM 12	Female	69	Associate Professor	12	4
FM 13	Male	39	Adjunct Professor	2.5	1
FM 14	Female	42	Associate Professor	8	3
FM 15	Female	59	Adjunct Instructor	5	5
FM 16	Female	53	Adjunct Instructor	5	5

Seventy-five percent of the faculty members (12 out of 16) indicated being female, 18.75% indicated being male (3 out of 16), and 6.25% indicated having another gender (1 out of 16). The age range of the faculty members was between 37 and 69 years of age with a mean of 50.5 years. The medium was 50 and the mode 49 years. Seventy-five percent of the faculty members stated being full-time faculty members, and 25% indicated being adjuncts. The total online teaching experiences for both groups ranged from 2.5 to 15 years and from 1 to 14 years for the current college. Table 2 shows further profile characteristics addressing the type of online undergraduate courses taught, class size, types of OERs used, number of years of OERs used, and OER selection.

Table 2

Participant Demographics II

General Questions (GS)	Undergraduate Online Classes Taught	Class Size	Types of OER Used	Number of Years OER Used	OER Selection
FM 1	History	25–40	Textbooks, Created by Other People	5	Faculty Member
FM 2	Psychology	25	OpenStax	8	Faculty Member
FM 3	Business Courses	20	YouTube Videos, OpenStax	5	Faculty Member
FM 4	Composition	10-24	Self-Creation	5	Self-Creation
FM 5	Communication	20–25	Open Books, YouTube videos	15	Faculty Member
FM 6	Biology	25	OpenStax	6	Department
FM 7	Humanities American Government	25	Open Textbook Network	8	Faculty Member
FM 8	Music	20–25	Federal Government	23	Faculty Member
FM 9	Physics	25	Self-Creation	4	Faculty Member
FM 10	Special Education	30	OER Textbooks	5	Faculty Member
FM 11	Teacher Preparation	35	Case Studies	4	Faculty Member
FM 12	Programming and Developmental	15–40	Peer-Reviewed Articles	5	Faculty Member
FM 13	Data Analysis	30–Oct	Websites	5	Faculty Member
FM 14	Composition	20	OER Textbook	1	Faculty Member
FM 15	Sociology	20	OpenStax	20+	Dept. Heads
FM 16	History	35-40	American Yawp	4.5	College

The sample represented a broadly defined selection of online undergraduate instructors being QM PRs, MRs, or both. Class sizes ranged from 10 to 40 students, and the faculty members have adopted a variety of OERs in the courses. The OERs included textbooks, OERs created by other faculty members, YouTube® videos, federal government websites, open peer-reviewed articles, own creations, case studies, and the American Yawp®. The number of years the participating faculty members have used OERs ranged from 1 to more than 20 years. Twelve out of 16 faculty members indicated having personally selected the OERs. In each of the other cases, department heads or the college administration had decided which OERs to use.

Coding Analysis

OER is a broadly defined term leading to broadly defined answers (M. Weller, De los Arcos, Farrow, Pitt, & McAndrew, 2015). The broad definition of the term limited the ability to make comparisons across answers or to find specific words in the responses provided by the faculty members. Blair (2015) noted no particular way of coding exists. The interview questions were grouped along with the research questions to maintain consistency in the coding process. The array of different answers provided open and axial codes not based on specific words but on sentences or sentence fragments. Thick descriptions in the form of quotations from faculty members' answers were used to put the reader of this research study into the place of the interviewed faculty member (Clark & Chevrette, 2017). The research questions and interview questions were developed using Jung et al.'s (2016) 25-item framework as a foundation.

Research Question 1: What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs? The first research question addressed the perspectives of online instructors using OERs on the purpose of OERs and consisted of four interview questions. These interview questions asked about reasons to use OERs for online courses and the role of OERs in the future. The questions further probed whether OERs have met instructor expectations and whether OERs have improved online courses.

Interview Question 12: Why did you decide to use OERs for your online courses? The main reasons for the use of OER in online undergraduate classes cited by the faculty members were cost considerations and social justice. Rising tuition puts low-income students at a disadvantage. Eleven interviewees felt obligated to provide students with affordable tuition and textbooks while attending college. One faculty member noted, "The number one reason to select open educational resources was the cost for the students because tuition kept going up." Another

faculty member explained, “I realized how expensive the books were,” and a third interviewee wanted to contribute to social equity.

Faculty members stated other reasons for the selection of OERs for online undergraduate courses. These reasons included relevancy and currency of the material, the flexibility to craft learning activities, contemporary content, and information available on the Internet. Other faculty members decided to use OERs to create free instructor ancillaries or to make resources more accessible to students. One faculty member reacted sensitively to changes in the discipline and noted, “Things change rapidly from the moment the book is printed to the moment the students use it.” One history instructor decided to use an OER textbook because the commercially available resources presented the subject matter from a single author-driven perspective.

Online undergraduate instructors are concerned about participation in online classes. Expensive commercial textbooks are the reasons why students buy textbooks later to decide if the instructor uses the commercial textbook. One of the faculty members had observed increased student participation from the first day in the classroom when using OERs. Other reasons cited by faculty members to use OERs included the ability to add content, the lack of permissions to use copyrighted material, the provision of a grant, or an experiment with OERs. One instructor stated having attended several OER conferences over the past years and remembered one comment from one of the conference presenters. According to the interviewed instructor, the OER presenter noted, “It would be arrogant to think something in my printed textbook for which students pay \$100 or more is not available somewhere online.”

Interview Question 13: What will be the role of OER in the future? Thirteen out of 16 interviewed faculty members rated the future of OERs as promising to strong for various

reasons. These reasons included campus requirements to use OERs, to reduce costs for students, to create a competitive edge for students, more author control, improvement of OERs over time, being able to peer-review OERs, and increased university support for the use of OERs. Another university had mandated to switch to OERs because the college caters to the homeless and hungry. The instructor stated, “Students pay the same amount of money for a book compared to someone who attends an Ivy League college.” The same instructor went on to comment on a nationwide OER initiative, including Rice University and the OpenStax project. The grants associated with this project allowed only for the creation of books for introductory courses but not for advanced college courses.

Two other instructors stated, “OERs will be the future.” These instructors argued Generation Z would be saturated in a media-rich world, and the content of history books does not change to the extent a new edition is warranted every few years. Other faculty members disclosed departments at colleges and universities are implementing pathways to adopt OERs or develop OERs internally. One of the interviewed instructors was the lead faculty member of a department at a community college and explained the 180-degree turnaround toward adopting OERs. All instructors in the department (i.e., full-time and adjunct) are required to use OERs. Two instructors expressed a negative view of OERs. One indicated preferring commercially produced materials as the content is more appropriate, and the other faculty member believed commercial books and ancillaries provide more content for mobile use.

Interview Question 14: Did the OERs you used meet your expectations? If so, how? If not, why not? The faculty members, when interviewed about OERs meeting expectations, provided mixed responses. One faculty member responded, “For the most part, they did meet expectations. There were a couple here and there not being what I had hoped for.” Another

faculty member stated, “There are some very good sources I have used and some I have not being so good.” Seven faculty members felt strongly about OERs. These faculty members cited the currency of the material, the variety of available sources, and the underlying peer-review process. Other faculty members felt positive about OERs due to the existence of reputable OER sources such as OpenStax.

Some faculty members were hesitant to start using OERs. After having looked around for a while, these faculty members discovered available OER sources and started experimenting. Another faculty member looked for OERs going into this process with a low set of expectations and commented:

The OERs did not build themselves as OERs. The websites I found met my expectations because I did not expect them to be textbooks. The OER textbooks have been really disappointing to me. The quality of the scholarship and putting them together has been subpar, in my opinion.

Interview Question 15: Please tell me about using OERs to improve the quality of online undergraduate education. All interviewed faculty members felt OERs had improved the online courses for a variety of reasons. Some of the reasons cited were immediate access and not having to worry about buying books or articles. Another faculty member discussed the immediate availability of research findings in the legal field. Instructors felt being able to tailor the curriculum to student needs and to create better discussion forums in the online classroom. One instructor stated, “I use podcasts in my online courses which I do not necessarily do in my face-to-face classes because the podcasts give a student a chance to sit down and listen with discussion and description.”

The variety of materials played an important role. One instructor commented, “I think

they have improved the quality of my online courses because I am able to give my students so much more information than I could give them in any one textbook.” The ability to link to outside sources or embed videos was important to some instructors. The instructors noted, “I like the one OER I already used to have a lot of videos embedded already,” and “I think students like the links. I think it is because they are online.” Other reasons cited included being able to use OERs on a cell phone, to become active in the online class from the first day, to have easy access, to present information in small chunks, and to free up a student’s budget. The instructor reasoned:

I think it frees up the students to be able to make the decision to take an extra course maybe next semester because it frees up the funds for a book that may be almost half the tuition of a three-credit class.

Research Question 2: What are the perspectives of online instructors using OERs in online undergraduate classes on the ease of use of OERs? The second research question consisted of six interview questions examining the perspectives of online instructors on the use of OERs. The interview questions addressed in particular the location of OERs, criteria for the selection, the importance of open licenses, and the reuse, revision, and remix. The remaining interview questions focused on keeping the student in mind in the OER selection and the access to OERs.

Interview Question 16: How did you locate the OERs you use or have used in your online courses? The interviewed faculty members located OERs in different ways. Some faculty members indicated doing independent research. One faculty member commented, “Whatever I can find; however, I can find it.” Finding quality OERs is time-consuming as another faculty member noted, “I have spent countless hours of time searching for open content, but have also

used well-known sources for open content like OpenStax or Lumen learning.” Another instructor attended a colleague’s session on OER. Simple internet searches and the use of search engines represent the starting point of finding OERs. One instructor was able to find data from a website maintained by the U.S. government. Faculty members indicated finding OERs because the material was available through the campus library or was embedded in the learning management system. Established OER sites such as OpenStax or Lumen have the potential to attract instructors in search of OERs. Google Scholar plays a significant role or, as one faculty member indicated, “We just create it ourselves.”

Interview Question 17: What criteria did you use when selecting an OER to use in your online course? The faculty members cited different criteria for selecting OERs. Some instructors indicated the OER should be peer reviewed. Other criteria mentioned by the interviewees included relevancy, currency, and validity. The background of the OER writer is essential and whether the author is knowledgeable in the subject matter. One faculty member mentioned “that it is relevant, current, valid, and the authors have the knowledge to write about it.”

Further criteria in the selection process of OERs included learning enhancement, originality of the text, age of OER, appearance, ease of use, textbook model, accessibility, and content. One instructor teaching literature and humanities explained, “Is this a quality source? Would I consider this as something that meets the needs, or reflects the discipline in which I am teaching?” Another instructor pointed to the use of technology and argued OERs should be available across multimedia platforms. An instructor teaching programming and data analysis insisted not to use OERs being opinionated. Creative Commons licenses play a role allowing the instructor to revise and remix, adapting the OER to a need.

Interview Question 18: How important is it to you that the OER has an open content

license allowing the mix and reuse of OERs? To make the most of OERs, OERs should have a free license such as Creative Commons (Hagedorn et al., 2011). Fourteen out of 16 faculty members indicated a preference for an open content license. Being able to remix or reuse open material is a strong foundation to ensure the OER meets class and student needs. One faculty member teaching history courses pointed to OERs being a greater public good, “I think that would be if it is going to be for a greater public good.” Some faculty members found limitations in the use of OERs and an open content license, as one stated the book used had to stay in the same format. Another faculty member mentioned copyright restrictions rendering course materials unusable in the classroom. One faculty member indicated not being aware of open content licenses and another believed open content licenses apply only to videos online.

Interview Question 19: Did you reuse, revise, or remix any of the OERs you have used? If so, how? If not, why not? Faculty members, when asked if having reused, revised, or remixed OERs, provided mixed answers. Some faculty members indicated having reused but not revised or remixed. One faculty member was not aware of having the opportunity to reuse, revise, or remix, and stated, “I just have never thought about it. I just never thought about it before.” Reuse in the classroom is the simplest form of taking advantage of open content licenses. Most OER licenses come in the form of a Creative Commons license. Other faculty members have indicated having remixed OER content to meet the needs of the class. One interviewed faculty member remarked, “Well, I use images and videos for purposes that they weren’t created for,” and another faculty member indicated, “I think that example with the NPR audio clip is a great one.” Revising is a time-consuming process in the use of OERs, and a lack of funding is the reason many faculty members do not engage in revisions. Faculty members engage in OER revisions because there is funding available or there is a personal need or desire (Annand & Jensen, 2017).

Interview Question 20: What criteria do you use when selecting OERs for your students? Choosing OERs for students is a process where faculty members keep the student in mind (Hilton, 2020). Faculty responses mirrored the answers provided to Interview Question 17. Faculty members look for beautiful, clean content, currency, relevancy, ease of use, and quality information. Faculty comments included, “I try to select OER without advertising around them, that have nice clean pages,” and “I want to make sure it meets their needs, it delivers quality information on the content . . . and that it is not too difficult for the students to use and own.”

Other faculty members expressed a need for accessibility, useful content, and a lack of bias, allowing students to form an opinion on a personal level. One faculty member stated, “I just think content and lack of bias as much as possible.” Keeping the student in mind puts the learner at the center of teaching and learning. Faculty members wanted the OERs to illustrate concepts well and be appropriate for the skill and comprehension level of the student. One faculty member referred to diversity of opinion, a variety of methodology, and the quality of the research embedded in the OER.

Interview Question 21: How do you access OERs? Access to quality free educational resources is essential (Sandanayake, 2019). When asked how faculty members access OERs, answers ranged from simple internet downloads to PDF files to peer-reviewed sites such as OpenStax. Most instructors indicated accessing the internet and engaging a search engine to find open course materials. The main arguments were the content being relevant and available electronically and “downloading whatever the internet provides.” Some instructors looked for a range of OER materials or simply looked for images to use. One instructor loaded the OERs on a portable device to see if the OERs were usable for students this way.

Research Question 3: What are the perspectives of online instructors using OERs in

online undergraduate classes on the content of OERs? The third research question explored the perspectives of online instructors concerning the content of OERs. The interview questions focused on criteria to evaluate the content of OERs, assessment of appropriateness, and creation of own OERs. Research Question 3 concluded by asking faculty members about the three main advantages of OERs, the three main disadvantages, and whether there were any final thoughts and comments.

Interview Question 22: What criteria do you use to evaluate the content of an OER?

Grigore and Eugenie (2017) argued OER quality is viewed in different ways by different users. Different users include adult learners, professional organizations, educators, corporate trainers, and quality evaluation agencies. When asked about the criteria used in the content evaluation process of OERs, faculty members responded looking for completeness, coverage of needed content, author credibility, and positive reviews. One faculty member stated, “Yes, I look for completeness; does it cover the content that I am looking for?” Others mentioned “looking for the validity of the material” or “is it accurate, does it assist with learning?”

Other evaluation criteria included fact checks, accuracy, easy reading, lack of bias, own expertise, currency, meeting professional standards, positive reviews, and usefulness. One faculty member teaching business courses replied, “I do look at reviews if they are out there, other educator reviews.” The same faculty member went on to explain OERs should be “free of mistakes,” have an acceptable “quality level, whether it is in videos, and usefulness.” A faculty member teaching at a community college stated using a list of learning objectives and whether the source has good scientific images and interactives.

Interview Question 23: Do you try to assess the appropriateness of content for your students according to the level of their knowledge and skills? The appropriateness of OERs is

important to ensure the OER selection matches the needs of the students (Richter, 2013). All faculty members responded affirmatively to this question. Each one assessed the appropriateness of the material for the class for various reasons. One instructor teaching a writing course noted, “Right, have to do that several times where graduate-level writing is not good for a freshman just starting out, yes.” Another instructor chose OERs based on meeting student learning levels and noted, “Absolutely, that is what I mentioned. I try to pick materials that meet students’ learning level, meets their needs.”

OERs can differ in the quality level for first-year students, sophomores, juniors, or seniors, as an instructor noted teaching humanities and literature courses. Other instructors looked at OERs meeting the dual need of first-year college students and high school seniors. This instructor taught in a program allowing high school seniors in good standing to take classes at a local college to start the student career early. One faculty member taught sociology and noted “The students are exposed to OERs each day. The OERs are all around the students each day.” The instructor’s emphasis was on the practical application of OER material. One instructor teaching at a two-year college emphasized having senior students in the class who come back to college after many years for another degree. This instructor noted, “We have to be sure we are not turning the student away with material not addressing the student’s learning style.”

Interview Question 24: Have you created any OERs of your own? The personal creation of OERs is time-consuming (Whitfield & Robinson, 2012) and often accomplished in OER initiatives started by universities (Salem, 2017). When surveyed about the creation of the interviewed faculty members’ own OERs, answers were mixed. Some faculty members declared immediately not having created any OER without providing any specific reason. Those faculty members who responded affirmatively had created a variety of OER. One faculty member

indicated having created a mobile application allowing students to learn legal terms, and another faculty member had created a web simulator for the students.

There was some deeper involvement in the creation of OER. A faculty member teaching at a research university had participated in the creation of a textbook, and another one had created some videos for YouTube. This other faculty member had stopped the video production subsequently because outside comments from the public were discouraging. Another instructor mentioned having authored a 20th-century textbook on world history, and one had created a Powtoon for the online classroom. Powtoon is a cloud-based software for the creation of animated presentations.

Interview Question 25: What, in your opinion, are the three main advantages for you as a faculty member of using OER material? Krelja Kurelovic (2016) argued OERs treasure the culture of contribution, participation, teamwork, and sharing. Open access to information makes a prominent contribution to society. When asked about the three main advantages of OERs, faculty members cited cost, relevance, and current information. Other advantages included accessibility, flexibility, availability, and control over the content. One instructor teaching in education explained,

Not having to be concerned with the cost of textbooks, Number 1. Number 2, that they have the content immediately, and we don't have to do this, "Oh, the dog ate my book," stuff. Let's see the third thing. I really have control over what content they learn that way.

Two faculty members mentioned having students who are homeless with no funds to purchase any textbooks or pay tuition. One of these faculty members indicated having saved the department's students over \$100,000 in college costs and stated, "I love saving my students money. I really do."

As a department, and little tiny [...] college in [...] state, we have saved over \$100,000 for our students since going OER. I think that is cool.”

Interview Question 26: What, in your opinion, are the three main disadvantages for you as a faculty member of using OER material? The continued use of OERs provides challenges (Berti, 2018). These challenges include technical, social, legal, and economic domains. The digital divide prevents access to resources where needed. The sustainability and support of the long-term development of OERs are difficult (Coleman-Prisco, 2016). When asked about the three disadvantages of using OERs, the faculty members provided a variety of responses. These responses included lack of capacity on student computers, students not accessing OERs, time, availability, credibility, and not having a physical copy of the text. As one instructor noted:

Sometimes, I get feedback from students. In their minds, a textbook is a physical hard back book that they are supposed to be able to hold, and touch, and feel, turn the pages, and sometimes they do not readily recognize a PDF document or file as a textbook.

Other disadvantages included the timeliness of the material, varying quality of OERs, having to invest time in creating and locating OERs, students not liking to read books online, and a lack of instructor ancillaries. One faculty member teaching psychology stated, “There are typically fewer ancillary resources available. You must be very careful with the source of your OER material. You have to go into it in a methodical process when selecting resources.” Another faculty member commented on the disappearance of links in OERs, stating, “I just think the continuous check-up of the links and the pictures and the stuff that is—especially the links, pictures are ok, but the interactives and the stuff.”

Interview Question 27: Final thoughts and comments? The last question of the interview asked the faculty members if there were any final thoughts or comments. The concluding faculty comments about OERs were mostly positive. Comments included OERs being the future in the classroom. One faculty member stated:

I do believe that is the wave of the future, not only for higher education, but now since we have had this pandemic, I can see it being used in K-12. I think what we are going to see are the personal learning networks developed from this.

Other faculty members looked at OERs from the financial perspective. “Many of our students are economically challenged, and every dollar counts,” as one faculty member teaching physics explained. Budget cuts in some states have forced colleges to consider the adoption of OERs. An instructor whose college was affected by state budget cuts explained, “They just had an 11% budget cut across the board in this state with the virus because of the economy. That money will never come back for another 30 years.”

One faculty member expressed learning about the results of this research study, “I am eager to hear what you find from talking with everybody you are interviewing when this is done.” The same faculty member stated OER initiatives are fragmented, and there is no built-in structure. One faculty member who was a big proponent of using OERs mentioned OERs being in an infancy stage. Another instructor added, “If we pull our resources together, we have enough knowledge in the world to donate to the cause of education, to make learning possible.”

Tabular Summary of Axial Codes

Table 3 provides a summary of the axial codes from Research Question 1 and Interview Questions 12–15. Research Question 1 addressed the reasons for using OERs and the role of

OERs in the future. The last two interview questions focused on whether OERs met expectations and whether OERs have improved online courses.

Table 3

Axial Code Summary for Research Question 1

Research Question 1: Purpose of OERs	Axial Codes
Interview Question 12: Reasons to use OERs for online courses	Cost and relevance of textbooks. Information on the internet; OER provides more than textbooks, easy accessibility, commercial books outdated fast.
Interview Question 13: Role of OERs in future	Dominant future use; instructor control over the content. Some instructors continue to prefer commercial books. Some OER initiatives
Interview Question 14: Did OERs meet expectations?	The currency of information; the variety of resources, OER for lower-level courses
Interview Question 15: Have OERs improved online courses?	Access and availability, real-life applicability, high cost of commercial books, students question information, more participation from the very beginning of the course

Table 4 provides a summary of the axial codes for Research Question 2 and Interview Questions 16–21. Research Question 2 focused on the location of OERs, criteria for selection of OERs, and the importance of open licenses. The remaining interview questions addressed reuse, revision, and remix of OERs, criteria for selecting OER by keeping the student in mind, and access to OERs.

Table 4

Axial Code Summary for Research Question 2

Research Question 2: Ease of Use of OERs	Axial Codes
Interview Question 16: Locating OERs	Different sources, Creative Commons, personal research, use of OER repositories, OpenStax, MERLOT
Interview Question 17: Criteria for selection of OERs	Peer-reviewed, reputable source, knowledgeable author, accurate content, bias-free
Interview Question 18: Importance of open license for OERs	Importance of open license use, reusing and adaption important, author-driven content, unawareness of some faculty member, the flexibility of open licenses, knowledge collaboration
Interview Question 19: Reuse, revision, and remix of OERs	Awareness of OER reuse, revision, and remix, but limited use
Interview Question 20: Criteria for selection of OER for students	Appearance, relevance, accessibility, student needs, quality content, accuracy, bias-free, transcripts and close-captioned
Interview Question 21: Accessing OERs	Websites, pdfs, images, scanning for content, articles, web links, curated library materials, mobile access, access through learning management system, OpenStax or OER Commons

Table 5 provides a summary of the axial codes for Research Question 3 and Interview Questions 22–27. Research Question 3 focused on criteria to evaluate OER content, assessment of appropriateness for students, and the creation of own OERs. The last three interview questions asked about the three main advantages and disadvantages and concluded with any final thoughts and comments.

Table 5

Axial Code Summary for Research Question 3

Research Question 3: Content of OERs	Axial Codes
Interview Question 22: Criteria to evaluate the content of OERs	Completeness, content coverage, reputable sources, positive peer reviews, fact checks, accuracy, supportive of learning, ease of use, table of content check, reading level, currency, professional standards, evidence-based
Interview Question 23: Assessment of appropriateness for students	Differentiation of material, avoidance of jargon and technical terms, dual enrollments for senior high school and first-year students, provision of example, course design from scratch, adequacy for student level and challenging
Interview Question 24: Creation of own OER	Creation of various materials; reuse in LMS, government sites, YouTube and own PowerPoint (PPT) creations
Interview Question 25: Three main advantages of OERs	Control of cost and content, immediacy and relevance of material, student needs, ease of use and good topic explanation, student participation from the beginning of class, customizable to student needs, student equity and lifelong learning resource
Interview Question 26: Three main disadvantages of OERs	Electronic access required, students not accessing OER, lack of availability, time and credibility, no physical copy, lack of supplements for instructors, incomplete or incorrect information, broken web links, lack of updates due to lack of funding
Interview Question 27: Final comments	The future wave of higher education, creation, and development of personal learning network, the way education will go, future instructor responsibility of OER, love for OERs, tremendous potential, borrowing resource from others, the revolution in the field of education, OER in an infancy stage, attendance of OER conference each year, pooling global knowledge provides a basis for OER

The axial codes for each research question are summarized in Table 6. The study consisted of three research questions. Research Question 1 focused on the purpose of OERs and consisted of four interview questions. Research Question 2 addressed the ease of use of OERs and consisted of six interview questions, and Research Question 3 focused on the content of OERs and consisted of six interview questions.

Table 6

Axial Codes Aligned With Research Questions

Research Question 1: What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs?	Research Question 2: What are the perspectives of online instructors using OERs in online undergraduate classes on the use of OERs?	Research Question 3: What are the perspectives of online instructors using OERs in online undergraduate classes on the content of OERs?
<u>Axial Codes</u>	<u>Axial Codes</u>	<u>Axial Codes</u>
Cost and relevance of textbooks. Information on the internet, OER provides more than textbooks, easy accessibility, commercial books outdated fast.	Different sources, Creative Commons, personal research, use of OER repositories.	Completeness, content coverage, reputable sources, positive peer reviews, fact checks, accuracy, supportive of learning, ease of use, table of content check, reading level, currency, professional standards, evidence-based.
Dominant future use; instructor control over the content. Some instructors continue to prefer commercial books. Some OER initiatives	Peer-reviewed, reputable source, knowledgeable author, accurate content, bias free	Differentiation of material, avoidance of jargon and technical terms, dual enrollments for senior high school and first-year students, provision of example, course design from scratch, adequacy for student level and challenging
The currency of information, the variety of resources, OER for lower-level courses	Importance of open license use, reusing and adaption important, author-driven content, unawareness of some faculty member, the flexibility of open licenses, knowledge collaboration.	Creation of various materials; reuse in LMS, government sites, Youtube and own PowerPoint creations
Access and availability, real-life applicability, high cost of commercial books, students question information, more participation from the very beginning of the course	Awareness of OER reuse, revision, and remix, but limited use.	Control of cost and content, immediacy and relevance of material, student needs, ease of use and good topic explanation, student participation from the beginning of class, customizable to student needs, student equity and lifelong learning resource
	Appearance, relevance, accessibility, student needs, quality content, accuracy, bias-free, transcripts and close-captioned	Electronic access required, students not accessing OER, lack of availability, time and credibility, no physical copy, lack of supplements for instructors, incomplete or incorrect information, broken web links, lack of updates due to lack of funding

Table 6 (continued)

Axial Codes Aligned With Research Questions

Research Question 1: What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs?	Research Question 2: What are the perspectives of online instructors using OERs in online undergraduate classes on the use of OERs?	Research Question 3: What are the perspectives of online instructors using OERs in online undergraduate classes on the content of OERs?
<u>Axial Codes</u>	<u>Axial Codes</u>	<u>Axial Codes</u>
	Appearance, relevance, accessibility, student needs, quality content, accuracy, bias free, transcripts and close captioned	Electronic access required, students not accessing OER, lack of availability, time and credibility, no physical copy, lack of supplements for instructors, incomplete or incorrect information, broken web links, lack of updates due to lack of funding
	Websites, pdfs, images, scanning for content, articles, web links, curated library materials, mobile access, access through LMS, OpenStax or OER Commons	The future wave of higher education, creation, and development of personal learning network, the way education will go, future instructor responsibility of OER, love for OERs, tremendous potential, borrowing resource from others, the revolution in the field of education, OER in an infancy stage, attendance of OER conference each year, pooling global knowledge provides a basis for OER

Triangulation

The process of triangulation refers to the combination and analysis of two or more different qualitative data sources (Carter et al., 2014). The goal of triangulation is to create a comprehension of a phenomenon and diversity of perceptions (Ridder, 2017). Data source triangulation has been used. Data source triangulation comprises the collection of qualitative data from individuals or communities to gather multiple perspectives and to achieve data validation (Carter et al., 2014). The individual in-depth interview (IDI) is the most powerful tool to triangulate and develop an understanding and explore topics in great detail (Fontana & Frey, 2000). These interviews can range from structured to unstructured approaches and prompt rich

information concerning personal experiences and perspectives (Russell, Gregory, Ploeg, DiCenso, & Guyatt, 2005). IDIs are used in qualitative research for the ability to be spontaneous, flexible, and responsive to interviewees. Carrying out the interviews, coding, and analyzing the text necessitates a substantial time commitment and effort. Sixteen IDIs were analyzed, each ranging from four to six pages.

Reliability and Validity

Trochem and Donnelly (2008) regarded reliability and validity as separate ideas. Both concepts were combined in this phenomenological hermeneutical study. Reliability is defined as consistency in qualitative research (Noble & Smith, 2015), and a certain degree of variation is accepted (Leung, 2015). Silverman (2010) proposed five steps for the enhancement of reliability in qualitative studies. The steps are refutational analysis, permanent data comparison, full use of data, use of the deviant case, and use of tables. The accuracy of the data was confirmed during the extraction process with the input of a fellow professional.

Validity in qualitative research is necessary to assess whether the research question for the desired outcome is valid, whether the choice and design of the methodology are valid, whether the sampling and data analysis are appropriate, and whether the findings and conclusions of the study are acceptable for the selected context (Leung, 2015). Bowen (2009) recommended an audit trail to elevate the rigor, to add to the transparency of qualitative research, and to create trustworthiness. Audit trails follow no specific format (Bowen, 2009). A sample audit trail for the research study is presented in Appendix H to allow the reader to verify the research path undertaken in the qualitative study. Appendix I contains the permission to use the sample layout.

Member checking for the creation of credibility and dependability was used. The participants of the study had the opportunity to review the recorded data and transcripts and to provide input. The inclusion of the interviewees in the review process added to the internal validity and dependability of the research study. The interview sessions using Zoom were concluded by repeating the necessity for informed consent, privacy, and confidentiality (Bolderston, 2012). The interviewees reviewed the transcripts before coding was completed in NVivo. The member checking procedure improved the credibility of the study.

The concept of interrater reliability was used, and an invited fellow professional provided an unprejudiced review of the data and coding process to increase reliability (H. A. Taylor, 2018). The sample consisted of 16 faculty members using purposive sampling, which allowed for thematic data saturation to ensure the emergence of underlying themes. Rich and thick descriptions to contextualize the findings were used (Creswell & Miller, 2000), and interactive support in the research process was provided to create transferability.

Dependability refers to the consistency of research results over time (Korstjens & Moser, 2018). Selected participants were invited to evaluate, interpret, and make recommendations. All three elements were supported by the data the participants provided. Confirmability is compulsory to verify the research findings are not fabricated (Korstjens & Moser, 2018). Member checking and participant involvement were used to ensure the findings from the study were derived from the data, and critical self-reflection was applied throughout the study to minimize any preference or bias. The research relationship with the participants was professional and efficient, and a reflective journal for the length of the study was maintained to collect qualitative evidence of the development of the study (Bashan & Holsblat, 2017). Ortlipp's (2008) recommendation to keep a reflective journal to make the contextualization of the research

observable and an integral part of the research procedure was followed. The use of a reflective journal aided in composing the research results.

Summary

The results of the study have been carefully reviewed and aligned with the research and interview questions. The responses received to the research questions addressed the purpose of OERs, the ease of use of OERs, and the content of OERs. Open and axial codes were applied to the transcribed faculty member responses to arrive at axial codes providing answers to the research questions. The variety and broad spectrum of the interview answers did not result in specific words or themes but sentences and sentence structures.

Information on the data collection procedure, the data analysis process, the research results, and an explanation of the concepts of reliability and validity specific to this study were presented. The sample for the study consisted of 16 faculty members who have selected and adopted open education resources in online undergraduate classes. Each faculty member was a PR or MR for QM. The use of thick descriptions in the form of quotations has helped to convey the true meaning of the faculty members' perspectives about OERs. The next chapter of this study provides a discussion and interpretation of the findings with respect to the literature review in Chapter 2, an overview of the limitations specific to this study, recommendations for future research, and an overview of leadership implications.

Chapter 5: Discussion and Conclusions

The purpose of this qualitative hermeneutic phenomenological study was to explore perspectives about the accuracy and quality of OERs among instructors who have experience in applying QM standards in online course design and who have adopted and used OERs in online undergraduate courses. Current research suggests perspectives about the accuracy and quality of OERs vary widely among instructors in higher education (Camilleri et al., 2014; McMurtrie, 2017). These variations lead to gaps in the practice of selecting and adopting OERs in higher education (Fischer et al., 2017; S. Woodward et al., 2017). S. Wang and Wang (2017) observed a limited number of published case studies exist showing the structured selection and adoption procedure from the faculty member's perspective.

The present study was necessary to build, based on the studied perspectives, a standardized set of selection criteria for quality OERs for use by colleges and university administrators aiming to use and adopt OERs. In the absence of the study, college and university leaders may have a limited toolset for the selection of quality OERs. College and university administrators may continue to rely on the use of commercial educational resources because commercial publishers maintain sophisticated marketing channels and couple expensive textbooks with ancillary materials, which make the adoption of commercial resources convenient and easy for instructors (Annand & Jensen, 2017).

Sixteen undergraduate online instructors, all subscribing to QM and being QM peer reviewers (PRs) or master reviewers (MRs), were interviewed over three weeks in June 2020. The phenomenon under study was perspectives about the accuracy and quality of OERs among instructors who have experience in applying QM's standards in online course design and who

have adopted and used OERs in online undergraduate courses. Prior work experience resulted in the creation and design of the following three research questions:

Research Question 1: What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs?

Research Question 2: What are the perspectives of online instructors using OERs in online undergraduate classes on the use of OERs?

Research Question 3: What are the perspectives of online instructors using OERs in online undergraduate classes on the content of OERs?

The research questions were developed using Jung et al.'s (2016) 25-item framework as a foundation. The authors of this framework granted permission to use the framework (see Appendix A). Interview questions were used as a data collection tool, and all interview questions were peer reviewed before the data collection process.

The process of open and axial coding to explore the perspectives of online undergraduate instructors about the accuracy and quality of OERs was employed. The open and axial coding process of the participants' answers resulted in emergent sentences and sentence fragments to identify, analyze, and build a pattern structure, which helped to answer the research questions. Sections on the findings, interpretations, and conclusions of the study are presented followed by a discussion of the limitations and recommendations for future research. Implications for leadership are discussed, and the concluding section provides reflections on new knowledge and critical outcomes of the study.

Findings, Interpretations, and Conclusions

The general interview questions revealed no identified limits in terms of users of OERs. Full-time professors and adjunct instructors alike may be engaged in the selection, adoption, and

use of OERs in online undergraduate courses. The sample consisted mostly of female participants. All participants had online teaching experience ranging from 1 to 14 years at the current college and from 2.5 to 15 years overall. All sampled instructors stated having used OERs in online undergraduate courses. One instructor had recently started using OERs, and another instructor had used open resources for more than 20 years. Thirteen out of 16 faculty members had decided which OERs to use for the online undergraduate classes.

The college administration gave the instructors a choice in the selection process. The types of OERs ranged from the use of open books to YouTube videos to OER sites such as OpenStax or the American Yawp. The selected faculty members taught in different subject areas, and the selection of courses taught by the sample of online undergraduate instructors represented a cross-section of the disciplines where OERs are used. Student enrollments ranged from 10 to 40 in these types of classes, which suggested widespread use of OERs within the colleges.

Research Question 1

Research Question 1 asked, “What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs?” The codes discussed next emerged from the vast array and spectrum of faculty answers to the individual interview questions. When asked about the reasons for adopting OERs in online undergraduate classes, the instructors interviewed cited cost, the relevance of information, flexibility, accessibility, the currency of information, and biased views of commercial textbooks. Moreover, students were not buying the textbook because the instructor of the course would not refer to the book in many instances. The students felt purchasing the book was a lost value, and students without any textbook, commercial or open, were not able to follow the online undergraduate courses from the beginning. Some instructors encouraged the use of OERs because any information in a

commercially produced educational resource is available for free online. Other reasons to use OERs included an instructor's passion for OERs and the desire to experiment with the use of OERs. A comprehensive literature review on the use of OERs between 2015 and 2018 by Hilton (2020) confirmed the views expressed by most of the instructors interviewed for this study.

The next interview question focused on the role of OERs in the future. The responses were mixed. Some instructors felt there would be a dominant use of OERs in the future. Other instructors felt better using OERs or believed instructors have control over quality and content. Some skepticism was evident among the instructors concerning the future use of OERs. There was the impression some faculty members may or may not adopt OERs, and a preference for traditional textbooks continued to exist. Some faculty members interested in the selection, use, and adoption of OERs in online undergraduate courses have started a dialogue about the future use of OERs. A study by Hatzipanagos and Gregson (2015) confirmed mixed responses and varying opinions about the future role of OERs. The reasons cited in this study included the changing nature of OERs, but instructors' attitudes became more positive when faculty members considered OER further in the future.

The currency of information and access to a variety of resources were the first answers given when asked about whether OERs meet instructor expectations. Other faculty members started with low expectations when looking for OERs or found the compilation of a textbook disappointing at the personal level. OpenStax appeared to be a good source for OER, but faculty members resented the idea of making information available in the public domain. OERs met mostly the needs and expectations for lower-level classes. Christiansen and McNally (2018) noted low instructor expectations are often found in transition problems from closed educational resources to OERs. The required time investment and specialized knowledge needed to

understand copyright issues, standards for accessibility, cultural considerations, support costs, and redistribution added to the belief OERs have low quality. Christiansen and McNally argued most research on OERs relies significantly on institutional case studies but lack guidance for instructors who want to commit to the adoption or creation of OERs. Pitt (2015) noted instructors avoid OERs due to expectations of low quality.

The faculty members interviewed were asked in what ways OERs had improved the online classes. All instructors confirmed OERs had improved the courses. The reasons cited were immediate access and availability, the ability to modify the material to student needs, and the direct applicability to real life. Further reasons included students not having to buy an expensive textbook, resulting in student participation from the first day of class and increased creativity in the classroom. The faculty members additionally noted students became more active readers and did not rely on the textbook as the ultimate authority of knowledge. Sandanayake (2019) found OERs can indeed improve undergraduate online classes, but OERs should be considered together with an appropriate instructional design method. For example, OERs should be presented in the form of video material to accompany the text.

Research Question 2

Research Question 2 explored, “What are the perspectives of online instructors using OERs in online undergraduate classes on the use of OERs?” The codes discussed next emerged from the vast array and spectrum of faculty answers to the individual interview questions for Research Question 2. The faculty members were asked about how to locate OERs and answered OERs come from different sources. These sources include Google Scholar, the internet in general, OpenStax, the MERLOT network, Creative Commons, or listservs. Some faculty members searched for OERs based on personal preferences, used OER repositories, or shared

links among faculty members. Perez (2017) noted librarians at colleges and universities have taken on the task of locating OERs. Librarians assisted faculty members with intellectual property rights, public domain material, the Creative Commons license, and permission rights. Instructors tended to download images from databases and needed copyright-free materials. The difficulty in locating images and finding attribution descriptions represented a barrier in the publication of OER materials.

When selecting OERs, the interviewed faculty members stated OERs should be peer reviewed, come from a reputable source, be relevant, and the author of the OER should have the appropriate background and knowledge. Further considerations for the adoption of OERs were good reviews, vetted content, accuracy, bias-free material, and a good illustration of concepts. Instructors mentioned the presence of a Creative Commons license, appearance, and the size of the OERs were criteria as well. Neely et al. (2016) extended the selection criteria to include technology, student experience, learning resource attributes, and administration. These selection criteria were more detailed than those expressed by the faculty members interviewed.

The faculty members had differing opinions about the importance of an open license for OERs. When asked, some faculty members admitted not using openly licensed materials but felt the reuse and adaptation of OERs were necessary. Faculty members believed the content, revisions, and improvements should be author-driven, and there should be an ability to share. When asked about awareness of open licenses, some instructors stated not being aware of open licensing options. One instructor dismissed the idea of open educational resources by indicating a belief in permanent and static resources. There was a consensus open licenses would add flexibility in the classroom, and knowledge should be collaborative. One faculty member expressed not needing open licenses as copyright permissions are easily obtainable. Mishra

(2017) argued current open licenses for OERs add complexity to the use of OERs and confusion to stakeholders. Current Creative Commons licenses are not specific enough to aid faculty members in the selection of OERs. Havemann (2016) remarked the creation of proper licensing procedures removes the ambiguity in the OER selection process.

The presence of open licenses gives faculty members the permission to reuse, revise, or remix OERs. Most faculty members responded not having engaged in any of these activities. Some faculty had been involved in reusing, revising, and remixing to a limited extent. This response confirmed the attitudes expressed when interviewed about the importance of open licenses for the use of OERs. Fazzino and Turley (2019) observed librarians do most of the curation work of OERs. Instruction librarians and scholarly communication librarians at the College of New Rochelle created a group to revise and remix an existing information literacy textbook. The group of librarians in the study altered and customized an OER book to reflect students' lived experiences.

Instructors have students in mind when selecting OERs. When asked how instructors selected OERs reflecting on student needs, faculty members responded as having looked for appearance, relevance, and accessibility. The instructors argued further an OER should meet student needs, have quality content, be accurate, relevant, and present engaging material. OERs should have transcripts and captions, be the primary source and bias free, and be designed for introductory courses. Few studies exist on student perspectives of OERs (Huntsman, Edenfield, & Davis, 2020). Studies examining student perspectives suggest textbook changes to determine student perspectives. Huntsman et al. recommended further research using other OERs to assess student perspectives.

OERs can be accessed in a variety of ways. The faculty members responded having accessed OERs through websites and checking content for relevancy. Other methods of accessing OERs included looking for PDF files, images, scanning for content, pictures, journal articles, and web links. Some instructors noted libraries provided curated material and a comprehensive list of OERs. Mobile accessibility and accessibility with the learning management system (LMS) played an important part in the use of OERs. Instructors used OpenStax and OER Commons frequently. Morris (2019) provided a more detailed guide on accessing OERs and suggested, for example, OpenStax, MIT OpenCourseWare, or the Open Culture website. Many faculty members do not know how or where to access OERs and should undergo OER training (Misra, 2014).

Research Question 3

Research Question 3 asked, “What are the perspectives of online instructors using OERs in online undergraduate classes on the content of OERs?” The codes discussed next emerged from the vast array and spectrum of faculty answers to the individual interview questions for Research Question 3. The first interview question addressed the criteria for the evaluation of the content. When asked what the faculty members looked for to evaluate the content of OER, the responses were completeness, whether or not the content covers the course material, whether or not it comes from a reputable source, and whether or not the OER had positive reviews. Some faculty members indicated checking the facts of the OER. Other faculty members stated looking for the accuracy of an OER and reviewing whether the OERs provides support for the students’ learning progress.

Other comments related to criteria for evaluating the content of OERs included ease of reading, use of own expertise, review of citations, check of the table of contents, and the level at

which the OER was written. The level at which the OER was written is different from the ease of reading because an OER could be written for a graduate program. This level of writing can create reading and comprehension difficulties for an undergraduate student.

The faculty members checked to a lesser degree depth versus breadth, current OER practices, professional standards, fellow opinions on OER, or if the OER was evidence-based. The selection criteria for OERs vary widely. De la Rosa Gómez, Meza Cano, and Miranda Díaz (2019) established a rubric of 41 selection criteria. Each selection criterion contains three performance levels developed by experts after a documentary search. This list of selection criteria represents the most comprehensive one of its kind and reflects the variety of answers given by the faculty members interviewed.

Faculty members were asked about assessing the appropriateness of OERs for students. The instructors indicated looking at the differentiation of the material, the avoidance of jargon and technical terms, and dual enrollment possibilities for high school seniors and first-year students. The faculty members indicated the OERs should provide examples, allow for the course design from scratch, and be adequate and challenging for students. Yuan and Recker (2015) conducted a systematic review of 14 current rubrics created for OER evaluation. These rubrics assessed the appropriateness of OERs based on content, development processes, applicability, and support provision. The comparison revealed a large variety among the rubrics. Yuan and Recker identified a lack of rating and scoring guides and a lack of empirical testing. The absence of reliable results raised concerns about the reliability and validity of the rubrics. The large variety of answers given by the faculty members interviewed is congruent with the large variety of different rubrics.

When asked whether the faculty members had created OERs, the responses were mainly negative without providing a specific reason. A faculty member who had engaged in the creation of an OER indicated having created an application for a portable device. Other faculty members indicated having engaged in various activities or reused OERs in the learning management system (LMS). One faculty member had participated in the creation of a textbook. Other OER creations included using government sites, creating a YouTube video, or developing content in a PowerPoint for open use. The lack of time and resources limited the production of personally created OERs (Pounds & Bostock, 2019), but Salem (2017) pointed out the move to OERs has benefits because these personally created types of OERs have universal and long-term access. Colleges and universities should support OER creation as part of a local initiative or a “referatory.” A referatory is a list of sites containing OERs (Heinen, Kerres, Scharnberg, Bles, & Rittberger, 2016; Salem, 2017).

The next interview question asked about the three main advantages of OERs. The answers varied widely and included cost, content immediacy, control, relevance, meeting student needs, ease of use, and better explanation of the subject matter. Other answers included currency of the course material, format for the class, students not falling behind, customizability, mobile access, collaboration, equity, source permanence, and the provision of a base for life-long learning. Berti (2018) identified potential advantages from a stakeholder perspective and grouped the potential benefits into four categories. This classification served as a basis for the comprehension of how open education impacts individuals having different roles. These different roles included learners, educators, the government, and institutions. All four stakeholder groups consisted of various constituents. These constituents would benefit from the use of OERs because the benefits overlapped and showed the full variety of benefits. These benefits included

widened participation, improved student recruitments, learning connections, and access to high-quality materials.

The faculty members interviewed were asked about the three main disadvantages of OERs. The responses varied widely. Two aspects were the lack of computer access and students not going to the OER site. Other elements included lack of time, lack of availability and credibility, lack of a physical copy, and a lack of a student's ability to use OERs. Instructor convenience was mentioned as many OERs do not have useful ancillaries.

Further comments included incomplete or incorrect information, broken links, the fragmented nature of some OERs, lack of updates due to a lack of funding, or OERs not being what the instructor needs. Affouneh and Khlaif (2020) identified five main disadvantages in the use of OERs. These disadvantages were the individuality of work, limitations on the use of accessibility and technology, students living outside the study area, distance learning being different from traditional learning, and remote learning not being recognized worldwide (Affouneh & Khlaif, 2020).

The last question sought final thoughts and comments from the participants about OERs. The responses were positive. Faculty members' responses included OERs being the future of higher education. One faculty member noted OERs help create personal learning networks and are assets in the classroom. Others felt instructors have an obligation to make OERs happen and to believe in the future of OERs. Faculty members indicated OERs mean borrowing ideas from other people, and all faculty members can contribute to an OER knowledge base by pulling the combined knowledge together.

Many faculty members at colleges and universities have heard about OERs but have a vague idea of where to start looking for OERs. Stanforth (2019) recommended looking at

LibGuides, while Walz (2017) argued in favor of attending one or more of the many international conferences on OERs. The attendance at an OER conference, the exposure to OERs, and the exchange of research could help instructors to arrive at a judgment on how OERs can contribute to the success of a college or university over time.

Discussion of Research Results Through the Lens of the Theory of Transformative Learning

Mezirow (1981) developed the theory of transformative learning, which underpinned the present study and served as a reference framework for the data collection and analysis process. The theory of transformative learning is the most widely researched adult learning theory (Nerstrom, 2014), serves as a perspective transformation tool (Rahman & Hoque, 2017), and aids as a reference in the research of current open educational practices including the use of OERs (Deimann & Farrow, 2013). Transformative learning is associated with perspective transformation and making choices based on newly gained understandings and insights (Mezirow, 1991).

This process occurs over time in the area of OERs. Faculty members reflect critically upon assumptions, habits, and beliefs to create reference frames for the mind (Mezirow, 1997). Kitchenham (2008) remarked Mezirow's work has resulted in 10 stages of transformative learning. These stages are a disorienting dilemma, self-examination, critical assessment of assumptions, sharing of discontent and the transformation process, exploration of new roles and courses of action, planning a course of action, the acquisition of new knowledge, a provisional trial of the new role, the construction of competence and self-confidence, and an integration of the new knowledge into one's life (Kitchenham, 2008).

Transformative learning creates a framework reflecting the paradigm shifts in beliefs and values in the use of OERs (Katz, 2020). The existing belief among faculty members based on traditional arrangements consists of assigning a commercial textbook. Faculty members believe commercially produced educational materials are of better quality compared to anything available elsewhere for free. The attempt to move away from commercially produced learning and teaching resources would induce the faculty member to either fit the OER into the existing reference framework or to undergo a change in the perspective. Changing a perspective triggers a disorienting dilemma.

Scholars cite high costs as the principal reason to move to OERs, but different triggers can exist (Katz, 2020). In the answers to Research Question 1, faculty members stated the purpose of OERs is reflected in accessibility, instructor control over content, dominant future use, currency of information, variety of resources, access and availability, higher student participation, and real-life applicability. The answers showed the use of OERs is not rooted in the cost factor alone but in other triggers and motivations among faculty members.

Feeling comfortable with the use of OERs is reflected in the completion of Stage 9 in Mezirow's (1997) theory. All faculty members interviewed for this study had experience in the use of OERs. Reaching this point required the faculty members to go through Stages 2 through 9. In the responses to Research Question 2, faculty members expressed using different OER sources, personal research, Creative Commons, and OER repositories. In addition, faculty members looked at peer-reviewed sources provided by knowledgeable authors. The OER content should be accurate and bias free. The use of open licenses and the ability to reuse, revise, and remix content were important aspects in the ease of use of open educational materials as faculty members' responses showed. The collected data showed a high degree of competence and self-

confidence in the selection process of OERs as reflected in Stage 9 of the theory of transformative learning.

Stage 10 of the theory of transformative learning refers to an integration of a skill into one's life (Katz 2020). Faculty members who evaluate the content of an OERs have reached this stage. The judgment of content requires competence, self-confidence, and the integration of new skills. The skills acquisition process takes place between Stages 2 and 9 and reaches completion in Stage 10. In response to Research Question 3, the interviewed faculty members have rated the content of open education resources looking for completeness, coverage, positive peer reviews, learning support, professional standards, and evidence-based content.

All interviewed faculty members had experience in the use of OERs as reflected in the individual answers to all interview questions. The ability to select, adopt, and use OERs in the classroom requires the completion of all 10 stages in Mezirow's (1997) theory. Many problems faculty members encounter in the transition process to OERs are reflected in Mezirow's theory. The adoption of OERs is still a slow process (Lieberman, 2019) and requires a shift in educational practice to accelerate the use of OERs. The theory of transformative learning provides the framework for this shift (Bali & Caines, 2018).

Limitations

Theofanidis and Fountouki (2019) noted the research process could generate a bias due to unknown conditions at the time the study is conducted. Bias could have existed as a result of prior work as a course facilitator and reviewer at QM from 2007 to 2018. The sample for the study was drawn from QM's subscribing colleges and universities, and the past work at QM could have created a bias owed to the quality-driven aspect of online course reviews. The interview questions may have mirrored previous work experience affecting the design and

composition. The interview questions presented in Appendix B were peer reviewed by an external team of professional experts familiar with the use of interview questions in qualitative research.

The sample for this hermeneutic phenomenological study was drawn from a population of 3,053 QM PRs and MRs and consisted of 16 voluntary faculty members. The sample requirements of American College of Education necessitated between 15 to 20 participants to achieve data saturation. Purposive sampling on a first-come, first-serve basis as recommended for phenomenological studies was used (Gentles et al., 2015; Palinkas et al., 2015). The sample was not representative of the population, and the results of the study may not be generalizable to other similar or identical research studies. The research subjects had to meet three criteria for selection. These criteria were teaching online undergraduate courses at a college or university having a QM affiliation, having adopted and used OERs in these courses, and being a QM PR or MR.

The perspectives about the accuracy and quality of using OERs in online undergraduate classes could have varied from one faculty member to the next. Instructors may have been exposed to local selection criteria of OERs or other circumstances, which would have shaped the responses regarding the experience and perspectives of OERs during the interviewing process. Emerging open and axial codes developed from the faculty members' responses in the research process provided a basis for comparison with other similar studies (Jung et al., 2016; Neely et al., 2016). The research had limitations, and reasonable efforts were made to anticipate potential concerns. The instructors' responses may not have provided a foundation for transferability to a larger group of users of OERs.

Recommendations

The answers provided by the participating faculty members presented a broad spectrum of thoughts and opinions on the purpose, ease of use, and content of OERs. The wide array of responses mirrored the fragmented research and knowledge in the field of OERs. Most faculty members agreed cost was the driving factor requiring a move to OERs. Other reasons explaining the need to move to OERs differed among faculty members. The advantages in the use of OERs seen by the faculty members include OERs being easily accessible and part of the future of education. Faculty members are in control of content and able to cater to students who are homeless and hungry.

Proponents of OERs argued there is flexibility, mobile use, relevance of material, participation from the first day in class, collaboration among students, social equity, and lifelong learning. Opponents of OERs argued there is a lack of access due to electronic requirements, lack of availability, lack of supplements for instructors, lack of credibility, and lack of time. Lack of time was the argument cited most frequently as a reason not to engage in the adoption of OERs. The argument of convenience was a driving factor for not wanting to adopt OERs. Commercial textbook publishers provide instructor materials such as PowerPoint presentations, computerized databases to take tests, and solutions manuals. Many OERs lack these ancillaries, and instructors wanting to use OERs would be required to look up and curate the material. The need for faculty development and further research are discussed next.

Faculty Development and Support

Previous work at the University of Maryland Global Campus (UMGC) and the previous work as an online course facilitator and course reviewer at QM triggered the study. The leadership at UMGC decided to move to OERs from one term to the next in the summer of 2015.

UMGC was the first major university in the United States to make this move, which saved students approximately \$17 million in the first year (Schwartz, 2017).

UMGC faculty members were unaware of this change and did not know how to address the move to OERs. While UMGc populated the online course shells using OERs, faculty members were required to bring course material to the classroom. Many faculty members did not know where to look and find these course materials. The leadership at UMGc started a professional development activity and incorporated OER training in the initial onboarding workshops for new faculty members. Instructional designers developed separate, short online courses for current faculty members to become versed in the selection of OERs. Preparing faculty members for the use of OERs took time and lasted several terms.

Colleges and university administrators with OER initiatives have realized the importance of training faculty members in the selection, adoption, and use of OERs. The responses to the interview questions of the study have revealed how fragmented the approach to the use of OERs is. Scholars have recommended OER faculty training to allow faculty members to capture the full array and spectrum of possibilities OERs have to offer (Affouneh & Khlaif, 2020; Sandanayake, 2019). Cooney (2016) outlined a lack of faculty training in fundamental areas such as how to locate OERs and what resources exist. Further faculty training could address how to select, adapt, revise, redistribute, and remix OERs to meet student needs. Many instructors want to engage in the OER selection process but shy away in the absence of a clear and understandable framework about OER policies. Faculty members should receive training on the integration of OERs in online and blended learning courses. For example, pointing students to an OER resource does not guarantee the students would read the OER. Explaining the purpose of an OER and how the OER helps students achieve a learning outcome is necessary. Faculty

development should be offered on an ongoing basis and for purposes of continuous improvement (Kinskey & Lewis Miller, 2019).

Future Research

One of the interviewed faculty members noted the use of OERs is still in an infancy stage. Future research is recommended for a successful move to OERs. This qualitative hermeneutic phenomenological study focused on faculty members who had selected, used, and adopted open educational in online undergraduate courses and who were QM PRs and MRs. The faculty members represented a cross-section of selected instructors and courses. This sample was not representative of all QM PRs and MRs. Future studies could focus on a set of instructors having different profiles compared to those exhibited in Tables 1 and 2 in Chapter 4. Faculty members' perspectives about the accuracy and quality of OERs could be different, and repeating this study would help capture and contextualize the vast amount of different opinions in a more coherent fashion. This research would help anybody interested in the implementation of OERs refer to a toolset of best practices for the selection, adoption, and use of OERs.

Implications for Leadership

The idea of using OERs is not new. The OER movement has received new momentum in recent years as college and university attendance costs are rising beyond affordability for many students in higher education. Textbook costs and costs of other educational resources have become unmanageable. University and college students postpone the purchase of textbooks to find a way to defray the costs of higher education. Colleges and universities face declining student enrollments because rising costs in university materials and textbooks require students to consider more affordable alternatives in higher education (Brown, 2020). College and university administrators should find ways to reverse this process and to provide educational opportunities

at a lower and affordable cost. In the United States, higher education is still considered a privilege and not a right (Ayyad, 2015; Moola, 2015). The imbalance between demand and supply for higher education drives college costs up (H. Li, 2013) and prevents many talented individuals from attaining a higher education degree (Davidson, 2015). Commercial textbook producers have created an oligopoly worldwide and represent an industry market value of \$7–10 billion (Greenlaw et al., 2018). The five leading textbook publishers control 80% of the global market, and textbook prices have increased by 812% in the past 35 years (Zook, 2017).

Rising textbook prices have resulted in subeconomies (Zook, 2017), and textbook prices of \$400 or more per unit continue to drive the education bubble in the United States (Perry, 2015). The University of Chicago was the first university in the United States to hit the \$80,000 benchmark per year in college costs (DeGeurin, 2019). UMGC moved to OERs prior to its Fall 2015 semester. The move to OERs saved students approximately \$17 million on textbook purchases in the first year following the transition to OER (Schwartz, 2017), and the switch to open resources has resulted in increased student enrollments (McKenzie, 2018).

Participants' Views

The participants interviewed for this research study cited cost as the primary reason to move to OERs. OERs can provide more than textbooks, including easy accessibility, and faculty members believed there would be a dominant future use of OERs. Creative Commons licenses provide an easy way to reuse, remix, revise and redistribute OERs, yet many of the faculty members interviewed did not engage in this process. The main reasons cited included a lack of resources at the local college, no commitment to OERs, no grants, too much time required to find or create OERs.

All faculty members had adopted and used OERs in online undergraduate classes but had used different approaches. In some cases, the library maintained OER repositories, where faculty members could log in to retrieve OER materials. The libraries played an essential role in the curation process of OERs. Colleges have made OER decisions at the organizational, divisional, or departmental level. College and university leaderships promote the use of OERs but delegate the responsibility. The convenience of commercial textbooks is omnipresent (Bolitho & Rossner, 2020). Instructors prefer the ancillaries supporting commercial textbooks, such as PowerPoint slides, electronic test banks, or solution manuals. Having these commercially produced resources reduces the faculty member's time to prepare for a class. The high price tag of these commercially produced materials reflects convenience. While instructors enjoy these benefits, students are paying for these benefits in the form of high textbook prices. Commercial textbook publishers are the winners, and students are the losers in this economic process (Esposito, 2017).

Three faculty members spoke about student social equity and the need for lifelong learning. The student should be at the center of learning. The abolition of commercially produced educational resources would open doors for students who could not afford higher education. Two faculty members interviewed for this study teach at local community colleges and stated catering to the students who are homeless and hungry. Catering to the homeless and hungry is only possible through the provision of OERs. The students should be the winners in the higher learning process, and the role of the colleges and universities would be to facilitate the information exchange process between the instructor and the students.

The Role of College and University Leadership

College and university leaders should act as facilitators in the creation, selection, and adoption of OERs. Resources at the college and university level should be shifted to make a move to OERs to live up to the promise of providing affordable higher education to society at large. Many of the interviewed faculty members noted a high degree of freedom when choosing OERs but a lack of a support mechanism. For example, resources devoted to research could be used for the benefit of the student by making the research results available in the classroom. The benefits could be twofold: Faculty members could meet research and publication requirements, yet, at the same time, students could benefit firsthand from the research results.

Institutions of higher learning have untapped resources. Libraries can act as curating sources for OERs, and departments can create OER initiatives making the use of OERs mandatory in the classroom. While some faculty members interviewed enjoyed the freedom of creating, selecting, and adopting OERs, this process is time-consuming. Building OER repositories at the departmental level would help alleviate this problem. Faculty members are in control of content when designing OERs, and course materials can be updated on a more frequent basis to meet faculty and student needs. The high price tag of commercially produced materials would disappear, which would leave students with more funds to enroll in classes. Many useful OER resources exist, such as OpenStax, the American Yawp, the MERLOT system, and the University of Minnesota Center for Open Education, but available OERs do not cover all disciplines. College and university administrators should harness the potential of the global knowledge base to create quality OERs. There is nothing in a commercially produced educational resource not already available elsewhere at no cost.

The data obtained in this study showed cost was cited as the main reason to create, select, and adopt OERs, but other reasons existed as well. Other reasons cited included flexibility, ease of use, currency, availability, control over the content, and the ability to share. Colleges and universities have a mission for public education, and social injustice contributes to a split in society. The research presented can help college and university administrators set up a framework and toolset to create an OER environment where the student's chance of success is based on the ability to succeed and not on the ability to pay tens of thousands of dollars to earn a degree.

Conclusion

The study investigated faculty members' perspectives on the accuracy and quality of OERs among online undergraduate instructors in the United States. Sixteen purposively selected faculty members were selected and interviewed on the purpose, ease of use, and content of OERs. The interview questions were created using Jung et al.'s (2016) 25-item framework.

The answers provided by the faculty members resulted in open and axial codes consisting of sentences and sentence fragments. For Research Question 1, the purpose of OERs, the responses revealed cost considerations are the main driver for the move to OERs. Other main purposes cited by the faculty members included flexibility, easy accessibility, instructor involvement, control over the content, the variety, and real-life applicability. For Research Question 2, the ease of use of OERs, faculty members indicated the variety of sources and Creative Commons licenses. Other responses included the use of OER repositories, OER peer reviews, accurate and bias-free content, knowledge collaboration, and mobile access. For Research Question 3, the content of OERs, faculty responses noted completeness, reputable sources, accuracy, learning support, professional standards, and the presence of evidence-based

OERs. Other faculty members looked for differentiation of material, adequacy for student levels, use of OERs in learning management systems, and multimedia.

The last three interview questions addressed the main advantages, three main disadvantages, and any other final comments about OERs. For the main advantages, the responses showed cost control, immediacy and relevance of material, ease of use, customization to student needs, study equity, and lifelong learning. For the three main disadvantages, faculty members' responses included lack of availability, time, and credibility; lack of physical copies and instructor supplements; and lack of funding. Regarding final comments and thoughts, the instructors felt OERs are the future wave of higher education. Some faculty members mentioned the creation of a personal learning network and a shift to instructors to create learning materials. OERs are in an infancy stage but have tremendous potential to pool global knowledge to provide a basis for the creation of OERs.

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Appendix A

Permission to Use 25-Item Framework

Dear Andreas,

Thank you for the email. Please feel free to use those items for your doctoral research, of course with proper citation. I do not have another version of the items.

Best wishes for your research,

Insung Jung

Professor

Dept. of Education & Language Education

International Christian University

3-10-2 Osawa, Mitaka-shi

Tokyo 181-8585, Japan

Tel: 81-422-33-3125

Personal website: <http://epiaget.com>

SpringerBriefs in ODE: <https://www.springer.com/series/15238?detailsPage=titles>

ETHE Journal: <https://educationaltechnologyjournal.springeropen.com/about>

New Faculty Website: <https://sites.google.com/info.icu.ac.jp/newfaculty/home>

On Sun, Apr 28, 2019 at 9:36 PM Andreas Rambow <andreas.rambow@faculty.umuc.edu> wrote:

Dear Professor Dr. Insung Jung!

Kindly permit me to contact you regarding your research article “A framework for assessing fitness for purpose in open educational resources” of 2016 which appeared in the International Journal of Educational Technology in Higher Education.

My name is Andreas Rambow, and I work as an associate professor in the business program of the University of Maryland University College, Military Programs Europe (<https://www.europe.umuc.edu/>), where I teach quantitative business courses in the BBA and MBA program. I am currently enrolled in the online doctoral program at the American College of Education, Indianapolis, IN, USA, (<http://www.ace.edu>), leading to the degree of Doctor of Education.

My dissertation topic deals with the selection and use of open educational resources in the United States; in particular, within the Quality Matters (QM) community of higher education.

QM is an authority in the United States and charged with the quality assessment of online and blended learning courses. One of the assessment criteria is the provision of educational resources including the use of OERs in higher education.

Educators of subscribing universities are often hesitant to select OERs as there are many concerns about the accuracy and quality of OERs. The goal of my research in the field is to provide a consistent framework of OER selection within the QM community.

The methodology is phenomenology and looking at suitable research instruments, I came across your article and wanted to ask if you would allow me to use the 25-item framework you have illustrated in Table 5 of your research article? Or perhaps, you have any updated material on the 25-item framework?

The use of the 25-item framework you have created would be complemented by interviews. The combination of both would be a great way to triangulate the data and add to the existing literature.

I have used my UMUC work email to reach out to you; if you would like to “meet” with me online, I can offer you a Zoom meeting.

I really look forward to your reply and support, as the use of the 25-item framework would really help me advance in the research process.

With kind regards,

Andreas Rambow

Adjunct Associate Professor

UMUC Europe

This email has been checked for viruses by Avast antivirus software.
<https://www.avast.com/antivirus>

Appendix B

Validated Interview Questions for Selected Instructors (Researcher-Developed)

General Questions:

1. What is your name?
2. What is your gender?
3. What is your age?
4. What is your faculty role at the college?
5. How long have you been teaching online?
6. How long have you been teaching online for this college?
7. Which types of undergraduate online courses do you teach?
8. How large are the classes in terms of student enrollments?
9. Please describe the types of OERs that you use in the classroom.
10. How long have you been using OERs?
11. Who selected the OERs used in your online classes?

Interview Questions Addressing RQ1 (Purpose of OERs)

12. Why did you decide to use OERs for your online courses?
13. What will be the role of OER in the future?
14. Did the OERs you used meet your expectations? If so, how? If not, why not?
15. Please tell me about using OER's to improve the quality of online undergraduate education.

Interview Questions Addressing RQ2 (Ease of Use of OERs)

16. How did you locate the OERs you use or have used in your online courses?
17. What criteria did you use when selecting an OER to use in your online course?
18. How important is it to you that the OER has an open content license allowing the mix and reuse of open educational resources?
19. Did you reuse, revise, or remix any of the OERs you have used? If so, how? If not, why not?
20. What criteria do you use when selecting OERs for your students?
21. How do you access open educational resources?

Interview Questions Addressing RQ3 (Content of OERs)

22. What criteria do you use to evaluate the content of an OER?
23. Do you try to assess the appropriateness of content for your students according to the level of their knowledge and skills?
24. Have you created any OER of your own?
25. What, in your opinion, are the three main advantages for you as a faculty member of using OER material?

26. What, in your opinion, are the three main disadvantages for you as a faculty member of using OER material?
27. Final thoughts and comments?

Appendix C

Official Letter to Executive Director of Quality Matters to Place Notice about Research Study in
QM's Peer and Master Reviewer Resources Sites

March 30, 2020

Dr. Deborah Adair
Executive Director
Quality Matters
1997 Annapolis Exchange Parkway, Suite 300
Annapolis, MD 21401

Dear Dr. Adair:

As a current QM course reviewer and doctoral student at the American College of Education, kindly permit me to contact you regarding the placement of a notice about my proposed dissertation study in QM's peer and master reviewer resources sites to which all QM reviewers are subscribed.

The purpose of this placement would be the recruitment of 15 to 20 voluntary faculty members or instructors who have experience in the use of open educational resources in online undergraduate courses at their respective college and/or universities.

I am trying to recruit voluntary participants who are also familiar with applying QM's validated Standards in making teaching and learning judgments in one's own and peers' online courses. Faculty may be employed at institutions having QM memberships such as large university systems but lack an awareness of QM. Such faculty members do not possess the skills in using professional judgment in the application of QM tools and processes.

Without this distinction, faculty could be employed at an institution with a QM membership, but without any knowledge or effect of QM. This selection process will ensure faculty members can apply judgment against QM Standards. Making judgments against QM Standards helps setting quality benchmarks in the interviewing process and strengthen the research results.

As you know, the former QM Director of Research, Dr. Kay Shattuck, is a member of my dissertation committee and has been instrumental in the development of my dissertation proposal. The global increasing interest in the use of open educational resources in higher education has sparked international research initiatives and Dr. Shattuck has accompanied this process for the past two years. I am pleased to inform that the study has been approved by my dissertation committee.

Please find below the details of the study:

Background of the Study: College tuition rates have increased by 106% between 1987 and 2010 in the United States, and between January 1977 and June 2015, college textbook prices have risen by 1,041 percent, or three times the rate of annual inflation. Rising costs of education force many colleges and universities to consider open educational resources (OERs) as an educational alternative to lower the cost of college fees. Open educational resources are available in many different forms and may differ in quality. The selection of open educational resources represents a challenge in the absence of a standard set of selection criteria. Instructors who select, adopt and use open educational resources may have different perspectives about the accuracy and quality of open educational resources.

Problem Statement: The problem is no standard set of criteria exists for the selection of quality open educational resources in online undergraduate courses. Instructors who consider the adoption of open educational resources have concerns about the accuracy and quality, leading to the deterrence of adopting OERs. The background of the problem is rooted in the different quality levels of open educational resources, as many colleges and universities have started OER initiatives to replace expensive commercially produced resources with open source content to lower the cost of higher education.

Purpose of the Study: The purpose of this qualitative study using a hermeneutic phenomenological design will be to explore the perspectives about the accuracy and quality of OERs among instructors who consider the use and adoption of open educational resources in online undergraduate courses.

Significance of the Study: It will be important for this study to examine the perspectives about the accuracy and quality of open educational resources among a larger sample of instructors from different colleges and universities who have adopted and used open educational resources in online undergraduate business courses to establish research at a broader base and to capture a more comprehensive array of themes.

Research Questions: This proposed research study will use a qualitative methodology with a phenomenological design to examine the perspectives about the accuracy and quality of OERs among instructors who have adopted and used open educational resources in online undergraduate courses and to answer the following research questions:

RQ1: What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs?

RQ2: What are the perspectives of online instructors using OERs in online undergraduate classes on the use of OERs?

RQ3: What are the perspectives of online instructors using OERs in online undergraduate classes on the content of OERs?

Dissemination of Findings: The findings of the study will be made available in the public domain to help advance the knowledge in the use of open educational resources in online undergraduate education and to ensure it has the potential to reach a large audience including any stakeholder at Quality Matters.

Time Commitment: Faculty members interested in participating in the study as interview subjects, should contact me directly by email at arambow75@gmail.com. The recruitment process will follow standard IRB guidelines including informed consent, assurance of confidentiality, and anonymity of the data. The actual interview using Zoom communication software is scheduled to last between 45 to 60 minutes. Interviews will be held at a mutually convenient time. As a standard follow-up procedure, interviewees are invited to participate in member checking before coding the data.

Thank you for your attention to my request. Please let me know if I can provide further information. I appreciate your time and consideration of my request.

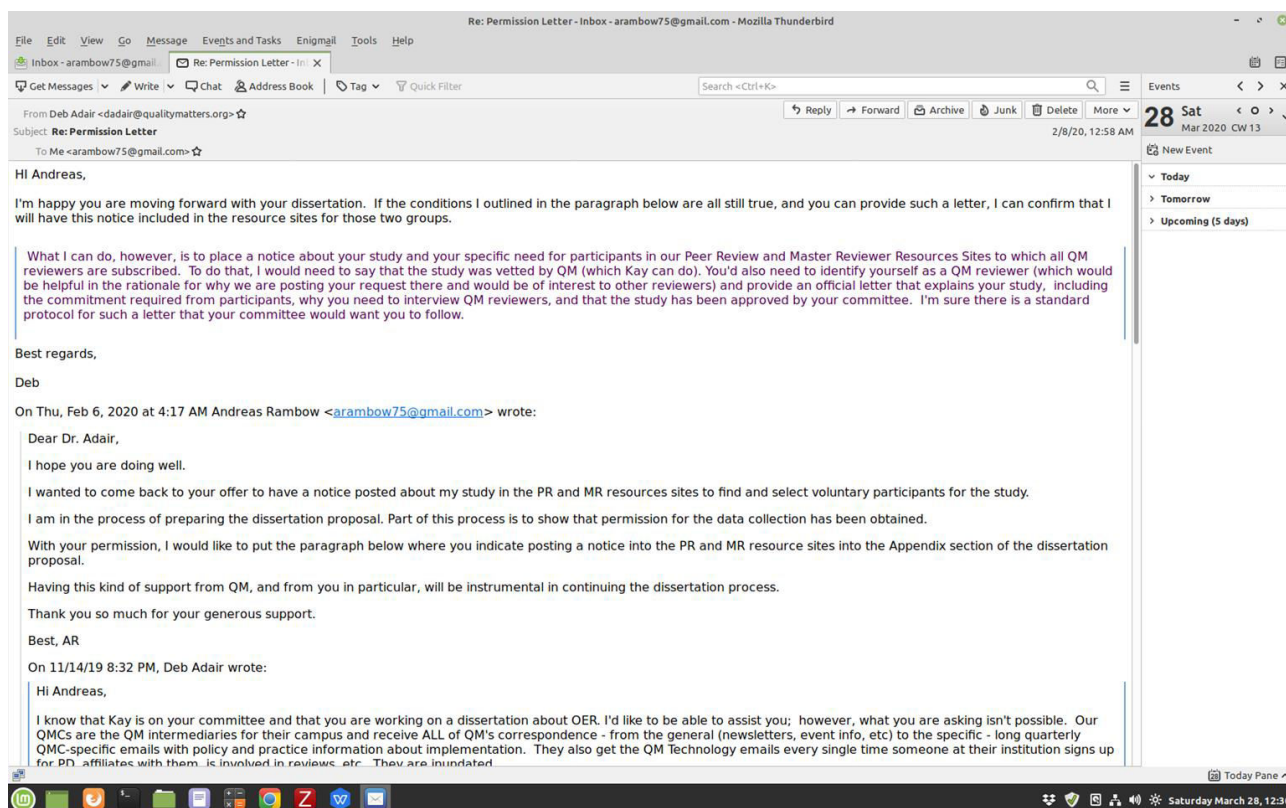
Regards,

Andreas Rambow
Doctoral Candidate
American College of Education

Appendix D

Permission Granted by Quality Matters

From email correspondence dated February 8, 2020.



Appendix E

Call for External Subject Matter Experts to Validate Interview Questions

Dear Researcher,

My name is Andreas Rambow, and I am currently a doctoral student at the American College of Education. I am composing my doctoral dissertation on the selection, adoption, and use of open educational resources (OERs) in online undergraduate business courses and would like to request your input in the form of a peer review on the interview questions attached to this document. The interview questions are researcher-developed and must be peer-reviewed to establish content validity before proceeding with the interviewing process. Your input for the creation of content validity will be invaluable.

Background of the Study: College tuition rates have increased by 106% between 1987 and 2010 in the United States, and between January 1977 and June 2015, college textbook prices have risen by 1,041 percent, or three times the rate of annual inflation. Rising costs of education force many colleges and universities to consider open educational resources (OERs) as an educational alternative to lower the cost of college fees. Open educational resources are available in many different forms and may differ in quality. The selection of open educational resources represents a challenge in the absence of a standard set of selection criteria. Instructors who select, adopt and use open educational resources may have different perspectives about the accuracy and quality of open educational resources.

Problem Statement: The problem is no standard set of criteria exists for the selection of quality open educational resources in online undergraduate courses. Instructors who consider the adoption of open educational resources have concerns about the accuracy and quality, leading to the deterrence of adopting OERs. The background of the problem is rooted in the different quality levels of open educational resources, as many colleges and universities have started OER initiatives to replace expensive commercially produced resources with open source content to lower the cost of higher education.

Purpose of the Study: The purpose of this qualitative study using a hermeneutic phenomenological design will be to explore the perspectives about the accuracy and quality of OERs among instructors who consider the use and adoption of open educational resources in online undergraduate courses.

Significance of the Study: It will be important for this study to examine the perspectives about the accuracy and quality of open educational resources among a larger sample of instructors from different colleges and universities who have adopted and used open educational resources in online undergraduate business courses to establish research at a broader base and to capture a more comprehensive array of themes.

Research Questions: This proposed research study will use a qualitative methodology with a phenomenological design to examine the perspectives about the accuracy and quality of OERs among instructors who have adopted and used open educational resources in online undergraduate courses and to answer the following research questions:

RQ1: What are the perspectives of online instructors using OERs in online undergraduate classes on the purposes of OERs?

RQ2: What are the perspectives of online instructors using OERs in online undergraduate classes on the use of OERs?

RQ3: What are the perspectives of online instructors using OERs in online undergraduate classes on the content of OERs?

Please use the attached VREP form for your comments and suggestions on how to improve the interview questions.

Thank you for your time and cooperation.

Kind regards,

Andreas Rambow
Doctoral Student
American College of Education

Appendix F

Informed Consent Document

Dear Prospective Research Participant: Kindly read this consent form carefully and ask any question or questions before you decide whether you would like to participate in this research study. You have the right and are free to ask any question any time before, during, or after your participation in the research study.

Project Title: Perspectives about the Accuracy and Quality of Open Educational Resources – A Qualitative Phenomenological Study

Principal Investigator: Andreas Rambow Organization: American College of Education

Email: arambow75@gmail.com Telephone: 01132-10-659181

Principal Investigator's Faculty Member: Dr. Amanda Evans

Organization and Position: American College of Education, Committee Chairperson

Email: Amanda.evans@ace.edu

Introduction

My name is Andreas Rambow, and I am currently a student in the doctoral program at the American College of Education. I am conducting research under the supervision and guidance of Dr. Amanda Evans, who is my committee chairperson. I will give you some background information about the project and invite you to become part of the research study. Before you decide, you are free to talk to anyone you would like to about this research. The consent form can contain words you do not understand. If there are any words or expressions you do not understand as we go through the information, kindly let me know and I will explain them to you. If any questions arise later, you can ask at any time.

Purpose of the Study

The purpose of this qualitative phenomenological study will be to explore the perspectives about the accuracy and quality of OERs among instructors who consider the use and adoption of open educational resources in online undergraduate courses among Quality Matters's (QM) subscribing colleges and universities.

Description of Methodology

The research study will request your participation for an individual interview using Zoom communication software. The interview will last approximately 45-60 minutes.

Participant Selection

You are invited to participate in this research study because your background as an educator using open educational resources in online undergraduate classes can contribute to the understanding of the perspectives about the accuracy and quality of open educational resources.

Voluntary Participation

There is no obligation of any kind to participate in this research study. Any participation is entire voluntary. You decide if you wish to participate in the study or not. If you decide not to take part in the study, there will be absolutely no ramifications regarding your job or other work-related relationships or situations.

Procedures

I would like to learn more from you regarding your perspectives about the accuracy and quality of open educational resources in online undergraduate classes at your college or university. If you decide to participate, I will invite you to join me for a private 45-60-minute interview using Zoom software. The interview will be auto recorded for later transcription and data analysis. If you are not familiar with the use of Zoom software, I will be happy to explain it to you and help you get connected. If, after the interview, you feel you need to talk to me to clarify any of your statements or ask questions, please contact me anytime.

Duration

The research for the study will be conducted over a three-months' period. During this time frame, I will have one interview with you lasting between 45-60 minutes.

Risks

As part of the interview process and to contextualize the use of open educational resources at your college or university, I will ask you to share personal and other job-related information in a confidential manner. If you feel uncomfortable to answer any such questions, you do not have to answer without giving any reason for not answering.

Benefits

There is no financial reward to participate in this research study. However, your participation will help shed light on the perspectives of instructors on the accuracy and quality of open educational resources in online undergraduate classes at your college or university. The benefits for participation include the potential creation of selection criteria for quality open educational resources for use at your college or university.

Reimbursement

There will be no financial compensation for the participation in this study. I will thank you for

your time and willingness to participate and you will benefit from participating by sharing your perspectives about the quality and accuracy of open educational resources leading to the creation of selection criteria for open educational resources.

Confidentiality

None of the information you provide during the interview, either personal or topic-related, will be shared with anyone not involved in the research study. The recorded audio-files will be kept on authorized and secure servers. The audio files will be encrypted using a randomly generated password and the files will be renamed using a number. Only I know your number.

Sharing the Results

Upon completion of the study, each study participant will receive a copy summarizing the research findings. It is my intention to publish the results so that other college and universities can benefit from the findings.

Contact Information

You can ask any question about the research study at any time, now or later. You can always reach me at my phone number 01132-10-659181. Note that this is an international long-distance call. If you wish to avoid these charges when making a call, we can also meet on Zoom at a mutually convenient time. You can also reach me at my email address arambow75@gmail.com. This research plan has been reviewed and has received approval by the Institutional Review Board (IRB) of the American College of Education. The IRB is a committee in charge of ensuring the research participants are protected of harm. In case you have questions for them, please contact them at IRB@ace.edu

Certificate of Consent

I am conducting this research in a responsible and respectful manner. My aim is to explore the perspectives about the accuracy and quality of OERs among instructors who consider the use and adoption of open educational resources in online undergraduate courses among Quality Matters's (QM) subscribing colleges and universities. It is important to me learn more about your perspectives on the accuracy and quality of OERs.

I have read this document and been informed about the study and its purpose. I had the possibility of asking questions about the study at any time and all questions have been answered to my full understanding and satisfaction. I agree to participate voluntarily in this study.

Name of Participant: _____

Date and Signature of Participant: _____

Appendix G

Coding Matrix

Research Questions (RQs)	Interview Questions (IQs)	Examples of Participants' Testimonials	Open Codes (initial coding)	Axial Codes (focused coding)
RQ 1: Purpose of OERs	IQ12: Reasons to use OERs for online courses	Cost for the students because tuition kept going up; to save student money and it's more relevant and current; the cost factor to help students; it gives me the flexibility to craft learning activities as I saw fit; primarily to save the students money; I want to make relevant the content to students; there's so much great information available on the internet; many students were not buying the required textbooks because of financial reasons; I realized how expensive the books were; because they provide something that the textbook doesn't; to save students' money; to make the resources more easily accessible for students; people were complaining that the books were too expensive; because the things that I teach change a lot, so from the moment the book is printed to the moment the student has to do it, it may be different; it frustrated me when a textbook only really provided history from the dominant perspective; social equity around cost; the cost barrier for students to purchase textbooks; increase participation from day one; it was to build in that lecture kind of part to add content; let's just create our own textbook, and then we'll save the students money from having to buy a textbook; it is arrogant for me to think that my information is not out there someplace else in a free version; I got goosebumps just saying that; you can tell I'm really passionate about OERs; the students will ask me, "Can I get an older edition of the book? or Amazon, this three additional order is available for \$2 versus \$20 or something"; I	Cost; relevance of information, flexibility; accessibility, currency of information; one-sided views of commercial textbooks. Many students not buying textbooks, arrogance to believe information is not available for free online, passion about OERs, experimenting with OERs.	Cost and relevance of textbooks. Information on internet, OER provide more than textbooks, easy accessibility, commercial books outdated fast.

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		realized, "Okay, this is going to be just my own experiment. I'm just going to do the OER";		
	IQ13: Role of OER in future	I believe they are the future; become more predominant; I think the OER movement is pretty much now becoming almost- I wouldn't say mandatory but on many campuses, it is becoming a requirement because many courses are being designated as utilizing open content and therefore having a reduced cost and is driving a lot of faculty to adopt it because it gives them some competitive edge; I think and I hope say will be the primary textbook; I feel are even better with OERs; honestly, I don't see it changing that much. There are people who will adopt it; I think it is going to become more and more common; I think that publishing companies probably should be worried because I think that more and more people, as people realize that there are other options; we have an OER initiative on campus but it really doesn't do anything or get anywhere because we don't have any policy about textbooks as a college; I think they're going to be very important; I think they will take over; I believe it is the future; I believe we'll be going completely to OER; in terms of how much we use, I would say even more; well, in general, I don't like it because I like paper textbooks. I like real books; I personally think that they are only going to expand further and further as more people get on board; I cannot predict on a larger scale, but I have tried to start the dialogue.	Dominant use of OER in future; feeling better with OERs; instructors have more control; enthusiasm, some skepticism about OERs; utilized at many campuses at a reduced cost. Some people will adopt OERS, others will not. Some instructors prefer traditional textbooks. Faculty have started a dialogue about the use of OERs.	Dominant future use; instructor control over content. Some instructors continue to prefer commercial books. Some OER initiatives

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	IQ14: Did OER meet expectations?	For the most part they did meet expectations; yes, because it's the current-- especially when I'm using current laws, amended regulations, it's right now, it's today; yes, I haven't had any complaints about the quality of the material because I provide access to a variety of resources for students; yes, they did; it's all over the map. There are some very good sources that I've used and some that I haven't that just aren't that good; the websites that I found have met my expectations because I didn't expect much in terms of- I didn't expect them to be textbooks. I expected them to be fragmentary pieces that I could put together, but the OER textbooks have been really disappointing to me; yes, they did; no. The textbook I use now is not good; I've been satisfied with what I've used so far, but of course I'm open to exploring and finding other options; they do meet the expectation; actually, yes. There are some just excellent either OER classes or OER textbooks; yes. I feel that OpenStax has done a great job of creating a quality product that follows the guidance of the American Psychological Association learning standards, and so it's a quality textbook; some definitely have. In the case of the project management ones, one of the sites I use, they're done very well and they're kept short, so they're very ingestible; that's really the problem, is having to relay your material to things that are in the public domain or things where the people; I think with any source that we use, there's positives and negatives; the OpenStax books are great, the courses that I teach and they very foundation level courses, the first two years of undergraduate studies, those books do meet my expectation.	Currency of information; access to variety of resources; low expectations of OERs to begin with; having to compile a textbook personally is disappointing; OpenStax is good, but having to relay information to the public domain is not good. Some OERs follow the guidance of the American Psychological Association for quality aspects. OER mostly suited for lower-level classes.	Currency of information; variety of resource, OER for lower-level courses

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	IQ15: Have OERs improved online courses?	the student being able to access them immediately; students are seeing firsthand how research and laws are applicable to their current role; I can tailor the curriculum to the student that I'm teaching; I really found students were able to-- I'd say they just had better material for discussion forums; I really found students were able to-- I'd say they just had better material for discussion forums; I'm able to give my students so much more information than I could give them in any one textbook; I think they have more of a better attitude about having to take history if they're not being forced to buy a really expensive book; using OER helps me focus in on the concepts that I really want them to know; I think it's helped the students be more active readers in a sense; I think the first piece is that it's very easy to access; my students are actually using the materials now because they're readily available; I think that it allows students to participate from the very first day without cost becoming a prohibitive factor in being able to get involved early in the course. I think that OER also has the potential of allowing for creativity; with our older students who are taking online courses because of expectations of family life and other areas, they support them, because they can be taken in at any time; I guess, because the textbook is available and it's in the course, that students have their textbook on the first day; I think it gives me more immediacy with my students in terms of they see from day one; I think it frees up the students to be able to make the decision to maybe take an extra course next semester.	Immediate access and availability; being able to tailor to student needs; applicability of material to real life. Students do not have to buy an expensive book; students participate from Day 1; more creativity in the classroom, students become more active readers. Students do not rely on a single textbook as the ultimate authority.	Access and availability, real-life applicability, high cost of commercial books, students question information, more participation from the very beginning of the course,

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RQ 2: Ease of Use of OERs	IQ16: Locating OERs	<p>Just a lot of research, independent research; just a lot of research, independent research; I've spent a countless amount of time searching for the open content that I use in my classes, but there are some well-known sources like OpenStax; I went to one of my colleague's sessions on OERs. He was a math professor, and he sent out several links to this source areas and I just started to explore them; I went to one of my colleague's sessions on OERs. He was a math professor, and he sent out several links to this source areas and I just started to explore them; I would say the vast majority of it is just through my own research, through my own hunting things down, lots of Google searches, lots of Google Scholar searches; The OpenStax was already embedded in a course that I'm teaching; The book I knew about even before I used it, but the people who located it for me were the full-time faculty who teach the course; Google is my friend; on our library website, there's a section for faculty and it is an OER repository. I actually looking at it right now. It provides open textbooks, OERs by discipline, links to Creative Commons, open image, video resources; The majority of them I just search for them on the internet; actually, I go to OpenStax. I go to the Creative Commons website. I go to-- What is it? The OER. It's the other OER textbooks; I was told about OpenStax at a conference a number of years ago; I am an excellent Google searcher at this point; we created it ourselves; In oral communication, I was so lucky to find a complete textbook that I really like. We use that textbook, that online textbook and its entirety; MERLOT comes to mind, University of Minnesota; I have the benefit of being on Listserv.</p>	<p>OERs come from many different sources. Examples include Google Scholar, the internet in general, OpenStax, MERLOT, Creative Commons or access to listserves. Hunting things down from a personal perspective. Use of OER repositories. Sharing links among faculty members.</p>	<p>Different sources, Creative Commons, personal research, use of OER repositories.</p>

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	IQ17: Criteria for selection of OERs	peer-reviewed for the most part and then I look to see that they came from a reputable source; it's relevant, it's current, it's valid, the authors have the knowledge to write about it, and they have the background; one of the things I look for is that it has some good reviews if it's been adopted by folk; really vetting the content; it's basically, is it on topic? Is it accurate? Will it enhance learning; does it have the original text, is it really clear who created the OER, what years they created it, who they were funded by; user-friendliness; appearance is number one; accurate content, lack of bias, and accuracy of information; does it illustrate a concept or a fact well; ease of use; it needs to be kind of written from an objective perspective; Creative Commons license that allows me to revise and remix; the American Psychological Association puts out expectations for introductory psychology courses. I use those as well as my personal experiences with other textbooks, to determine how well each topic was covered; made sure that there weren't any egregious errors and that minor errors had been fixed; will be helpful in terms of supporting the content; it would have to meet our needs; it depends on the size of the OER, the function that it serves in my course; accessibility, the source.	Peer-reviewed, reputable sources, relevancy, reputable source, author's knowledge and background, good reviews, vetted content, accuracy, learning enhancement, accurate content, bias-free, illustration of concepts, Creative Commons license, free of errors, supporting learning content, appearance of OERs, size of OER.	Peer-reviewed, reputable source, knowledgeable author, accurate content, bias-free
	IQ18: Importance of open license for OERs	Very important, very; the reusing or adapting is what I look for; what I've seen author-driven revisions and improvements, and the ability for us to share and use; if I don't have permission to use it I'm not going to use it; it's very important to me, because part of the purpose of me using OER is because I need it to be flexible for the needs of my class; if somebody else can edit that actual website, then I have a problem with that; if it's static and it's permanent, then that's fine; it's important. I	The importance of an open license varies. Not all faculty members use it open licenses. Reusing and adaption is important; Some faculty members believe in author-driven revisions and improvements and the ability to share. Not	Importance of open license use, reusing and adaption important, author-driven content, unawareness of some faculty member, flexibility of open licenses, knowledge collaboration.

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		registered with the remix website for the textbook but because it is a textbook and when you remix it, it has to stay in the same format; I'm less familiar with that angle in thinking about it, but I think it would be very important that it is something that can be reused; I think it's important; it is extremely important to me. I believe that knowledge is collaborative; I think it's very important. I feel that that is what will allow for the flexibility and freedom to teach in our best way; I haven't leaned as much on that; really, truthfully, it doesn't matter to me or not. It's easy enough to get the copyright to use things that are under copyright; It really depends on my purpose that I'm using them for; for me personally, reusing is more important.	all faculty members are aware of open licenses. One faculty member did not like open licenses and prefers permanent and static resources. Open licenses are needed to be flexible in the classroom. Knowledge is collaborative. Copyright permissions are easy to get; therefore, no need for open licenses.	
	IQ19: Reuse, revision, and remix of OERs	No, I left them as they were so that the students could see what is out there without it being adjusted in any manner; I've reused the OERs numerous times, but have not revised them. If it was still current and relevant, it was used; I haven't gotten into the revision business much but adding things to support for example the open textbook; No. I've used what was provided in one single source; I've used-- I haven't made very many changes to them. If there's something I don't like about them, then I just go in and ignore certain types of content; I have excerpted them. I have found OER materials and I have cut them down to what I want to use them for my class; No; I just had never thought about it. It just I never thought about it before; Well, I use images and videos for purposes that they weren't created for; Not that I'm aware of; No; I do not find the need to do that; In every class that I've developed; I have reused and remixed, but not revised; Yes. I think that example with the NPR audio clip is a great one; Yes, I have reused. I have not ventured into revising and	Many faculty members are aware OERs have an open license, but have not engaged in reusing, revising, or remixing very much. Those faculty members engaging in these activities have done so to a limited extent.	Awareness of OER reuse, revision, and remix, but limited use.

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		remixing;		
	IQ20: Criteria for selection of OER for students	<p>I try and select OERs without advertising around them, that have nice, clean pages as per what The Nielsen Group recommends. I'd like to make sure that they are accessible, they have good accessibility; current and relevant; I want to make sure that it meets their needs, it delivers quality information on the content that I'm wanting to cover and that it's not too difficult for the students to use and own from a technology standpoint; I want to make sure the content is quality, written by an expert in the subject area. That it's accurate; is it relevant? Is the student-- Will this help the student finds the material more engaging, relevant, will explain it more easily; I want them to be accessible to them; I try to choose things that have captions or transcripts, things that are using good design. Most important, I want the material to be presented in a way that is interesting, that is on the level of novices within the fields since I teach a lot of introductory courses; I just think content and lack of bias as much as possible, or at least a balanced picture; The criteria are, does it illustrate the thing I'm explaining well, or does it explain the thing I want to explain well, even better? Is it clear? Is it easy to understand? Is it interesting? in terms of the appropriateness of it for the students' skill levels, reading levels, comprehension abilities, use of technology, familiarity. it needs to be something that works current from a decent source and from an objective perspective. I am looking for diversity of opinion, diversity of methodology, as well as the quality of research that the OER has done. The first criteria is accuracy, and that's measured through number of errors. Then the next criteria is how complete the discussion is on each topic included.</p>	<p>Faculty members look for appearance, relevance and accessibility. OER must meet student needs. Quality content. Accuracy. Engaging material and relevancy. OER with transcripts and captions. OER for introductory courses. OERs should be presented interestingly and without bias. OER book should be primary source.</p>	<p>Appearance, relevance, accessibility, student needs, quality content, accuracy, bias-free, transcripts and close-captioned</p>

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		It's got to be relevant to the course. Well, when we did create it, we wrote all these introductions to the pieces. It depends on my purpose with that particular piece at that time. I really want it to be relevant to the students in the course and readable for the student. It's the book, that's the primary source.		
	IQ21: Accessing OERs	I can get to them and they can get to them all electronically. I just look for them and then as long as they're relevant and I have permission to use it. It just depends on what it is. There are some textbooks that give you the full PDF version, there are some that I have used where I can pick and choose the chapters from that material. In the two that I'm using, they were website downloads. Almost every time on the internet. Just get on there and look for images. I type in keywords and I look for pictures, content, journal, articles. I usually access them just through web links. I have ordered the hard copies myself. I like to write notes, but mostly online. Well, for photos, there are two websites that I know about and go to. Our library has a very comprehensive list of OER sources. Primarily I use online OERs that I am able to access very easily from my laptop, desktop. I also, when I integrate them into my class, I try them out on a cell phone because a lot of my students are using cell phones now to do their readings and homework. Directly through the internet. I access it through the internet. There's beginning to be resources in history on OER specifically. The American Historical Association has really endorsed both online education as well as OER and so there's a growing list. I use that as a professional resource. For the most part through curated sources like OpenStax and OER Commons. Primarily through their websites. These ones are PDFs and	Faculty members access OERs through websites and check for relevancy. Faculty members prefer full PDFs. Faculty members look for images to download. Faculty members scan for content, pictures, journal articles and weblinks. Libraries provide curated material and comprehensive list of OERs. Mobile accessibility. Accessibility through learning management system. Use of OpenStax and OER Commons.	Websites, pdfs, images, scanning for content, articles, weblinks, curated library materials, mobile access, access through LMS, OpenStax or OER Commons

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RQ 3: Content of OERs		their PDFs-- It's in the course in the LMS, which is Canvas, so the PDF's available. I put everything that I use in Canvas, in the modules, and there are PDFs. A lot of them are PDFs. What else do I have? I'll have links to things, of course, but not-- Let's see. I'll include the link with the PDF if that makes any sense or if it's like a YouTube video, that's just the link. I'll then embed it in there. My main way, just too online is directly from the website.		
	IQ22: Criteria to evaluate content of OERs	I look for completeness, does it cover the content that I'm looking for them to learn? Again, is it from a reputable source? Does it complete the circle of what they are trying to learn? That the author is credible and has the knowledge to be discussing the content that they are. I try to utilize OER materials that have positive reviews if it's been adapted before and if there are no reviews once I try it or utilize it, then I try to provide a review. looking for the validity of the material. I would read through the material, study it myself, fact check as needed. I just looked to see if it's accurate and if it assists with learning, is it overly complicated? I usually try and find something that is very easy and straightforward to read; I use my own expertise for a lot of these things. Most of the things I'm assigning are the things that I have some experience with either as a scholar or a teacher. I look to see, especially principles of citation. I look to the contributors and to see what areas their expertise is as far as their credentials. That takes time because you really have to spot check the whole thing. Look at the table of contents doesn't match what you closely enough what you are doing in the course. I check a few particular chapters to see what its orientation or perspective is. I look at the reading level, and I look at the breadth versus	Completeness, does content cover course material, does it come from a reputable source, positive reviews of OER course materials, reading through OER and engaging in fact check, accuracy, does it assist with learning, easy to read, using own expertise, review of citations, checking table of content, reading level, checking depth versus breadth, keeping pace with current practices, meeting professional standards, getting fellow opinions on OER, checking learning objectives, currency of material, evidence-based,	Completeness, content coverage, reputable sources, positive peer-reviews, fact checks, accuracy, supportive of learning, ease of use, table of content check, reading level, currency, professional standards, evidence-based.

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		<p>depth because I really want more depth and less breadth. when I read through it, I want to make sure that it is sound and keeping with current trends in writing education, practices, and that it's. I already know the subject, so I read it and make sure that it is consistent with what I knew or I tried to review that. I use it very much the same way that I would peer review a Holley article or course. I'm looking for does it meet the professional standards for historians? Does it have the most current research? Does it incorporate it? Does it use evidence and is the evidence credible and valid based on the criteria of my disciplines? Finally, is it well-written? I look at, again, accuracy. I look at how the OER compares to multiple options from print versions we're being able to get, sample copies from publishers that have been around for a number of years and have been repeatedly updated, using those as a basis; I do look at reviews if they're out there, other educator reviews. I try to see how they've been used. I share with colleagues in the department to get their opinion. Again, that it meets our needs. I evaluate it based on my purpose of using it. Does it match up with other stuff I've read on this topic? Does it align with our textbook? I want to make sure that my content is of high quality. It's generally speaking, peer-reviewed, it's generally speaking on exactly what we want for that course, it's generally speaking able to be tailored to my students to my content. Number one is the learning objective is just to go through the learning objective set by the institution and then images interactives. Have a little four or five-point checklist that goes through and say, "Okay, is it meeting the learning objective? Does it have that good scientific images? Does it have the good interactives? Does it have the links that work?"</p>		

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	IQ23: Assessment of appropriateness for students	<p>Oh yes! Right, have had to do that several times where graduate-level writing is not good for a freshman just starting out. anything that I use, I must make sure that I have either built them up, I've led them to where they can understand and use the material, or I need to differentiate for the different students. I try to pick materials that meets the students' learning level, meets their needs. I have one course that is a 100-level general education class. I need to make sure that the content is appropriate for students that essentially have no background. Yes, again, type 1, type 2 errors I can do that, but how much jargon does it use? Do they use a lot of technical terms? The other thing, I don't know if I would use OER much with a multivariate analysis or advanced statistical study because it just is not a substitute, but showing images of sampling and well, the different types of errors and good questionnaires. Yes, absolutely. Yes. The OER that I'll use in a freshman-level course is very different than the OER that I might include in a junior, senior-level course, absolutely. Since I teach mostly survey classes, I don't want to buy or to choose books that are so detailed. I must realize that I have a lot of dual enrollment students, which means I have students as young as 14, because dual enrollment is the thing of the future. I have many classes that have a lot of 14, 15, 16-year-olds. Yes. I am lucky because since I teach sociology, the examples I can use are all around us all the time in everybody's personal life and in the news. On the other hand, there are some concepts and some. That is something that's very much at the forefront of my mind. I don't want to choose anything that's too simplistic, but I also don't want to choose anything that I know they're going to really struggle with. Yes. I designed my courses from learning objectives. If instructional material</p>	<p>Graduate-level versus freshman writing, differentiation of material, avoidance of jargon and technical terms, looking for lack of detail for freshman courses, dual enrollments of high school seniors and freshmen, provision of examples, designing courses from scratch, things should not be over students' head, but challenging at the same time.</p>	<p>Differentiation of material, avoidance of jargon and technical terms, dual enrollments for senior high school and freshman students, provision of example, course design from scratch, adequacy for student level and challenging</p>

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		<p>doesn't meet the learning objective in some way, I don't use it. Yes, I do. I do, I do try. Well, we do, but sometimes it's difficult, because you don't always know what they teach him in high school. Yes. For sure. Absolutely. I wanted to challenge them. In some cases, in other cases, I think an easy read is fine. I just want to make sure things are not just over their heads. Yes. That's readability, how easy they can understand the concept, because we are a community college.</p>		
	<p>IQ24: Creation of own OER</p>	<p>The only thing I created is an app. That was for my area of expertise in special education and there are tons and tons of terms that those students needed to learn, legal terms. I created an app with definitions so they could just pop up the term and find the definition. No. I have created something like activities that go along with the web simulators. I have taken some activities that are already available that are openly licensed and modify them slightly and then made them available in places like canvas comments, OER comments so that other people can utilize them if they choose to. No. I participated in creating a couple of textbooks. One American government, another state and local government with an organization that was creating the OER. I have created YouTube video lectures about content in my classes that I initially made public on YouTube, so yes, I have created OER. I have backed away from making those public. They're not so open anymore because I started getting comments from people around the world who disagreed with things that I said or wanted me to help them write their paper for their class or assumed a level of expertise with a subject that I</p>	<p>Creation of app, creation of various activities, reusing OERs in learning management system, participation in textbook creation, use of government sites, creation of Youtube videos, but not made public, personal creation of PPTs,</p>	<p>Creation of various materials; reuse in LMS, government sites, Youtube and own PPT creations</p>

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		<p>don't have, that I was talking about in much more general terms. I create resources all day long, but it's all mixing and gathering more than anything. Yes. I have created things. I haven't licensed them. I don't know if you would call them OER. I've created my own resources. I have not. No. No. Yes. I created a 20th century world history where I created the content entirely myself. It's not complete, but I have. Not enough, but yes. I know one of our faculty created some grammar videos. I've written a few things. It's where I find gaps in material and then I'll create something on my own. Yes. My subject area books, at first when I adopted them, the OpenStax book, they didn't come with the lecture slides or any notes. It was just a book, which was great. I created my own PowerPoint slides and I continued pretty much daily.</p>		
	<p>IQ25: Three main advantages of OERs</p>	<p>Not having to be concerned with cost of textbooks for students, number one. Number two, that they have the content immediately and we don't have to do this, "Oh, the dog ate my book," stuff. Let's see the third thing. I really have control over what content they learn that way. Cost, relevance, current information. the cost factor, the ability to tailor it to meet my student's needs and ease of use. Number one for me would be cost, reduced to no cost really, at least in what I use. Accessibility of the material, easily accessible, and I feel like more frequently revised, the material that I've used. To better explain a topic like give and image instead of me repeating over and over. Let's say the first main advantage is flexibility, that the information will be presented in a manner and order, in a format that works for the class. Second main advantage is cost. To be able to save my students a lot of money. The</p>	<p>Cost, content immediacy, control of content, relevance, meeting student needs, ease of use, better explanation of topic, currency of material, format that works for the class, students not falling behind, customizability, access without purchasing a physical copy, collaboration among students, quick adaptation, equity, source permanence, life-long resource for</p>	<p>Control of cost and content, immediacy and relevance of material, student needs, ease of use and good topic explanation, student participation from beginning of class, customizable to student needs, student equity and life-long learning resource</p>

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		<p>third main advantage I would say is, currency, that I can get breaking news things as they happen. The fact that nobody has an excuse to not have access to the book is major for me. I would say the big one is cost. The second one is probably that the student has, what they need to succeed in the course, when the course starts. They don't automatically fall behind and that's related to cost. The third one, I think, is probably customizability that OER have the potential if you have the time to be customized. The ability to access them without having to purchase a physical copy, or having to go to a bookstore or something. The freedom to access them from wherever they are, if they have internet connection, and of course, the cost, the savings to the students. Cost, freshness, availability. Cost. For me, it's because costs lead to access for our students. Two the ability to adapt quickly. Many people don't realize how fast history is changing right now, or at least the discipline and our perception of history. You don't have the luxury, in my opinion. We don't have the luxury to wait two to five years for that to be incorporated into our classrooms. We need to be doing it as soon as we know new perspectives.</p> <p>Three, the collaboration factor. Flexibility, accessibility by students and the ability to remove barriers. Equity I think is another. One of the big things is my administration loves it, primarily as a cost savings. Probably the control over the content, because it's not someone else's content, it's our content so we can have control over it. there's obviously cost, first-day access, portability, source permanence. I think number one if you just looking purely from the number's perspective. I have that freedom to be able to provide a lifelong resource to students.</p>	students,	

Research Questions (RQs)	Interview Questions (IQs)	Examples of Participants' Testimonials	Open Codes (initial coding)	Axial Codes (focused coding)
	IQ26: Three main disadvantages of OERs	<p>Electronically, it is sometimes, students don't have the capacity on their computers to be able to get to the OERs that I've to have them link to. They're trying to use the absolute cheapest Chromebooks they can to access things that need a little more oomph. That's probably the main concern. The fact that students will not always go to the OER unless you lead them there and there's an assignment attached to it. Time, availability, and credibility. Sometimes I get feedback from students. In their minds a textbook is a physical hard bag book that they're supposed to be able to hold and touch and feel, turn the pages and sometimes they don't readily recognize a PDF document or file as a textbook. There has been this learning curve to get students acclimated to the idea that it doesn't have to be a physical hard copy to be a textbook. Also, for some faculty I would necessarily say for me there's the time to re-work a course to incorporate the OER materials. These days if you get a textbook through a publisher, they come with a lot of ancillaries. I have had some students who've asked if there was any way to get a printed text. They just want to have printed material and that has not been available. You always must look at timeliness as is it dated material. Obviously, you must spend time evaluating the content. I found incorrect information, I found incomplete information, and then you must decide if it's appropriate. I would say the first disadvantage is uneven quality that like I've mentioned, some are very high quality and some are very low quality. It takes a fair amount of time to have to search them out and to try to find the good quality ones. The second is that links break, the possibility of link rot. That I might link to something and then the next semester it's not available anymore. That really increases my work. The third I think is that there's a</p>	<p>Lack of computer access, use of cheapest Chromebook for cost reasons, students not going to OER site, lack of time, availability and credibility, lack of physical copy of OER material, lack of student learning curve using OER, lack of good ancillaries, evaluation of content is time consuming, incomplete and incorrect information, broken links, fragmentary nature of OERs, lack of updates, OER not being what instructor is looking for, sites like OpenStax not being updated due to lack of funding.</p>	<p>Electronic access required, students not accessing OER, lack of availability, time and credibility, no physical copy, lack of supplements for instructors, incomplete or incorrect information, broken weblinks, lack of updates due to lack of funding.</p>

Research Questions (RQs)	Interview Questions (IQs)	Examples of Participants' Testimonials	Open Codes (initial coding)	Axial Codes (focused coding)
		<p>fragmentary nature to them that a regular textbook would smooth over, that there would be transitions between sources or between ideas. For example, I have a list of all kinds of questions for the question bank in my course. In a publisher's world, they have a download that you import into your course. You can download this huge file and all the quiz questions; the quiz bank is in your course. I want to say potentially quality by any book can be low quality. I think it's just that people are more tempted to stick with an OER if it's low quality because they're scarce, especially textbooks. OER textbooks are not common. If people have one and it is okay, they tend to stick with it. That's not always the case. At my college, the economics faculty changed from an OER back to a low-cost textbook. Not all students like having their course materials all online. One other one would be the time it takes for an instructor to obviously do the research, search. Errors, lack of extensive review, and lack of support. I think that there are still some big gaps in the OER that is available. There are entire disciplines that don't have good OER materials. It takes a lot of time just to find OER materials. There are typically fewer ancillary resources available. You must be very careful with the source of your OER material. You must go into it in a methodical process when selecting resources. It can be time-consuming to create, but there are organizations out there who are doing a lot of the pre-work for you. The quality varies. You do have to be diligent about looking at it and making sure. Then, there aren't necessarily updates. the main disadvantage is the content doesn't meet our needs because it's created by someone else. You go in there you look at it, none of it is exactly what you want. I guess to just pick an OER off the shelf or off the internet, it's not going to be 100% what you</p>		

Research Questions (RQs)	Interview Questions (IQs)	Examples of Participants' Testimonials	Open Codes (initial coding)	Axial Codes (focused coding)
		<p>want, you're going to have to make compromises. Time it takes to gather things up. It would be huge. Things possibly disappearing. If you're using anything that's an active link, that personal assessment of public speaking anxiety that I talked about, I always check all my links in my course before online or face to face. I check them the week before we go live with it. I've had links disappear and go down over that weekend. That's frustrating. I think that stigma that goes with them, particularly with our old school counterparts, and University College settings, it can't possibly be that good, especially the textbook writers of the department. It's insulting them and what they do and that's not my intention at all in any way, shape, or form. I think just the continuous check-up of the links and the pictures, and the stuff that is-- especially the links, pictures are okay but the interactives and the stuff. I think that's important and I can see why the OpenStax book may not be being updated on a regular basis because, of course, it's a full-time paid job. Ancillaries, lack of ancillaries is what distracts a lot of faculty from not being able to use the OER resources. Those are the two things that I can see why that can be the disadvantage and faculty may not want to go along those ways.</p>		
	<p>IQ27: Final thoughts and comments</p>	<p>I do believe that's the wave of the future not only for higher education but now that we've had this pandemic, I can see it being used in K-12. I think what we're going to see are the personal learning networks developed from this is what the horizon report is pointing to, and I think that's the way education is going to go. I do believe that's the wave of the future not only for higher education but</p>	<p>It is the wave of higher education, development of personal learning networks, wave of the future, the way education is going on, asset in teaching classes, students find</p>	<p>Future wave of higher education, creation and development of personal learning network, the way education will go, future instructor</p>

Research Questions (RQs)	Interview Questions (IQs)	Examples of Participants' Testimonials	Open Codes (initial coding)	Axial Codes (focused coding)
		<p>now that we've had this pandemic, I can see it being used in K-12. I think what we're going to see are the personal learning networks developed from this is what the horizon report is pointing to, and I think that's the way education is going to go. I have found them to be an asset in teaching my classes not just from my perspective, but I know that students find them helpful as well. Many of our students are economically challenged and every dollar counts. I've been using it since the very beginning, because just to some degree, I know what I can do and I know what I can't and sometimes the production volume, the images there, it's like borrowing resources from other people. I do think that this is the future of education for those reasons that I've mentioned. I also feel like that in good conscience, it's my responsibility to try to make this happen for my students and to contribute. I was part of an OER institute at my school where they did give us some training and support, and a lot of encouragement in doing this. I love them. I really do and I absolutely believe in them. I'm eager to hear what you find from talking with everybody you're interviewing when this is done. I think there's just a tremendous potential there, but time is the issue. I think that OERs are definitely a positive. I think there's a lot we can do with them, I think they're going to take off. I think colleges in particular are going to encourage their faculty to use it, I think community colleges as a specific group as well will be a group that will be pushing them. I like them. I think they overall bring a lot of value, and I think they brought a small revolution in the area of education that was a little stuck. I was happy to see they exist and be able to use them. I think we're still in the infancy for OER. I think at least in the time that I've been working with it and I've been attending the OER</p>	<p>them helpful, instructor responsibility to make OER happen, believing in and loving OERs, being able to do a lot with OERs, tremendous potential, it is like borrowing resources from other people, revolution in area of education, OER in infancy, attendance of OER conference each year, pulling together resources creates knowledge base for OER.</p>	<p>responsibility of OER, love for OERs, tremendous potential, borrowing resource from others, revolution in field of education, OER in infancy stage, attendance of OER conference each year, pooling global knowledge provides basis for OER</p>

Research Questions (RQs)	Interview Questions (IQs)	Examples of Participants' Testimonials	Open Codes (initial coding)	Axial Codes (focused coding)
		<p>conferences every year since 2016. I think that OER has a bright future, and if we're careful and come up with some sort of way to assess as we go, I think it's a great thing to continue. I think it's an important area, and OER, I believe, is here to stay. my recommendation would be to have the college bookstores ability an OER, printing company printed off into a book, and then my students just pay the cost of the printing where they wouldn't have to pay the royalties and publisher. My only concern, that's to the disadvantages, I didn't say this before, student engagement with them, that whole control find effect or instructors that aren't intentionally teaching their students how they want them to interact with them. I think if we pull our resources together, we have enough knowledge in the world to donate to the cause of education, to make learning accessible.</p>		

Appendix H

Audit Trail for Proposed Research Study

Institutional Review Board (IRB) approval and oversight: The IRB at American College of Education will monitor and oversee the proposed research study. The IRB will grant final research approval.

Literature Review: The abbreviated literature review for the topic was presented in the concept paper, a prelude to the current dissertation research proposal. It received approval from the Teacher of Record. The literature review for the proposed research was completed and received approval from the Teacher of Record. The approved version contained 155 references and discussed research in the field of open educational resources within the last five years.

Theoretical framework: Mezirow's theory of transformative learning is a constructivist theory and underpins the proposed research study. Learners interpret and reinterpret personal experience to create meaning and learning. Transformative learning addresses two types of learning, which are *instrumental* and *communicative*. Instrumental learning emphasizes learning using problem-solving techniques, and communicative learning helps explain how individuals learn by communicating feelings, needs, and desires. Structures having a *meaning* form the theory's key element. Mezirow defined *meaning* as predispositions coming from conventions determining peoples' expectations and argued meanings are a combination of concepts, beliefs, judgments, and feelings leading to an interpretation.

Interview protocol and instrument development: Interviews will be held using Zoom and conducted using the interview protocol refinement (IPR) framework. The use of the IPR method contributes to an improvement of the data quality generated using research interviews and strengthens the reliability of interview protocols. The research instrument is researcher-

developed based on the framework created by Jung for the assessment of fitness for purpose in open educational resources. The interview questions have been peer-reviewed by a team of external researchers familiar with using interviewing as a data collection method.

Participant selection: Using purposive sampling, voluntary participating faculty members, 15 to 20, having experience in the use of open educational resources in undergraduate online courses will be selected from member colleges and universities subscribing to Quality Matters (QM). The selected interview participants for the study are faculty members who have adopted and used OERs in online undergraduate classes and demonstrated experience in using QM's validated Standards in making teaching and learning judgments in one's own and peers' online courses. The faculty members must be current QM peer or master reviewers.

Data collection and storage: Using Zoom communication software, unstructured, in-depth interviews. The communication is encrypted, and the interviews will be recorded. Zoom automatically transcribes the communication for later entry into the QDA program, NVivo. Data files will be hosted on an external storage device which is encrypted, and password protected. Ten to fifteen faculty members will be interviewed.

Raw data: Sound files, video files, and unedited transcripts from the interviews.

Partially processed data: Coded interview transcripts, summary of observational comments, and eventual notes.

Coding scheme: Using NVivo, open and axial coding for the data analysis when using interviews as a data collection tool. The researcher will use open coding to identify and create tentative labels for data chunks summarizing what is happening induced from the data. The data chunks will be axially coded to identify relationships and connections among the open codes in a second step. Open coding requires reading through the data several times, recording examples of

participants' words, and establishing properties for each code. Axial coding connects the dots and identifies relationships among the open codes to find connections.

Trustworthiness techniques: Audit trail, triangulation of data using audio and video, member checking, peer reviews of interview questions, feedback from doctoral committee, feedback from DRR and IRB, “thick” descriptions of phenomena.

Summaries: Chapter 4 of the dissertation will provide a summary of the research findings.

Research report: Final approved dissertation consisting of five chapters. Literature review, “thick” description of context, methodology, phenomena, operational definitions, research and design, sampling, data collection and analysis, answers to research questions, and suggestions for further research. Appendices including informed consent, permissions for accessing data and interviewing participants, call for external subject matter experts, validated interview questions, official letter to QM to invite research participants, and an audit trail sample. Report will be made available in the open domain to reach a large audience interested in the development of open educational resources and the use in online undergraduate courses.

Appendix I

Permission to Use Audit Trail Layout

Dear Professor Dr. Glenn A. Bowen (via LinkedIn),

kindly permit to contact you regarding the use of materials from a previous research article of yours.

The article is dated 2009 and appeared in the International Journal of Social Research Methodology and had the title “Supporting a grounded theory with an audit trail: an illustration.”

I am a doctoral student at the American College of Education and in the process of preparing the dissertation research proposal. The study uses phenomenology and my dissertation committee requires the creation of an audit trail document. Doing research on how this is done, I came across your article and wanted to ask for your permission to use the layout of the sample audit trail appearing on pages 312 and 313 of the report. It is exactly what I am looking for. Following scholarly practice, it goes without saying that any material used will be appropriately cited. I look forward to your response.

Kind regards,

Andreas Rambow

Doctoral Student, American College of Education

Response received on April 1, 2020, via LinkedIn:

Hi, Andreas: Thank you for contacting me. You may use my audit trail (format) and cite appropriately. Best to you! --Glenn