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Faculty Use Of Open Educational Resources: Attitudes, Norms, And Self-Efficacy As Behavioral Predictors.

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FACULTY USE OF OPEN EDUCATIONAL RESOURCES:

ATTITUDES, NORMS, AND SELF-EFFICACY AS BEHAVIORAL PREDICTORS

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ABSTRACT

The primary drivers of open educational practices, open educational resources (OER), and OER enabled pedagogy are the faculty who will help transform higher education in these domains. The purpose of this study was to understand factors that lead faculty to use OER and to learn how their use is related to teaching behaviors. It is broadly based on an OER Research Hub hypothesis that the use of OER leads to critical reflection by the educator with evidence of improvement in their practices. Within that hypothesis is the suggestion that the use of OER causes faculty to incorporate a wider range of content, consider different teaching approaches and reflect on their practices as an educator. In this study, the components of this hypothesis are dissected by directly measuring faculty teaching and reflective practices and using the components of the Theory of Planned Behavior (TPB) to explain factors that contributed to the behavior. This research looks at faculty perceived attitudes towards OER, their subjective norms of peers, and their self-efficacy in teaching as determinants of behavior. This yields three research questions. What are the attitudes, subjective norms, and perceived behavioral control of faculty in relation to three behaviors: use of OER to prepare for instruction, use of OER within a course, and reflective practices. Higher education faculty in the United States were surveyed (n=414) using questions adapted from the Attitude Towards Open Education Resources (ATOER), the Teachers' Sense of Efficacy Scale (TSES), and the Unified Theory of Acceptance and Use of Technology (UTAUT). Data were analyzed using univariate and multivariate regression. The findings show the impact that OER use has on how teaching faculty change the way they prepare for classes, the way they engage with students in the classroom, and the way

they reflect on their teaching. When looked at independently, attitude, subjective norms and perceived behavioral control each significantly explained the use of OER in preparing for instruction and reflective practices. Perceived behavioral control was not significant in explaining use of OER in a course. Multivariate models incorporating all three of the major constructs of the TPB, found the models to be a significant predictors of use of OER in preparing for instruction, use of OER in a course, and faculty reflective practice. However, in both the univariate and the multivariate models, the amount of variance explained was very low, with there being no explanation above 20%. The findings also identified the need for interventions that facilitate transformative teaching using OER. A deeper understanding of the faculty who use OER and the factors related to OER that influence faculty practices is an important contribution to the research.

DEDICATION

This dissertation is dedicated to my great-aunt, Dr. Ruby Shubkagle. You introduced me to the world of academia and instilled in me the desire to keep pursuing my education. After I earned each of my degrees I told you I was done with school and every time you were adamant that I continue on and get my doctorate. I finally listened. Doc, this one is for you.

LIST OF ABBREVIATIONS

ATOER	Attitude Towards Open Educational Resources
OER	Open Educational Resources
UTAUT	Unified Theory of Acceptance and Use of Technology
TPB	Theory of Planned Behavior
TSES	Teachers' Sense of Efficacy Scale

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CHAPTER 1 - INTRODUCTION

Background of the study

In academia, there has been an increased interest in a range of 'Open' philosophies and models. These interests are motivated by the desire of faculty to freely share their work, prevent duplication, avoid restrictive copyright practices, and improve access to groups of stakeholders (McGill, 2014). Within the realm of open philosophies lies open education which is the notion that "education can be improved by making educational assets visible and accessible and by harnessing the collective wisdom of a community of practice and reflection" (Iiyoshi & Kumar, 2008, p. 2). Conole (2013) developed four principles of openness that are necessary for open educational practices. These are collaboration and sharing of information, connected communication about learning and teaching, collectivity to grow knowledge and resources, and serendipitous innovation (Conole, 2013). Helping to facilitate open education practices is the creation and use of open educational resources. OER, as defined by UNESCO (Open Educational Resources (OER), 2017), are "any type of educational material that are in the public domain or introduced with an open license." It is because of such resources that OER enabled pedagogy (Wiley, 2018) becomes possible. This set of teaching and learning practices are only possible because of the *5R permissions* that allow the user to reuse, revise, remix, redistribute and retain the work. Whether looking at open educational practices, open educational resources or OER enabled pedagogy, teaching faculty are the primary drivers who will help transform

higher education in these domains. This study will explore how faculty use of open educational resources has impacted their approaches to teaching.

Statement of the problem

Open Educational Resources (OER) are receiving attention as teaching tools that can transform education and help overcome barriers to access. They also have the potential to promote innovative pedagogical models for teaching (Baker, 2008) and empower learners as co-producers of their learning (Derricott, 2015).

In 2007, a group of educators came together in Cape Town, South Africa, to accelerate open education initiatives. At that meeting, the Cape Town Open Education Declaration passed. As of October 2018, nearly 2700 individuals and 280 organizations have signed the Declaration ("The Cape Town Open Education Declaration," 2007.). The Declaration states that:

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

The signatories of the Declaration share a commitment to open education, by supporting the ideas of: (a) creating, using, adapting and improving open educational resources and embracing educational practices built around collaboration, discovery and the creation of knowledge, (b) freely sharing open educational resources through open licenses which facilitate use, revision, translation, improvement and sharing by anyone, and (c) advocating for policies

that make open education a high priority (Cape Town, 2015, p. 1). These goals have fueled the OER movement and have shaped the ways that faculty are involved with open educational practices.

Since that meeting in Cape Town, the movement has grown, and advocates have worked to create resources and collaborate around the idea of open education. Key stakeholders involved include the global community, educational institutions, and supporters and facilitators of learning (McGill et al., n.d.). By focusing on the cost savings for students, almost half of all states have introduced some form of legislation that proposes more substantial use of OER in college education (SPARC, 2018). Schools, such as Tidewater Community College in Virginia, are creating degree programs that promise students no textbook costs, by utilizing OER in multiple courses. Foundations, like the Hewlett Foundation, have made OER a primary focus of their philanthropy.

Weller et al. (2016) identified three categories of OER users: OER active, OER as a facilitator, and OER consumer, each with differing needs. OER active users are those that are familiar with the concept of OER and are often advocates. OER active is the largest group of users. Faculty who use OER in their courses and are interested in learning more about their potential to fall within this category (Weller et al., 2016.). OER as facilitator refers to those users who are more interested in innovation and efficiency. These may be faculty who are excited by the possibility of using new strategies for engaging students, of which OER is one option (Jhangiani, 2017). Lastly, OER consumers are less interested in the capabilities of OER and are focused on use rather than creating and sharing. Faculty who are OER consumers are concerned with ease of use and quality (Jhangiani, 2017). Higher education teaching faculty represent various stakeholder groups and all three categories of users. Despite high interest in OER by

those outside of higher education, there is still slow growth in the number of faculty who are incorporating them into their courses. In order to make OER more mainstream, it will be necessary to fully understand faculty needs and interests.

For the OER movement to affect the climate and culture of higher education greater numbers of faculty will need to adopt these types of resources for their courses and integrate their features into pedagogy and teaching practices. A deeper understanding of the faculty who use OER and the factors related to OER that influence faculty practices is an important contribution to the research.

Purpose of the Study

By surveying teaching faculty at higher education institutions in the United States, this study will contribute to a better understanding of the characteristics and behaviors of faculty who use OER for teaching. This knowledge will provide OER advocates additional ways to persuade more faculty to implement OER. The findings will also identify interventions that facilitate transformative teaching using OER. Ajzen's (1985) Theory of Planned Behavior (TPB), which attempts to predict behavior based on one's attitudes and beliefs, will serve as the theoretical framework for this study. Three specific behaviors of faculty teaching will be addressed: 1- how faculty use OER to prepare for their teaching; 2- the pedagogical practices of faculty using OER in a course; and 3- the reflective practices of faculty that use OER. Applying the Theory of Planned Behavior, the attitudes, subjective norms and perceived behavioral controls will be examined as predictors of each of these three behaviors.

Significance of the Study

Much of the research related to OER use in higher education has focused on the benefits to students (Bowen et al., 2012; Fischer et al., 2015; Hilton III & Laman, 2012). By showing the positive impact that OER have on student success, OER advocates hope that this evidence spurs more faculty to adopt OER. A review of this research is covered in Chapter 2. However, student outcomes are not the only thing that influences how faculty teach their courses.

Prior research has identified barriers to faculty adoption of OER (Belikov & Bodily, 2016; Kursun et al., 2014; Mishra & Singh, 2017). OER advocates talk about ways to overcome these barriers, but faculty are still mainly participating voluntarily in small numbers (Ehlers, 2011a). One area of focus related to increasing use is motivating factors. Motivation can be thought of as the perceived benefits to themselves and others (McGill, L., Falconer, I., Dempster, J.A., Littlejohn, A. & Beetham, H., n.d.). In order to increase the use of OER, there is a need to understand what motivates faculty to participate. Within the framework of TPB, these motivators serve as determinants of behavior and include faculty perceived attitudes towards OER, subjective norms of their peers, and their self-efficacy. Understanding the impact that these determinants have on OER usage will help in the development of new interventions. If the advocate has a potential service or resource to "sell" then they need to know what motivates the faculty. This study expands the current research by providing empirical evidence for the intrinsic determinants that makes faculty want to use OER. Furthermore, it will offer a broader perspective beyond case studies and offer a way to predict faculty behaviors related to OER usage.

Previous research has identified types of usage and how specific individual faculty are using OER (Jhangiani & Jhangiani, 2017; Mtebe & Raisamo, 2014; Petrides et al., 2011). Most

of this research is case studies at either a specific institution or within a specific course. This study seeks to expand the scope, by surveying faculty across the country, in order to describe common characteristics of faculty and how they are incorporating the open permissions of these resources. It will also provide evidence of how faculty use OER to prepare for classes, to teach in the class, and to reflect on their teaching.

What makes OER unique is the ability of the faculty to use open educational practices. The OER movement is moving away from a phase that emphasized access and availability of resources to one that looks at how OER improve both teaching and learning experiences through new practices. This research study will also offer greater insight into how faculty are using the licensing permissions to customize and share their teaching materials, as well as the factors that influence this behavior.

There is a need for the OER Community to "develop systematic research program that target a clearer understanding of the differential needs and values of particular educators" (Harley, 2008, p. 209). By pulling together all of these characteristics of faculty who use OER this research study will address that need.

Local Context

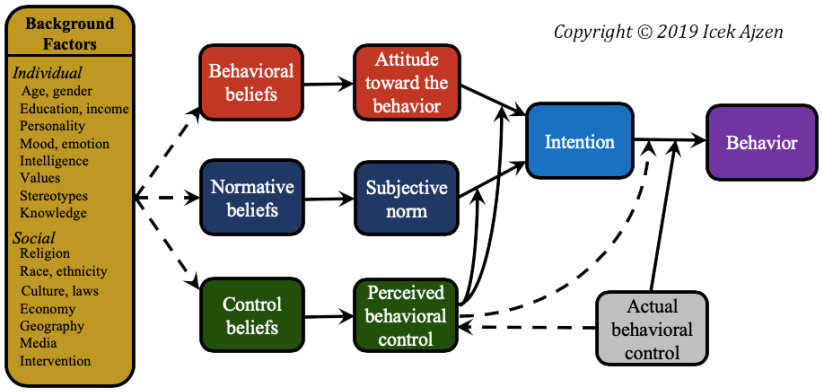
This study will focus on the teaching faculty at higher education institutions in the United States. Although there is global interest in OER use, higher education systems around the world each have different characteristics that would need to be accounted for as influences on faculty motivation, and are therefore, outside the scope of this research. Participants were solicited from all types of higher education institutions (two year, four year, public, private) throughout the United States and all academic disciplines.

Conceptual Framework

Faculty have agency over how OER are used in higher education. If OER advocates have a greater understanding of the characteristics and intrinsic motivating factors of faculty who use OER, then they can create programs or incentives that address these factors. The results of this research will also allow proponents of OER to develop interventions that address the specific attitudes, norms and perceived behavior of faculty which makes better use of limited advocacy resources rather than a one size fits all approach. These interventions are designed to increase the number of faculty using OER in the future.

The Theory of Planned Behavior (TPB) is the most frequently cited explanation of human behavior (Sussman & Gifford, 2018; Norman, 1994; Weinstein, 1993; Hausenblas, 2014). TPB predicts an individual's intention to perform a specific behavior. Behavioral intention is the immediate antecedent of the behavior (Ajzen, 1985). The TPB uses three components to determine behavioral intention: attitudes, subjective norms, and perceived behavioral control (See Figure 1). Attitude in this context refers to an individual's positive or negative evaluation of performing a particular behavior of interest (Ajzen, 2006). Subjective norms relate to the person's perceived social pressure to perform or not perform a behavior (Ajzen, 2006). Perceived behavioral control is a measure of self-efficacy and control over the behavior (Ajzen, 2011). Chapter 2 includes a more detailed explanation of the TPB and its components. The more positive a person's attitude toward the behavior, the stronger the social norm to complete it, and the more control the individual perceives they have over whether they can complete it, the greater the intention to engage the behavior is said to be (Dewberry & Jackson, 2018).

Figure 1. Theory of Planned Behavior



Motivational research differentiates between intrinsic and extrinsic motivation (Ryan & Deci, 2000). In the context of the TPB, the focus is on the intrinsic motivators of behavior by using behavioral, normative, and control beliefs to predict behavioral intention (Ajzen, 2011). Prior studies have looked at opportunities and resources as external motivating factors related to OER use (Algers & Silva-Fletcher, 2015; Sclater, 2011). These studies have identified barriers to use and have suggested ways to address them. Chapter 2 will provide a closer look at this research. By using the TPB, this study will be able to determine the salient beliefs (intrinsic factors) rather than the external factors that predict how faculty use OER.

For purposes of this study, scales were used to measure the three constructs of attitude, subjective norms and perceived behavioral control included in the Theory of Planned Behavior. Attitude is measured using a selection of questions from the Attitude Towards Open Educational Resources (ATOER) instrument (Mishra et al., 2016). ATOER is a scale that identifies the sharing and adapting attitudes of OER users. Subjective norms refer to the perceived pressures

put on an individual by others that they hold in respect (Ajzen, 2011). For faculty, these influencers may be colleagues, department chairs, and administrators. Questions to measure this construct were adapted from Venkatesh, Morris, Davis, & Davis' (2003) Unified Theory of Acceptance and Use of Technology (UTAUT). For this study, statements from the long form of the Teachers' Sense of Efficacy Scale were used as a measure of perceived behavioral control (*TSES - Long Form*, n.d.). Although the scale has three factors, only questions measuring the factor of efficacy in instructional strategies were used in this research.

After measuring the attitudes, subjective norms and perceived behavioral control of faculty that information is incorporated into the model to predict faculty behavior. This research examines three specific faculty behaviors related to OER: usage of OER to prepare for teaching, pedagogical practices used in a course with OER, and reflective practices after teaching. Details about these constructs and measures are in Chapter 3.

Research Questions

Applying the concepts included in the TPB to faculty use of OER yields the following broad research questions:

1) What is the relationship between the attitudes, subjective norms, and perceived behavioral controls of teaching faculty and how they use OER to prepare for their teaching?
2) What are the attitudes, subjective norms and perceived behavioral controls of teaching faculty that predict pedagogical practices using OER within a course?
3) How do attitudes, subjective norms and perceived behavioral controls of teaching faculty relate to reflective teaching practices?

Limitations and Delimitations

This study employs survey research methods to gather data. This method allows for quantitatively measuring the variables in my study. However, this method is not without limitations. I did not have direct access to the population in my study and needed to rely on my personal network of OER champions. I asked those advocates for help distributing the survey instrument to potential respondents. I sent out a recruitment email to relevant listservs. When possible, faculty known to have used OER were directly contacted. Because I used listservs and cold called people the sample frame is not be comprehensive and there is no way to calculate a person's probability of selection. This method of distribution could lead to a small sample size that could impact the statistical power of the results and keep the findings from being generalizable to the larger population. Also, the survey relied on self-reporting by the participants. This method of data gathering could result in false answers because the respondents may misunderstand the questions, or they do not have the information needed to answer, or they are distorting answers to provide what they view as a favorable response (Fowler, 2014). An additional limitation to the study is that the variables in my study are not directly measurable. Therefore, I relied on the questions asked in the survey to operationalize the variable I will be measuring.

A comprehensive study of all factors that impact faculty in their teaching is not possible. Therefore this study will be confined in scope. The sample is limited to teaching faculty in higher education institutions in the United States. The survey instrument is designed to measure only the factors included in the TPB, attitude, subjective norms and perceived behavioral control and the three specific behaviors included in the research questions. By using a survey as my data collection method, rather than focus groups and interviews, I increased the number of

participants in the study and included a larger geographical area. In analyzing the data, the primary analysis is multiple regression. This method, along with structural equation modeling, are the most often used by researchers using the TPB (Hankins et al., 2000).

Definition of Relevant Terms

- 5R permissions are the ability to reuse, revise, remix, redistribute, and retain material because of the license given to that material. These permissions are the essential characteristics of open educational resources.
- Faculty is the generic term used to describe academic staff employed by higher education institutions with the responsibility of teaching, regardless of the type of institution, employment status, tenure status, professional rank or mode of instruction.
- OER enabled pedagogy is “the set of teaching and learning practices that are only possible or practical in the context of the 5R permissions” (Wiley & Hilton, 2018)
- Open educational practices are defined as “practices which support the (re)use and production of OER through institutional policies, promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path” (Ehlers, 2011b, p. 3)
- Open Educational Resources (OER) are "teaching, learning, and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation, and redistribution by others with no or limited restrictions” (“Open Educational Resources (OER), 2017).

- Teacher-efficacy is “the teacher’s belief in his or her capabilities to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context” (Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998, p. 233).
- Reflective practice, as defined by Schön (1983) is practice by which professionals become aware of their implicit knowledge base and learn from their experience.

Organization of the Study

This chapter provides an overview of the OER movement and explains the need for greater understanding of what the next steps are in meeting the Declaration’s commitment to “embracing educational practices built around collaboration, discovery and the creation of knowledge.” Chapter 2 provides greater detail about the theoretical framework used in this research and reviews the prior literature of OER. The chapter will provide a brief overview of the historical issues discovered in efforts for widespread adoption. A detailed overview will describe previous research related to higher education faculty attitudes towards OER, and the normative beliefs and self-efficacy as they relate to teaching practices. Chapter 3 describes the methodological approaches used to answer the research questions, descriptions of the constructs and the survey instrument. Chapter 4 provides the results from the data collected that answer each of the hypotheses. Chapter 5 discusses these findings to show how this new knowledge can be incorporated into the work of OER advocates.

CHAPTER 2 - LITERATURE REVIEW

This literature review seeks to synthesize research on open educational resources to understand the role they play in the work of teaching faculty in higher education. For this study, the Theory of Planned Behavior serves as the model for understanding faculty behavior. Included in this chapter is a detailed description of the theory and applications in education. This chapter covers literature related to the three determinants of behavioral intention included in the TPB: attitude, subjective norms and perceived behavioral control. It also looks at literature regarding behaviors associated with the use of OER, specifically teaching practices and reflection. Before exploring literature related to each construct of the theory, background information, including various definitions and aspects of open education set the stage for understanding the role that OER are playing in the higher education arena. Following the overview, sections will focus on each part of the TPB. A section will explore the behavioral beliefs that factor into faculty attitude towards OER. Next, there is a section devoted to topics focused on the normative beliefs that influence the subjective norms placed on faculty from inside and outside higher education. Another section will explore the control beliefs and perceived behavioral control that faculty have regarding their use of OER for teaching. The final section looks at faculty behavior as a result of working with OER. After reviewing the literature, it will then be possible to test which factors in the TPB are the most influential in predicting faculty behavior in regards to OER.

Theoretical Framework

The Theory of Planned Behavior (TPB), created by Ajzen (1985), and its predecessor the Theory of Reasoned Action (TRA) (Fishbein, 1975), explain that behavioral intentions determine voluntary human behavior. It posits that the likelihood that someone will engage in a behavior depends on his or her intent to perform it (Ajzen, 1991). The stronger the intention, the more likely the person is to perform the behavior. The Theory of Planned Behavior is founded on subjective utility theory (Savage, 1954) that assumes decisions and actions are based on rational evaluation of the probabilities and values of outcomes associated with alternatives. According to the TRA, these rational decisions are the result of the individual's attitude toward the behavior and subjective norms regarding the behavior. The TPB's significant addition to the TRA is the consideration of an individual's degree of control over the behavior in question, referred to in the theory as perceived behavioral control. In addition to the three primary components of the TPB, Ajzen acknowledges that background factors may have a small effect on intention through the three determinants (Ajzen & Fisbhein, 2005). These background factors may have different effects on each determinant of intention (McEachan et al., 2011).

In summary, the TBP says that a person's attitudes, subjective norms, and perceived behavioral control influence the intent to perform a given behavior and that intentions determine whether the behavior is carried out. Each of these components warrants additional explanation. Attitude toward a behavior is defined as the degree to which a person has positive or negative feelings about the behavior of interest. Attitude is a function of our behavioral beliefs which are the perceived consequences of carrying out a specific action and our evaluation of these consequences (Hausenblas, 2014). Subjective norms relate to a person's perceptions of the social environment surrounding the behavior. The subjective norms are a function of normative beliefs

- the perceived expectations of an important normative referent (significant other) and the individual's motivation to comply with those expectations (Hausenblas, 2014). People can have more than one referent individual or group influencing the normative beliefs that can change depending on the specific behavior. Perceived behavioral control is the perception of the extent to which the successful performance of the behavior is easy or difficult (Ajzen, 1991). It increases when the person perceives they have more resources and confidence (Ajzen, 1985). Perceived behavioral control is a function of control beliefs – the perceived presence or absence of required resources and opportunities, the anticipated obstacles or impediments to behavior, and the perceived power of a particular control factor to facilitate or inhibit performance of the behavior (Hausenblas, 2014). Perceived behavioral control is composed of self-efficacy (ease or difficulty of performing the behavior) and controllability (beliefs about the extent to which the performance of the behavior is up to the individual) (Ajzen, 1991). Attitude toward the behavior, the subjective norms of the behavior, and the perceived behavioral control, separately and together determine a person's behavioral intention. Behavioral intention represents a person's formulated conscious plan or decision to perform or not perform some specific future behavior (Conner & Armitage, 1998; Warshaw & Davis, 1985). The more positive a person's attitude toward the behavior, the stronger the social norm to complete it, and the more control the individual perceives they have over whether they can complete it, the greater the intention to engage the behavior is said to be (Dewberry & Jackson, 2018).

Applying the Theory of Planned Behavior to Higher Education

In the higher education setting the TBP has been used to predict many different behaviors. For example, the TPB was used to understand the significant predictors of potential applicants' intentions to enroll in a master's program two years post-baccalaureate degree (Chen

et al., 2018). Dewey and Jackson (2018) applied the TPB to retention of college students by determining that the variables in the theory explained 60% of the variance in students' intentions to voluntarily withdraw from school before completing their studies. Using a variation of the TBP, Ahmed and Ward (2016) found that attitude towards behavior, subjective norms and perceived behavioral control and their decomposed belief structure can assist in predicting and explaining students' behavioral intention to use e-portfolios.

The application of TPB has also been used to predict faculty behavior. Knabe (2012) used the TBP to research public relations faculty intentions of teaching online. The study found that subjective norms, attitude and Perceived Behavioral Control were statistically significant in predicting intent to teach public relations online. Smith (2015) applied the TBP to examine the influences on nurse educators' intention to use instructional methods that promote evidence-based critical thinking teaching strategies in baccalaureate nursing courses. Also in the context of nursing education, Kim, Park, and O'Rourke (2017) used the TPB to examine faculty's intention to adopt the use of simulations in their teaching. Carraher, Crocitto, and Sullivan (2014) applied the framework of the TBP to determine the factors that impact faculty decisions to take a sabbatical. Jung Lee, Frank A. Cerreto and Jihyun Lee (2010) used the theory to investigate teachers' decisions to use computers to create and deliver lessons. While all of the tenets were significant predictors, this study found that attitude was the most influential. To date, only one study has applied the TBP in trying to understand OER use for changing pedagogy in higher education. The study found that subjective norms and perceived behavioral control can predict pre-service teachers' intention to use Web 2.0 and OERs in their future teaching practices (Mijares, Bustamante, Ayo, Anacio, & Jotic, 2017).

Overview of Open Education Resources

Definitions

Currently, there is no universally accepted definition of OER; however, frequently cited definitions are found throughout the literature. Open Educational Resources was first adopted as a term in 2002 by the United Nations Educational, Scientific and Cultural Organization (UNESCO). Participants at the forum on the impact of open courseware for higher education in developing countries defined OER as "the open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes" (UNESCO, 2002, p. 24). The Organization for Economic Co-operation and Development (OECD) define OER as "digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research" (Hylen, n.d.). Another way to describe OER is, "educational resources (including curriculum maps, course materials, textbooks, streaming videos, multimedia applications, podcasts, and any other materials that have been designed for use in teaching and learning) that are openly available for use by educators and students" (Butcher, Kanwar, & Uvalic-Trumbic, 2011, p. 5).

According to Geser (2012, p. 12), "OER are understood to comprise content for teaching and learning, software-based tools and services, and licenses that allow for open development and re-use of content, tools, and services." Whereas, the 2012 Paris OER Declaration defines OER as "teaching, learning and research materials in any medium, digital or otherwise, that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions" (UNESCO, 2012, p.1). Clements and Pawlowski (2012) see OER as resources for learning, education, and

training that are freely accessible and includes literature and scientific resources (open access for education), technologies, and systems (open source for education), and open content (actual learning materials/contents) as well as related artifacts (such as didactical materials or lesson plans). The commonality among all of these definitions is that OER are materials used to support education that may be freely accessed, reused, modified and shared by users.

An important feature that is often overlooked in these definitions and the discussion of OER is that these works are copyrightable, but that the copyright holder provides a license of these works that allows users to have free and perpetual permission to customize the work for their needs. The William and Flora Hewlett Foundation, a primary sponsor for OER efforts, includes this notion in their definition. They explain that "OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others" (Atkins et al., 2007, p. 4). It is because of the legal freedoms associated with open educational resources that faculty can alter the way they use their teaching material and how they behave as producers of these products that can indicate their "openness" to education. While all of the content is allowed to be adjusted, most only use the open textbook as an outright substitution for their publisher restricted text. Faculty also can remix the content and create something that is entirely customized for their course and their teaching style.

Growth of Movement

The emphasis of OER within the open education movement garnered attention in the early 2000s. Early efforts focused on helping facilitate the development and sharing of open source educational content. The MIT OpenCourseWare initiative, that emphasized the sharing of content and Connexions, developed by Rice University, created platforms for university

professors to develop content (Bliss & Smith, 2017). Also during this time at Stanford University, Creative Commons was founded to facilitate the development and licensing for free and open materials across a wide range of areas. The establishment of Creative Commons helped support the legality of distributing and altering open materials. Creative Commons provides an intellectual property license and legal permissions for the public to use, modify and share (Casserly, 2018). These licenses are what allows the 5Rs – retain, reuse, revise, remix, redistribute - of OER to take place. With the creation of Khan Academy, the largest producers of OER, with funding from the Gates Foundation, people around the world began to understand the impact that OER could have on informal education. UNESCO hosted the OER World Congress, in Paris 2012, where representatives from nations showed their commitment to OER (Bliss & Smith, 2017).

Cost as Impetus

Open Education Resources, based on all of the above definitions focus on a learning object, but what is missing from all of these is a discussion of why they should be used. The OER movement has received greater attention in recent years because of increased interest in the cost of higher education and the need to address greater accessibility. Textbook costs have been a primary focus in these discussions.

The problem of textbooks costs stem from the structure of the academic publishing market. Senack (2014) sets the stage of why textbook pricing is a problem by explaining that the student is forced to pay for a book that was chosen by someone else, in this case, the professor. Because of this, the student is, in essence, a captive market. Without the ability of the student to choose a more affordable option, publishers can drive prices higher without fear of repercussion. Data from the Bureau of Labor Statistics shows that textbook prices have risen over three times

the rate of inflation from January 1977 to June 2015, a 1,041 percent increase (Popken, 2015). A 2016 survey by the Student Public Interest Research Groups found that five textbook companies control more than 80% of the $8.8 billion publishing market, giving them near market monopoly and protecting them from serious competition (Senack & Donoghue, 2016). In 2015-16, full-time undergraduate students spent an average of $900 on course materials and supplies (Radwin et al., 2018).

These textbook costs contribute to the need for greater financial aid. Research suggests that students are spending around $1.575 billion a semester, or $3.15 billion a year, in financial aid on textbooks (Senack & Donoghue, 2016). By alleviating high textbook costs state, federal, and local financial aid funding could be used to reduce other higher education costs (Senack & Donoghue, 2016).

The Higher Education Opportunity Act of 2008 tried to address the rising cost of textbooks by requiring increased transparency by the textbook publishers, including the requirement to sell bundled materials separately and for colleges to list the cost of textbooks in course catalogs. The General Accounting Office (2013) was tasked with examining the impact that this legislation had on the student savings. The results showed that students were able to achieve savings through used and rental purchases but during 2002-2012 the cost of new textbook rose 82% or nearly three times the rate of inflation. The data from this governmental report showed that current policy alone was not enough to help address student costs. This report motivated many in the OER movement to increase efforts to raise awareness of alternatives to traditional textbooks.

The movement gained further momentum when the Student Public Interest Group (Senack, 2014) released the results of a survey that examined the impact that rising textbooks

costs have on college students and their interest in alternatives to traditional textbooks. The group surveyed 2,039 students at 150 university campuses. There were three primary findings from the research. First, high textbook costs kept students from purchasing course material, despite the concern that doing so will affect their grades. Second, textbook costs affected other academic decisions, including the number of courses they take each semester. Third, nearly eighty-two percent of respondents indicated interest in lower cost or free textbook alternatives and felt they would perform better in courses that used these materials. This frequently cited work serves as the impetus for widespread adoption of open educational resources in the United States.

Additional research confirms these findings. Students in the USA spend an average of $1,160 per year on textbooks (Trends in College Pricing, 2018) and this cost barrier contributed to 2.4 million low- and moderate-income college-qualified high school graduates not completing college in the previous decade (Advisory Committee, 2006). High textbook costs are also a barrier to student success in individual courses and student retention. A recent poll of higher education students in Florida found that 64% of students reported not purchasing a required textbook because of high cost (Florida Virtual Campus, 2012), 45.1 percent of students chose not to register for a specific course, 33.9 percent had earned a poor grade, 26.6 percent had dropped a course and 17 percent had failed a course because they could not afford the textbook (Donaldson *et al.*, 2012).

The U.S. PIRG Education Fund (2014), in their policy guide on affordable textbooks, explains that alternatives to traditional textbook purchasing have grown significantly. E-textbooks are becoming more widely available, and campus textbook rental programs have increased from 300 in 2009 to more than 3,000 by 2013 (National Association of Campus Stores,

2013). While these alternatives do offer students some upfront savings, they are fraught with problems. Used books and rental programs are easily undermined by the release of new editions – a practice that publishers undergo every 2-3 years. Rental programs and e-textbooks do not give students the ability to keep their book – they are due back at the end of the semester, or their digital license expires, and the book is no longer accessible. E-textbooks include restrictions that limit the number of pages printed or the number of devices that can access the book. The most significant problem, however, is that the prices of used books, rentals, and e-textbooks are dictated by the cost of a new, print edition. Therefore – while these alternatives do offer students some upfront savings, they will never solve the problem.

It is because of the increased awareness of costs and the concerns of faculty about students being able to afford their textbooks that many are interested in looking for new alternatives and see OER as a possible solution. One of the many advantages cited by faculty who use OER is that the students are able to have access to the course material on the first day of class. They do not risk falling behind, while they wait for student loans to come through, in order to purchase their textbooks. The faculty also realize that it is unfair for the students to have to purchase entire textbooks when only a portion of the chapters are covered in class. Sometimes faculty will try to use the same textbooks over multiple courses so that the students do not need to purchase another one for the next semester.

Attention of Policymakers

The high cost of higher education and the impact that student loan debt is having on the economy is a growing concern for governments at all levels. They often see textbook costs as a contributing factor and an easy way to address these problems. They are creating legislation and policies that encourage the development and use of Open Educational Resources. The American

Council on Education and the Center for Education Attainment and Innovation (2015) are tracking these developments. In Congress, the proposed Affordable College Textbook Act would fund a grant program to support the development of open textbooks at higher education institutions. SPARC (the Scholarly Publishing and Academic Resources Coalition) also tracks legislation at the federal and state levels related to OER. An early example of open educational licensing by the federal government includes the Department of Labor 2010 Trade Adjustment Assistance Community College and Career Training Grant Program. This program provided grants to expand and improve education and career training programs and required all educational material created with grant funding to be licensed under a Creative Commons attribution license (CC BY), and required depositing editable copies into a public open educational repository (Green 2017). In March 2018, Congress included a $5 million federal appropriation to create an Open Textbook Pilot grant program. This program which is administered by the U.S. Department of Education has been renewed for a second year. The program supports projects at higher education institutions that create or expand the use of open textbooks to achieve savings for students.

There are several examples of state governments passing legislation to address textbook costs., A University System of Georgia initiative known as Affordable Learning Georgia passed in 2014. The initiative is designed to promote student success by supporting the implementation of affordable alternatives to expensive commercial textbooks, particularly Open Educational Resources (OER) and open textbooks (*OER State Policy Tracker—SPARC*, n.d.). California established the California Open Education Resources Council in 2012. The bill required the Council to determine a list of 50 lower division courses in the public postsecondary segments for which high-quality, affordable, digital open source textbooks and related materials would be

developed or acquired (*OER State Policy Tracker—SPARC*, n.d.). In 2018 the state of Washington passed legislation that created an OER Grant Pilot Program run by the Student Achievement Council for the public four-year institutions of higher education. Grants may be used for creating a campus coordinator position for OER and supporting faculty to adopt, modify, or create OER. (*OER State Policy Tracker—SPARC*, n.d.)

Funding Models for Open Educational Resources

With all the emphasis on reducing college expenses by lowering textbook costs, OER should be a popular solution. However, that is not the case. The Student PIRG organization explains why free and open educational resources are slow to be adopted by higher education institutions. Although there are no costs associated with adopting open textbooks for students, there are "work costs" in the production and development of open materials. To produce high-quality educational content, faculty members need time, energy, and resources. While some professors have created resources without compensation, additional development funding would encourage more to do so thereby stimulating the supply of OER that others can use (Senack, 2014).

Stephen Downes (Downes, 2007) describes eight possible funding models for open educational resources:

- Endowment (charity or large organization pays for content creation and dissemination)
- Membership (institutions/organizations pay to be part of a larger consortium that handles creation and dissemination)
- Donation (public fund cost of creation and dissemination of resources)
- Conversion (resources created and disseminated for free with consumers converted into paying customers)
- Contributor (creator of resources pay for creation and dissemination)
- Sponsorship (cost of content creation and dissemination borne by sponsors in return for advertising space/promotion)
- Institutional (educational institution pays for content creation and dissemination as part of its mission/mandate)

- Government (content creation and dissemination of resources relevant to governmental aims and objectives funded centrally by the state)

Other researchers support many of these models. Sclater (2010) also observed that direct financial benefits have primarily been in the form of grants from external bodies, and that arguably, there has been an over-reliance on these relatively impermanent sources of revenue. Velentino's (2015) research found that OER programs make ideal candidates for donor funding because donors like to support programs that have: a proven track record of success; a significant impact on important issues; a significant impact on important issues; a cascading effect; help people who are helping themselves; and they can personally relate. Stacey (2010) argued that stable government funding is needed to enable the disruptive influence of OER to proceed through the inevitable 'valley of death' phase of innovation to a place of financial sustainability. Mulder (2013) also claimed that OER sustainability could only be created by public funding, accompanied by a national educational strategy and a modest reallocation of existing budgets. de Langen (2013) also argued that the only long-term sustainable business model for OER is subsidization by the state. Butcher et al. (2011) implicitly argued the same, suggesting that the educators and educational institutions need to "abandon the pervasive economic logic that education should be treated as a business, governed by the same rules and incentives as the commercial and retail sector" (p. 37).

Behavioral Beliefs and Faculty Attitude toward OER

In the Theory of Planned Behavior behavioral beliefs serve as the cognitive foundation for attitudes. Favorable or unfavorable attitudes are based on the belief that performing a behavior will have certain outcomes. In order for this study to focus on the behavior of using OER in teaching it is necessary to understand the underlying attitude that faculty have towards

OER themselves. This section explores the literature about factors that could influence faculty attitude about OER.

Faculty Attitudes of OER Before Use

Before discussing faculty attitudes of OER, it is important to note that others have pointed out a common flaw in the research on the topic of faculty perception. In most of the studies, there is no operationalized definition of OER, and therefore the respondents were able to include anything they thought was OER (Hilton, 2016). An example of this is a study on OER user perceptions of 58 teachers and 490 students from Project Kaleidoscope (PK) institutions. While the study has a considerable number of respondents, the types of OER resources teachers used were not concretely defined (Bliss et al., 2013). Despite this caveat, the articles mentioned in this section do provide a broad look at how faculty view OER.

The Babson Research Group has conducted yearly studies on faculty attitudes of OER since 2014 across multiple institutions. The most recent report finds that most faculty are still either unaware of OER or do not know much about them (Allen & Seaman, 2018). Several other studies have been conducted to better understand the perception of those faculty that are aware of OER but are not using them. Annand (2015), Bossu and Tynan (2011), and Sclater (2010) all noted that there is academic concern over the perceived risks of OER adoption. For faculty who have not used OER, these include reservations about quality, loss of control over intellectual property and threats to reputation. Lee et al. (2008) found that faculty were concerned that by excluding copyrighted materials the content of their courses would be diminished, which would hurt their reputation and have a negative impact on their credentials and promotions. Other faculty felt that it would be challenging to use OER because they require specialized knowledge

to develop the resources, they were unsure of copyright and licensing of materials and that it would be difficult to identify and access the material (Delimont, 2016).

These perceived challenges hinder faculty from considering OER as an option for their teaching. The U.S. PIRG Education Fund adds to these challenges of OER adoption (Senack, 2014). For faculty, there is a concern over academic freedom. Faculty members are often concerned with the effect of an open textbook policy on their right to assign whatever textbook they think best suits their class. Faculty place strong importance in the quality of their book and the knowledge they want to teach and worry that an open textbook policy will dictate which books they can assign or use to teach. Many faculty also raise concern over the 'free' aspect of open textbooks and its monetary implications. They express concern that open textbooks remove incentives for faculty to write quality textbooks or even write textbooks at all.

Faculty Attitude of Students in OER Courses

Faculty who are teaching with OER have also felt there were positive benefits to their students. At Kansas State, faculty perceptions of student use showed that students liked the OER better than traditional materials, had course material in class more often, read resources more closely or knew content more broadly, had better access to videos, web links, and blogs relevant to the course compared to traditional textbooks (Delimont, 2016). Only 4 out of 13 faculty did not perceive a difference in student behavior. Weller et al., 2017 found that educators thought OER increased learners' satisfaction of the subject (62.1%), increased their interest (60.8%) and increased experimentation with new ways of learning (60.3%).

Jung et al., (2017) in a survey of faculty using OpenStax material found that 68% perceived their students equally prepared as traditional textbooks and 20% more prepared. Similar to the results on student preparedness, the same study found that a significant portion of

faculty members (23%) believed their students performed better when using open textbooks (Jung et al., 2017). Faculty responses, in this survey, to a question about student retention, were also positive. Overall, 71% of the faculty members believed that the student drop/withdrawal/incomplete rates stayed the same when utilizing open textbooks as opposed to traditional textbooks.

Weller et al. (2015) found that faculty thought that OER usage impacted student satisfaction. Approximately 62% (*n*=524) of educators in this study agreed or strongly agreed that OER increased student satisfaction with the learning experience. There is stronger belief for OER improving non-grade related aspects of performance, with a majority of educators (59.6%, *n*=503) agreeing that OER improved student engagement with lesson content and increased students' experimentation with new ways of learning (60.3%, *n*=501); students are more independent and self-reliant as a result of using OER (59.5% *n*=505), and students become more interested in the subjects taught (60.8% *n*=524). These results led Weller, et al., (2017) to note that the emotive aspects related to learning such as satisfaction, enthusiasm, and confidence could be of greater relevance that cost savings.

Faculty Attitude of Open Textbook Quality

Jung, Bauer, and Heaps (2017), in their study of faculty, found that users of OpenStax, a popular OER provider, were concerned about the quality of the OER texts. For those users, the factors that contributed to the perception of quality were cost and affordability, content quality, content difficulty, readability, and scope. Using those factors, of the surveyed faculty members, 62% thought that open textbooks have about the same quality as traditional textbooks, whereas 19% thought they have better quality, and 91% said they would adopt open textbooks if the quality were at least equal to traditional textbooks (Jung et al., 2017). The faculty also felt that

the quality of the open textbooks had a positive impact on student performance, with 49% believing that the quality of open textbooks positively impacted student performance, while only 3% felt the quality had a negative impact (Jung et al., 2017).

Normative Beliefs and Subjective Norms to Use OER

Subjective norms are formed by being told or inferring the expectations of social referents. They can also come from observations of significant others' actions. For faculty, several groups contribute to their normative beliefs. These include the overall culture of higher education, the opinions of the students, and the priorities of the institution and department where they work. This section examines some of the factors that contribute to the normative beliefs of faculty.

Emphasis on Student Success

Higher education has emphasized student success as measured by GPA, completion rates and learning outcomes. Faculty often seek out ways to address this expectation and need to understand the impact that OER have on these outcomes. It is not enough for students to like OER. Learning materials, regardless of format must also have a positive impact on learning outcomes. Wiley (2017) reminds us that the "quality of educational resources ought to be judged by the learning it facilitates – if materials are less effective, it does not matter how much it saves money" (p. 200). Several studies have tested how effective OER is in improving student learning. Lovett et al. (2008) studied an introductory statistics course at Carnegie Mellon University's Open Learning Initiative. Comparing courses that utilized OER and face-to-face commercial textbook they found that there was no statistically significant difference in test scores or retained information. Bowen et al. (2012) also studied introductory statistics courses at

six universities and found that the use of free OER did not lead to lower course outcomes. Hilton & Laman (2012) compared sections of introductory psychology courses using open textbooks with classes taught with a traditional textbook. The treatment group had a higher class GPA, lower withdrawal rate and higher scores on the department final exam. Feldstein et al., (2012) focused on Virginia State University's School of Business core curriculum. There were 1393 students in courses with OER, 2176 students in courses not utilizing OER. In the OER courses, students had better grades and lower failure and withdrawal rates. Because OER is often seen as a way of reducing costs and creating greater accessibility for lower-income students Hilton, et al. (2013) focused on Scottsdale Community College math students with slightly less than half using loans, grants or tuition waivers. They compared math courses using OER in 2012 with 2010 and 2011 when no oer was used and found no statistically significant difference in final exam scores, and completion rates. Concluding the results of all of these efficacy studies Hilton (2016) found that overall utilizing OER does not appear to decrease student learning.

Students as Normative Influencers

Students who are supportive of OER identify many benefits including a financial benefit, ease of access, content customized for the course, not having to carry heavy textbooks, more interactivity with the material, the ease of finding the content online, and conservation of environmental resources. At Kansas State University students were surveyed in 13 courses using OER. The students rated OER as good quality, somewhat easy to use, and they preferred OER over buying textbooks (Delimont, Turtle, Bennett, Adhikari, & Lindshield, 2016). These findings were similar to Feldstein (2012) at Virginia State University, where the school of business incorporated OER into the core curriculum. Of the 1393 students who took courses with OER, 95% thought OER were easy to use, 78% thought OER provided access to more up-to-date

material, and 2/3 agreed that the digital OER was more useful than traditional textbooks. Hilton et al. (2013), studying student perception of a math OER, found that 78% of students would recommend OER to their classmates, and 83% felt that the material adequately supported the coursework they did outside of class. At the global level, the OER Research Hub conducted a global survey to assess the attitude of formal learners. They found that 61.9% felt that OER increased their interest in their subject, 60.7% stated OER increased satisfaction with the learning experience, 60.4% believed it increased their enthusiasm for future study, 83.5% would study with OER again, and 80% would recommend them (Weller et al., 2017). Findings from focus groups with community college students who used OER also showed positive views about the quality of materials and the course experience including the sense that the material was more relevant and better aligned with the learning objectives (Griffiths, R. et al., 2018). While OER were designed to be free or low cost students are willing to pay a course fee in exchange for not having to purchase a textbook. Lindshield and Adhikari (2013) found that more than 70% of the on-campus and online students they surveyed would support course fee explaining that the student thought this would save them money.

Institutional Incentives

Many programs have been developed to offer monetary or professional incentives to faculty for trying OER in their courses. The University of Massachusetts Amherst, an early OER program and one of the few led by the University Library, serves as a model for other schools (Billings et al., 2012). Their program, in partnership with the Office of Provost, awarded ten faculty members individually $1,000 Open Education Initiative grants to seek out an alternative textbook solution in one academic course. Librarians developed guides to help identify sources and other campus partners assisted with the technology. By using class enrollment numbers and

the costs identified in the grant proposals, the total student savings approximated $70,000 in a single semester. This model of providing faculty with monetary incentives to adopt OER has become widely utilized at institutions because of the substantial return on investment. With little money spent by the institution, the students can save significant amounts in textbook costs. The cost savings can be immediately seen at the end of each semester. Numerous other schools replicate this approach using institutional funding, including: Maricopa County Community College in Arizona with a focus on STEM courses (Minneapolis, Education, & Minnesota, n.d.), and Tidewater Community College in Virginia, which is working to create a textbook free associates degree in business administration (American Council on Education, 2015), UCLA Libraries' Affordable Course Materials Initiative, Florida State University Libraries' Alternative Textbook Grants, University of Oklahoma Libraries' Alternative Textbook Initiative, and Open Education North Carolina. In Mississippi, a multi-year grant from the Hewlett Foundation is providing funding for faculty at all of the public universities and community colleges to apply for $4000 grants to switch their courses from a traditional textbook to a no or low-cost alternative to create multiple associate and bachelor degrees throughout the state. This program, Z-Degree Mississippi, also provides support from an instructional design company to help redesign the course and identify relevant content. Another statewide program offering grants to faculty is Affordable Learning Georgia's Textbook Transformation Grants, funded by the legislature. These incentive programs have worked to encourage more faculty to adopt OER and expand the amount of openly licensed content available in all disciplines.

Other programs use incentives to address the concerns about peer review and quality of available resources. The Open Textbook Network, a consortium of academic institutions, pays faculty at member institutions to write reviews of the material housed in their open textbook

library. They also provide training and guidance in creating new OER content (Minneapolis et al., n.d.).

Control Beliefs and Perceived Behavioral Control for Using OER

Control beliefs contribute to the extent that a person believes they can perform a given behavior. These beliefs stem from the beliefs about resources and obstacles that either hinder or help in the performance of a behavior. This section looks at factors that could influence the perception of ease or difficulty for faculty use of OER.

Faculty Preparation Time

One of the chief reasons faculty choose not to use OER is the perception that it takes too much time to redesign the course with open content. For faculty who used OER from OpenStax, this was not the case. In Jung, Bauer and Heaps' (2017) study, 82% of faculty stated that they spent about the same or less time preparing to teach a course using open textbooks, while only 18% said that they spent more time. Of those faculty that thought they spent more time on preparation, 78% found the additional time acceptable because of the following benefits: immediate student access to the textbook; up-to-date content; interactivity; the textbook was better aligned with class activities; content quality; faculty convenience; and the ability to customize/modify content. For those faculty that did not find the additional time acceptable, they listed the following reasons: lack of alignment between test banks and textbook content; poor quality of text banks/quiz questions; lack of student engagement; and lack of instructor resources.

Faculty Experience with OER

Faculty are including OER in their textbook selection process. Harley et al. (2010) provide more insight into the faculty mindset in determining what materials to use in their

courses. She finds that top-down, one-size-fits-all policies on textbook selection will not work with faculty. They are actively involved in their choice for course material and want to have a say in that decision. They want a diversity of choices that allow for the varied needs of their students and disciplines. She also stresses that there are not enough OER available to satisfy the multiple needs of the faculty and until more high quality, easy to use and reliable options are available, widespread adoption is not likely.

Faculty who have used OER have had both positive and negative experiences. Some faculty have found it easier to teach with OER than traditional textbooks. This is because of the ability to customize the content with more relevant material, to be flexible throughout the course with what material is provided and to improve course organization (Delimont et al., 2016). Other faculty found it challenging to use OER in their courses. In some cases, there was little open content available for their discipline (Lee et al., 2008). Faculty at Kansa State identified a number of challenges when using OER. These included technology issues, difficulty coordinating with other faculty teaching the same course, and difficulty in getting students to use the resources (Delimont et al., 2016). If these faculty were to offer advice to others thinking about incorporating OER, they would suggest a better understanding of the platform used to create or adapt OER and sources to obtain content, as well as technology and authoring assistance (Delimont et al., 2016). These same faculty felt they deserved more support from their administrators and credit for using OER as part of their tenure and professional advancement (Delimont et al., 2016)

Faculty Motivation

Despite all of these concerns of OER, there are some faculty motivated to incorporate OER in their courses. Hylen (2007), identified three motives for individuals: gaining access to

the best possible resources; creating more flexible materials; promoting scientific research and education as publicly open activities. Mishra & Singh (2017) grouped faculty motivation of using OER into thematic principles. These themes in order of importance were social/altruistic, learning, collaboration, cost/time/access, individual benefits, technology, and knowledge. McGill et al., (2013) discovered that the motives to release OER were different from motivation to use or re-purpose OER created by others. For those creating OER, the motivating factors included user feedback and open peer review, recognition, benefits of collaborative approaches to teaching, opportunities to work across sectors, institutions, and subject disciplines, and increase digital literacy. For the faculty that were users of OER rather than creators, their motivation included access to peer-reviewed material to enhance curriculum, peer-to-peer learning about the process of OER release, preservation, and availability of materials for endangered subjects (Mishra & Singh, 2017). Conole (2012) explains that there are three main perceived benefits of OER. The first is that they provide examples of good practices to give practitioners a good idea of the types of learning interventions they might design for their teaching context. Second, practitioners can take and adapt existing OER. Third, OER can act as objects that practitioners can discuss with peers.

Drawing on the literature (Fitzgerald, 2006; CED, 2006; Stacey, 2006) and the OECD case studies, four main groups of reasons for faculty to use OER appear (OECD, 2007). The first is altruistic or community support reasons. Within this area of reasoning are the notions that sharing is a good thing to do because it stimulates further innovation, offers personal satisfaction to know that one's materials are available and used all over the world, and it is a pleasure to develop things together with peers and share with others. The second reason falls within the category of personal non-monetary gain. This reason includes the publicity and reputation

garnered within the open community. Specific gains from participating in OER activities include support for digitizing the teaching materials and clearing copyrights to third-party materials, opportunities to restructure and systematize lectures and get feedback, and finally increased possibilities for future publication. The third group of reasons is commercial. Creating an open content version of the material may be a strategy for enhancing the final commercial product. Sharing may help get a new product to market more quickly, gaining a first-mover advantage, and it may help build a community of users that will support a new product or process; it may also stimulate sales of related products. Lastly, some may feel it is not worth the effort to keep the resource closed. Creators may conclude that it is not worth the time and effort to obtain a copyright or a patent. Alternatively, creators may conclude that intellectual property mechanisms may not adequately protect the innovation if many others have similar information, if it would be difficult to keep the development a secret, and if the development can be easily replicated. Furthermore, there is the idea that what one person thinks is useless may be the building blocks of knowledge and creative genius for another (Fitzgerald, 2006; CED, 2006; Stacey, 2006).

Behaviors Associated With OER Use

Teaching Practices

As OER gain in popularity, scholars are raising questions about the possibilities of OER effecting change in teaching and learning (Matkin, 2009). Literature suggests that teaching with OER can promote change in educators practices by modifying attitudes toward curriculum (Beetham, H., Falconer, I., McGill, L. and Littlejohn, A., 2012), fostering new more collaborative methods of working (Lane & McAndrew, 2010), and educators taking more of a facilitator role rather than just focusing on the delivery of content (Ehlers & Conole, 2010). Jung and Hong (2016) determined that faculty considered instructional priorities when deciding to use

OER. Among the considerations was the ability to offer more user-centered materials, and using active learning methods to promote deeper learning.

Ehlers and Conole (2010) point out that OER have the potential to align more learner-centered, interactive and self-directed pedagogical models. Research by Livingston and Condie (E. Jung et al., 2017) found that students who accessed optional open resources engaged in self-initiated and self-directed learning thereby transitioning from passive knowledge recipients to independent knowledge creators. They also found that student learning was lessened by the teacher's lack of expertise in leveraging the open resources to assist students in becoming learners that are more independent. The alignment of digital learning resources with enhanced pedagogy suggests that the impact of those resources on learning is most significant when teachers adopt new practices where they act as facilitators in collaborative peer-to-peer learning environments (Mentis, 2008).

Building on these studies, Petrides, et al. (2011) discovered that open textbooks supported increased interactivity with course material and increased interaction among the students. Her research also identified a need to build on the technology and learning practices and tools made possible with OER to enhance teaching and learning practices through professional development opportunities. There is also the potential for developing collaborative creation of curriculum materials and teaching practices through OER.

A 2011-2012 study of 80 community college instructors using OER found that 75% of teachers changed their instructional practices (Bliss et al., 2013). Some of the changes mentioned included more in class activities, creating more assessment tools, and drastically reducing the amount of time spent lecturing.

In a study of OpenStax textbook users, 52% of faculty indicated little to no change in their instruction as a result of using open textbooks. However, other faculty believed using open textbooks enabled positive changes in their instruction, indicating that they started employing student-centered instruction such as collaborative and active learning strategies as well as implementing flipped classroom methods. These instructional approaches, in turn, helped the faculty members employ different types of assessments, enabled displaying/referring to the open textbook during class, or facilitated the use of applied examples/problems (E. Jung et al., 2017).

Faculty Reflection on Teaching

Critical reflection in education can impact an educator's practice. Procee (2006) explains that reflection can improve professional proficiency and foster personal growth. Brookfield (1995) suggests that reflection can improve practice when it focuses on a critical incident. The use of OER can serve as this event. Brookfield (1995) proposes that teachers review their practices, get feedback from students and talk with colleagues about each other's teaching as the means for reflection.

The OER Research Hub hypothesized that the use of OER leads to critical reflection. This reflection could be because of exposure to other teaching approaches, raising awareness of issues that had not been considered before, or through the process of adaptation (Weller et al., 2015). Determining the relationship between OER use and reflection is based on self-reporting of practitioners. In an international study of educators using OER, the OER Research Hub found that 59.4% (n=558) agreed that they reflected more on the way that they teach and 44.5% (n=416) agreed that they more frequently compared their teaching with others (Weller et al., 2015).

Summary and Future Research

Based on the knowledge gained from previous research on Open Educational Resources future research can move beyond definitions, adoption efforts, and barriers, to focus on the more significant issues of pedagogy and learning practices, thereby shifting the focus from OER to open educational practices. Kortemeyer (2013) suggests that conventional teaching and learning models in higher education have not changed despite the increased prevalence of OER. Faculty are the key drivers of educational practices and have the ultimate impact of how OERs are used in the classroom. Babson (2017) found that of the faculty not currently using OER, 6% are not interested in using them in the future, 7% say they will use OER, and 37% will consider using. The research in this dissertation seeks to determine what factors are most influential in faculty decisions to use OER so that interventions can address these and thereby increase the numbers of the faculty who will use OER in the future and understand likely behaviors of faculty when interacting with the open resources. The following chapter will describe the research questions, and methodologies used to answer them.

CHAPTER 3 – METHODOLOGY

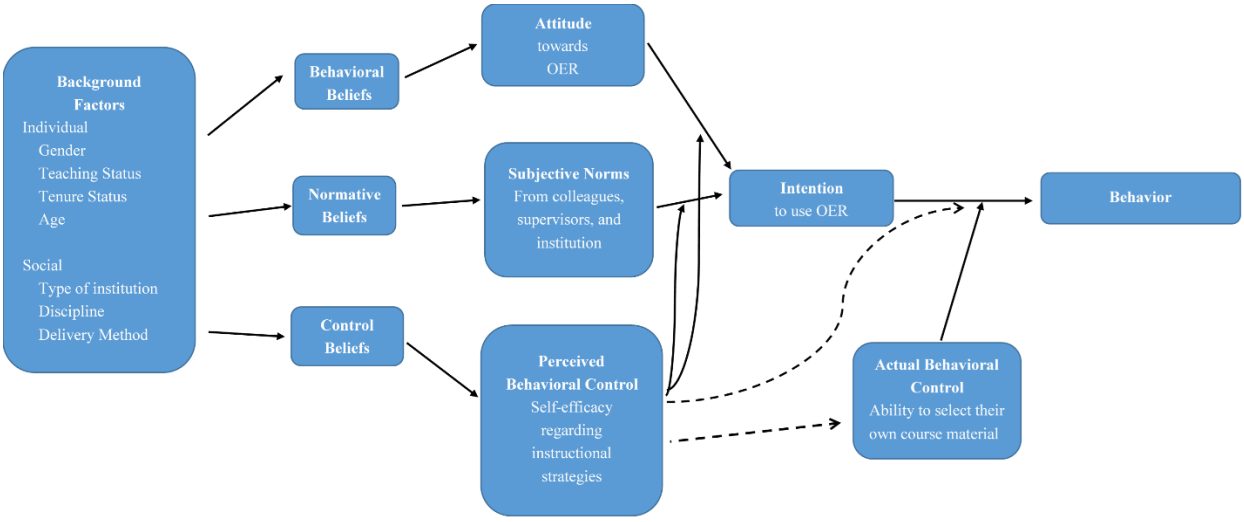
This chapter discusses the methodology used in this research study. It presents the research questions and hypotheses, describes the instrument used to gather data, and discusses the variables and statistical analysis used for each hypothesis.

The primary purpose of this study is to gain a better understanding of faculty who have chosen to use open educational resources as part of their teaching process. This knowledge will assist OER advocates and researchers in knowing more about their target population so that programs and solutions being developed in the OER realm better address the needs of this user group. Enhanced knowledge about OER users will, in turn, encourage more faculty to engage with open educational practices. According to the Theory of Planned Behavior, interventions can be created to address a behaviors' theoretical determinant (attitude, subjective norm, perceived behavioral control) which then produce changes in behavioral intention (Ajzen, 2005). This study will assess the impact that OER use has on how teaching faculty change the way they prepare for classes, the way they engage with students in the classroom, and the way they reflect on their teaching.

The Theory of Planned Behavior (Ajzen, 2011), which posits that an individual's beliefs can predict behavioral intention, provides the framework for this study. Data was collected and analyzed at the individual faculty level. In keeping with the TPB, there are three predictor variables: attitude, subjective norms, and perceived behavioral control that were measured in relation to the dependent variable. Three behaviors will be studied: faculty use of OER in

preparing for instruction, faculty use of OER in their course, and the reflective practices of faculty who use OER. Each of these will be examined as a separate research question (Figure 1).

Figure 2. Applying the Theory of Planned Behavior



Constructs

The following is a detailed description of each of the predictor and behavioral variables that will be measured in this study.

Attitude. Zimbardo and Leippe define attitude as: "An evaluative disposition toward some object based upon cognitions, affective reactions, behavioral intentions, and past behaviors ... that can influence cognitions, affective responses, and future intentions and behaviors" (Zimbardo & Leippe, 1991, p. 51). TPB's definition of attitudes includes the consideration of the outcomes of performing the given behavior. For purposes of this research, the focus will be on individual faculty's disposition to use and interact with open educational resources in the context of their teaching.

Subjective norms. Subjective norms refer to the belief about whether most people approve or disapprove of a behavior. These beliefs act as pressures, exerted by influencers, on individuals to exhibit certain behaviors (Kreijns et al., 2017). Influencers are people who have the ability to influence the behavior or opinions of others and whose effect on decision making is in some way significant or authoritative (de Graffenreid, 2017) The opinions of peers and people of importance to the individual influence whether that person will engage in the behavior. In this study, colleagues, department chairs, and institution administration serve as the influencers of faculty use of OER.

Perceived behavioral control. Perceived behavioral control refers to a person's self-efficacy. Bandura (1977) describes self-efficacy as an individual's belief in his or her capacity to execute behaviors necessary to produce specific performance attainments. The self-efficacy is based on the person's belief that they possess the skills, knowledge, and ability to control unexpected problems necessary to complete the behavior successfully.

Actual behavioral control. This differs from perceived behavioral control because it considers not just what people think are under their control. It refers to the extent that a person has the skills, resources and other prerequisites needed to perform a behavior.

OER permissions. These are the license permissions granted to OER that allows the user to reuse, revise, remix, redistribute, and retain the content.

Pedagogical practices. This variable refers to the context in which OER is used in teaching. This includes teaching methods and the range of resources available to the students.

Preparing for instruction. This variable examines how faculty are using OER outside of the classroom when planning to teach. This could be during course development or lesson planning for a single session.

Reflective practices. Schon (1983) defines a reflective teacher as someone who critically examines his/her practices, comes up with some ideas on how to improve their performance to enhance student learning, and puts those ideas into practice. He describes reflection-on-action as something the teacher does after the event and is encouraged and practices in higher education settings.

Research Questions and Hypotheses

1. What are the attitudes, subjective norms and perceived behavioral controls of teaching faculty that predict how they use OER in preparing for instruction?

   H_{01} = There is no relationship between faculty attitudes towards OER and how they use OER in preparing for instruction.

   $$Y_{preparation} = b_0 + b_1 x_{attitude} + \in$$

   H_{02} = There is no relationship between faculty subjective norms and how they use OER in preparing for instruction.

   $$Y_{preparation} = b_0 + b_1 x_{subjective\ norms} + \in$$

   H_{03} = There is no relationship between faculty perceived behavioral control and how they use OER in preparing for instruction.

   $$Y_{preparation} = b_0 + b_1 x_{perceived\ behavioral\ control} + \in$$

   H_{04} = There is no relationship between faculty attitude, subjective norms and perceived behavioral control and how they use OER in preparing for instruction.

$$Y_{preparation} = b_0 + b_1 x_{attitude} + b_2 x_{subjective\ norms} + b_3 x_{perceived\ behavioral\ control} + \in$$

2. How do attitudes, subjective norms and perceived behavioral controls of teaching faculty relate to how they use OER in their courses?

   H_{01} = There is no relationship between faculty attitudes and how they use OER in their courses.

   $$Y_{teaching} = b_0 + b_1 x_{attitude} + \in$$

   H_{02} = There is no relationship between faculty subjective norms and how they use OER in their courses.

   $$Y_{teaching} = b_0 + b_1 x_{subjective\ norms} + \in$$

   H_{03} = There is no relationship between faculty perceived behavioral control and how they use OER in their courses.

   $$Y_{teaching} = b_0 + b_1 x_{perceived\ behavioral\ control} + \in$$

   H_{04} = There is no relationship between faculty attitude, subjective norms and perceived behavioral control and how they use OER in their courses.

   $$Y_{teaching} = b_0 + b_1 x_{attitude} + b_2 x_{subjective\ norms} + b_3 x_{perceived\ behavioral\ control} + \in$$

3. How do attitudes, subjective norms and perceived behavioral controls of teaching faculty relate to reflective practices?

   H_{01} = There is no relationship between faculty attitudes and reflective practices.

   $$Y_{reflection} = b_0 + b_1 x_{attitude} + \in$$

H_{02} = There is no relationship between faculty subjective norms and reflective practices

$$Y_{reflection} = b_0 + b_1 x_{subjective\ norms} + \in$$

H_{03} = There is no relationship between faculty perceived behavioral control, and their reflective practices.

$$Y_{reflection} = b_0 + b_1 x_{perceived\ behavioral\ control} + \in$$

H_{04} = There is no relationship between faculty attitude, subjective norms and perceived behavioral control and how they use OER in their reflective practices.

$$Y_{reflection} = b_0 + b_1 x_{attitude} + b_2 x_{subjective\ norms} + b_3 x_{perceived\ behavioral\ control} + \in$$

Instrument Creation

A survey instrument was created to measure each of the predictor and dependent variables (Appendix A). The questions were adapted from a variety of sources. General demographic questions were asked to describe the sample population. The demographic questions included type of institution, gender, geographic location, teaching status, tenure status, age, and discipline. Five survey questions were asked, each addressing one of the 5R permissions (reuse, revise, remix, redistribute, and retain). These were measured in the survey instrument with Yes/No questions. A series of questions will be used to measure each of the constructs used in the Theory of Planned Behavior. (Table 1). All questions in the survey were optional.

Knowledge and interaction with OER. Questions were asked to determine the participants' knowledge of OER, how they have used OER in their courses, and their intention to use OER in the future. These questions allowed for creating groups of users and non-users for comparison. These questions are derived from those suggested by the OER Research Hub

(Farrow et al., 2016), an international collaboration between K-12 schools, higher education institutions and informal learners, with the goal of improving the quality of OER research, and allow for comparison of respondents across different research studies. The answers to these questions are presented as descriptive statistics with possible crosstabulations between demographic characteristics of the participants.

Attitude. The Attitude Towards Open Educational Resources (ATOER) Scale will be included to assess faculty attitude towards OER. The creator of the scale suggests that it be used to explore the possibility of predicting those who would be more willing to share OER by identifying pre-dispositions to the concepts and practices of OER (Mishra et al., 2016). Only the questions relating to a general attitude towards OER are included. The mean score of the questions will be used for this measure.

Subjective norms. A series of questions are included to measure the extent that respondents are influenced by social groups. For faculty these social groups include colleagues, department chairs, and institutional administrators. The wording for these questions is adapted from Venkatesh et al.'s (Venkatesh et al., 2003) Unified Theory of Acceptance and Use of Technology (UTAUT) instrument to predict teachers intentions to use technology. The Theory of Planned Behavior was used as one of the models in developing UTAUT. In the UTAUT model there are three determinants of intention and usage: performance expectancy; effort expectancy; and social influence and facilitating conditions. In the current study only the questions related to social influence are used. The mean scores of the questions are used to generate an individual score for this variable.

Perceived Behavioral Control. The Teachers' Sense of Efficacy Scale (Tschannen-Moran, M & Woolfolk Hoy, A., 2001) is used to measure this construct. The full scale yields

three factors, efficacy in student engagement, efficacy in instructional strategies, and efficacy in classroom management. Only those questions related to instructional strategies were incorporated into the instrument for the current study. The mean scores of the respondent is used to generate an individual score for this variable.

Use of OER in preparing for instruction and use in a course. These variables are measured using survey questions from the survey bank of questions created by the OER Research Hub. The questions were designed to provide insight from faculty on the impact that OER has on their practices (Farrow et al., 2016). The sum score of these questions is used in the regression equation as a measure of the behavior.

Reflective practices. The English Language Teaching Reflection Inventory (Akhari et al., 2010) has five factors, practical, affective, cognitive, critical and meta-cognition. The questions relating to practical elements of reflection are used for the current study. This component deals with the tools and actual practice of reflection.

Prior to conducting the survey, three cognitive interviews project were done. D'Ardenne (2015) explains that cognitive interviews improve data collection instruments. They ensure that the participants understand the questions and that they can respond using the answer options provided (Mehrota, 2007). The participants of the cognitive interviews were faculty that have used OER in their teaching. They represented the intended respondents of the survey. After the interviews, the wording of the questions was revised to address the confusion that the interviewees experienced. In one case the question originally designed to measure teaching practices broadly was divided in two as a way to prevent drop off. By diving the question the research question expanded to look at teaching practices in regards to how faculty prepare to teach and how they use material with the students in a course.

Table 1

Study Constructs with Measurement Items

Attitude

1. I believe OER is "good" for people as it improves their learning.
2. OER gives me opportunities to learn new things.
3. OER caters to the innate desire to learn, improve and progress.
4. OER improves professional image.
5. OER provides access to the best materials and teachers.
6. OER provides me with opportunities for establishing new partnerships

Subjective Norm

1. People who influence my behavior think that I should use OER.
2. People who are important to me think that I should use OER.
3. Other faculty in my department use OER.
4. University administrators have been helpful in the use of OER
5. My supervisor is very supportive of the use of OER.
6. In general, the organization has supported the use of OER.

Perceived Behavioral Control

1. How much can you do to motivate students who show low interest in school work?
2. How much can you do to help your students value learning?
3. To what extent can you craft good questions for your students?
4. How much can you do to get students to believe they can do well in school work?
5. To what extent can you use a variety of assessment strategies?
6. To what extent can you provide an alternative explanation or example when students are confused?
7. How well can you implement alternative teaching strategies in your classroom?

Use of OER to prepare for instruction

1. To prepare for my teaching/training
2. To get new ideas and inspiration.
3. To compare them with my own teaching/training materials in order to assess the quality of my materials
4. To broaden the range of my teaching methods
5. To make my teaching more culturally diverse or responsive

6. To enhance my professional development
7. To stay up-to-date in a subject or topic area
8. To learn about a new topic
9. To connect with teachers or learners who have similar interests (e.g. by reading comments they have posted about resources)

Use of OER in a course

1. To supplement my existing lessons or coursework
2. As ‘assets’ (e.g. images or text extracts) within a classroom lesson
3. To give to learners as compulsory self-study materials
4. To give to learners as optional self-study materials
5. To provide e-learning materials to online learners.
6. To broaden the range of resources available to my learners
7. To engage my students more fully in a topic area
8. To interest hard-to-engage learners

Reflective practice

1. I have a teaching portfolio or file where I keep accounts of my teaching for reviewing purposes.
2. I talk about my classroom experiences with my colleagues and seek their advice /feedback.
3. After each lesson, I write about the accomplishments and/or failures of that lesson or I talk about the lesson to a colleague.
4. I discuss practical/theoretical issues with my colleagues.
5. I ask my peers to observe my teaching and comment on my teaching performance.
6. I observe other teachers' classrooms to learn about their efficient practices.

Reliability and Validity

The Theory of Planned Behavior has been found to have a significant predictive ability over an individual’s intention to engage in behaviors and can identify target interventions to change the given behaviors (Chen et al., 2018). A meta-analysis of the empirical evidence of the TPB predictive behavior validates the power of the independent variables to predict behavioral intention and the performance of actual behaviors (Cheung et al., 1999).

A number of questions in the survey instrument are taken directly from the OER Research Hub. One of the goals of that organization is to extend the research of OER by providing shared methods and shared results. Over forty articles and conference presentations have used the questions from the OER Research Hub for their instrument. By using the questions from this organization, it will provide the ability to compare this research with other OER research.

The ATOER (Mishra et al., 2016) is a two-factor scale shown to be valid and reliable to measure attitude towards OER. The psychometric properties of the scale show Content Validity Ratio=0.9 and Cronbach α=0.897 with strong inter-item correlation. The construct was tested for good model fit using Structural Equation Modeling to reveal a mediocre fit with 0.8 Root Mean Square Approximation value and the chi-square to degree of freedom ratio below 3.

The Teacher Sense of Efficacy Scale was tested for reliability and construct validity during its creation. Factor analysis indicated a high reliability of 0.91 for the instruction scale. Additional psychometric testing of the scales was conducted by Henneman, Kimball and Milanowski (2006) and confirmed that of Tschannen-Moran and Hoy (2001). The factor structure also held for teachers at different school levels.

Akhari et al., (2010) used exploratory and confirmatory factor analysis to test the construct validity of the five factors during the creation of the English Language Teaching Reflection Inventory. The calculated model-fit also verified the model as a valid measure of reflective teaching (Akhari et al. (2010).

Overall and Sample Population

The survey was distributed to higher education faculty in the United States. Efforts were made to obtain a representative sample of the entire population of faculty OER users from a variety of types of higher education institutions (research intensive, teaching intensive, and community colleges). Participants represent a broad range of academic disciplines.

There were three ways the sample was recruited (Appendix C). First, OER grants from state organizations or higher education institutions were reviewed to identify faculty who received these grants. These individuals were then emailed an invitation. Second, the researcher identified persons directly supporting the use of OER from interactions at open education and library conferences and OER listservs. A different email was sent to them requesting they forward the survey to faculty they know have expressed interest in using OER. Lastly, by reaching out to known OER advocates, snowball sampling resulted in the survey being posted on social media sites and in organization newsletters.

Data Collection and Analysis Procedures

The survey was distributed online using Qualtrics. Using this method ensures the ease of data collection and maintains the confidentiality of participants. Cognitive interviews were conducted in June 2019 with the final wording of the instrument complete at that time. The University of Mississippi Institutional Review Board approved of the research project in June 2019 (Appendix B). The survey was distributed in August and September 2019, allowing at least four weeks to recruit participants and collect the data. The required sample size of 119 for this study was determined using G*Power calculated with three predictor variables (attitude,

subjective norms, perceived behavioral control), a medium effect size (.15) and power equal to .95 for linear multiple regression. Data was collected in Qualtrics, imported into SPSS, and analyzed within that software. Hankins, French, and Horne (2000) provide guidelines for using multiple linear regression with studying the Theory of Planned Behavior.

Limitations of the Study

The respondents to the survey were self-selected and therefore cannot be taken as representative of the views of all faculty in postsecondary institutions in the United States. The methods for distributing the survey favor faculty who are already aware of and have used OER in the past. This is not a design flaw, as this study is specifically interested in learning about the characteristics of those faculty who are already using OER. Questions were included in the instrument for those not using OER. A comparative analysis of their responses and those of the users will be done if there is sufficient data.

Another noted limitation in previous studies of faculty use of OER is the potential confusion over the definition of OER. Faculty often conflate OER with any free resource. It is not possible to ensure that the respondent has the same definition as the researcher. However, to mitigate this, the operational definition for this research study was include on each screen of the survey, directly above the question.

Ethical Considerations

No identifying information was collected; therefore, it is not be possible to determine the participants' identities. Participation in this study was completely voluntary, and respondents could choose at any point to vacate the survey or skip any questions they prefer not to answer. Prior to conducting this research approval was obtained through the University of Mississippi's

Institutional Review Board. A question in Qualtrics obtained participant consent prior to asking any survey questions. A separate survey was used to gather contact information for those wanting to be entered into the drawing, ensuring that names are not linked in any way to the survey questions.

CHAPTER 4 – FINDINGS

This chapter provides the findings from a survey of higher education faculty as they relate to behaviors associated with open educational resources. The presentation of the findings consists of descriptive statistics of the sample and findings for three research questions related to faculty behaviors associated with the use of OER. Each research question has four associated hypotheses. Three of the hypotheses deal with predictors in the Theory of Planned Behavior (attitude, subjective norms, and perceived behavioral control) individually. Simple linear regression was used to test these hypotheses. A fourth hypothesis includes all of the predictor variables together and is analyzed using multiple linear regression.

Sample

The target population of this study are faculty using OER at higher education institutions in the United States. Data was collected using a self-administered questionnaire completed on-line in Qualtrics. The survey was distributed August 19, 2019 – September 16, 2019. I loaded this data into SPSS, a widely accepted software program used to analyze quantitative data. For this study I used SPSS software version 25 for Windows.

An a priori power analysis was conducted to compute the required sample size using G*Power (Faul et al., 2009). When applying a medium effect size of 0.15, an alpha level of 0.05 and a power of 0.95 with 3 predictors the power analysis indicated a sample size of 119 was needed and the recruitment efforts yielded 480 responses. The large response allowed for removal of responses that did not contribute to the research. After reviewing the data any

incomplete responses (*n* = 39) and those lacking data for any of the construct and behavior variables, including those unaware of OER (*n* = 23) were identified and removed. Responses from faculty outside of the United States (*n* = 4) were also removed prior to the analysis. The final sample included for analysis was 414.

Respondents came from thirty-nine states, with 43.5% coming from Georgia, Mississippi and Oregon. The states with the largest number of responses are from states with established statewide OER initiatives (Oregon and Georgia) or from the researcher's own state. The majority of respondents were tenured (50.5%, *n* = 208) female (55.3%, *n* = 229), and teaching full-time (88.6%, *n* = 366) at a 4-year institution (69.1%, *n* = 286). The faculty taught in a variety of disciplines, with the majority in the humanities (25.6%, *n* = 106) and the social sciences (24.4%, *n* = 101). Some faculty reported teaching in multiple areas. Of the 53 respondents that selected other as their discipline, thirty-three specified mathematics. Detailed participant characteristics can be seen in Table 2.

Table 2

Characteristics of the Sample

Variable	**Categories**	**Frequency**	**Percentage** *
Gender	Female	229	55.3
	Male	163	39.4
	Other (self-described)	4	1.0
Age	Under 35	42	10.2
	35-44	143	34.6
	45-54	116	28.1
	55+	112	27.1
Discipline**	Applied science, technology, engineering	46	11.1
	Economics, Business & Management	29	7.0
	Education	46	11.1
	Health/Medicine	25	6.0
	Humanities	106	25.6
	Life Science	48	11.6

	Mathematics	33	8.0
	Physical Science	41	9.9
	Social Science	101	24.4
	Other	53	12.8
Type of Institution**	2-year	132	31.9
	4-year	286	69.1
	Other	14	3.4
Teaching Status	Part-time	50	11.8
	Full-time	374	88.2
Tenure Status	Tenured	214	50.6
	Tenure track, not tenured	54	12.8
	Not tenure track	155	36.6

Note: * The percentages are computed based on total usable sample. ** Respondents could select multiple options.

While faculty have agency over the way they teach their courses, the selection of course materials may be done by others. The survey sought to determine the actual behavioral control of textbook selection. The comments suggest that the decision of course material is often dependent on the course, with some having control over the selection and the department choosing others. Some mentioned that departmental selection was an effort to reduce the financial burden on the students. Most of the respondents (n=414, 76%) were solely responsible for the selection of course materials (Table 3), or part of a group that made the selection together.

Table 3

Faculty Selection of Course Materials

	Frequency	**Percentage****
Solely responsible	315	76.1%
Lead a committee/group that makes selection	43	10.4%
Member of committee/group that makes the selection	62	15%
Influence the selection but have no decision-making power	16	3.9%
Others make the selection, I have no role	6	1.4%

Other	22	5.3%

n = 414. ** Respondents could select multiple options.

Because faculty who use OER were targeted to complete the survey, it was expected that all would have some awareness of OER and how they can be used. Eighty-three percent were very aware of OER and know how they can be used in the classroom (Table 4). Eighty-six percent of the faculty have used OER in at least one course in the past and 67.4% intend to use OER in a course in the next academic year (Table 5).

Table 4

Faculty Awareness of OER

	Frequency	**Percentage**
I have heard of OER, but don't know much about them	6	1.4
I am somewhat aware of OER but I am not sure how they can be used	2	0.5
I am aware of OER and some of their use cases	63	15.2
I am very aware of OER and know how they can be used in the classroom	343	82.9

n = 414

Table 5

When Faculty Have Used Or Intend To Use OER

Use*	**Frequency**
Used in previous academic years	356
Using in the current academic year	312
Intend to use during the next academic year	279
Intend to use sometime in the future	137
Don’t know if they will use	3

Not used	3
Other	23

n = 414, * Respondents could select multiple options.

OER permissions allow for reuse, retention, revision, remixing, and redistribution. Faculty could select all of the ways they have used the 5R permissions. Each of these were recorded as yes/no. The responses showed that faculty use all of these permissions. Reuse was the most common with 394 respondents indicating that they use content created by others without any modification followed by retain (n = 301), revise (n = 291), and remix (n = 266). The least used permission is redistribution, reported by 240 respondents, which allows OER users to share copies of the original content, the revisions or the remixes with others.

Factors Influencing Use of OER

The Theory of Planned Behavior's constructs of attitude, subjective norms and perceived behavioral control were assessed to predict faculty behavior relating to how they use OER in preparing for instruction, in the context of a course and their reflection on their teaching. In this study, each construct was assessed using a set of Likert scale questions. The mean rating of all items comprising the scale were used to calculate the value of each construct. Only those respondents with answers to all of the scale questions are included. Internal reliability of each scale was assessed by computing Cronbach's alpha for each predictor (Table 6). All items were deemed to be worthy of retention, resulting in a decrease in the alpha if deleted.

Table 6

Theory of Planned Behavior Constructs

Construct	**Mean**	**Standard Deviation**	**Cronbach's α**

Attitude (ATT)	23.7	4.0	.85
I believe OER is "good" for people as it improves their learning.	4.09	.81	
OER gives me opportunities to learn new things.	4.22	.77	
OER caters to the innate desire to learn, improve and progress.	3.93	.88	
OER improves professional image.	3.63	.92	
OER provides access to the best materials and teachers.	3.43	.99	
Subjective norm (SN)	22.23	4.37	.83
People who influence my behavior think that I should use OER.	3.42	.99	
People who are important to me think that I should use OER.	3.43	1.00	
Other faculty in my department use OER.	3.77	1.05	
University administrators have been helpful in the use of OER	3.70	1.07	
My supervisor is very supportive of the use of OER.	3.86	.968	
Perceived behavioral control (PBC)	28.67	3.37	.80
How much can you do to motivate students who show low interest in school work?	3.59	.77	
How much can you do to help your students value learning?	3.82	.75	
To what extent can you craft good questions for your students?	4.34	.63	
How much can you do to get students to believe they can do well in school work?	3.99	.70	
To what extent can you use a variety of assessment strategies?	4.30	.74	

To what extent can you provide an alternative explanation or example when students are confused?	4.46	.63

The Theory of Planned Behavior is used to predict behavior and in this study three different behaviors are of interest: use of OER to prepare for teaching, use of OER within the course, and reflective practices of faculty. These behaviors are operationalized by a series of statements that asked respondents to indicate which ones they had done in the process of their teaching. Cronbach's α was calculated to determine the internal reliability of each scale (Table 7). Each behavior variable was calculated by aggregating the number of scale items selected. For the variables of use of OER in preparing for instruction and use in the course respondents were able to write in response. These responses were not included in calculating reliability and the comments were not systematically analyzed, but were used to help clarify the "other" uses respondents engage in and were considering when responding to this survey. The complete text of all write-in responses are provided in Appendix D. All other items were deemed to be worthy of retention, as they resulted in a decrease in the alpha if deleted. The descriptive statistics for all predictor and behavior variables is in Table 8.

Table 7

Reliability of Behavior Variables

Variable	**Means/%**	**Standard Deviation**	**Cronbach's α**
Reflective Practice	18.48	4.10	.75
I have a teaching portfolio or file where I keep accounts of my teaching for reviewing purposes.	3.27	1.27	

I talk about my classroom experiences with my colleagues and seek their advice /feedback.	3.84	.85	
After each lesson, I write about the accomplishments and/or failures of that lesson or I talk about the lesson to a colleague.	2.40	1.03	
I discuss practical/theoretical issues with my colleagues.	3.58	.89	
I ask my peers to observe my teaching and comment on my teaching performance.	2.67	1.05	
I observe other teachers' classrooms to learn about their efficient practices.	2.73	1.01	
Use of OER in preparing for Instruction	4.09	2.67	.77
To prepare for my teaching/training	68	.47	
To get new ideas and inspiration.	60	.49	
To compare them with my own teaching/training materials in order to assess the quality of my materials	38	.49	
To broaden the range of my teaching methods	56	.50	
To make my teaching more culturally diverse or responsive	39	.49	
To enhance my professional development	34	.48	
To stay up-to-date in a subject or topic area	38	.49	
To learn about a new topic	36	.48	
To connect with teachers or learners who have similar interests (e.g. by reading comments they have posted about resources)	20	.397	
Use of OER in the course	4.01	2.30	.75

To supplement my existing lessons or coursework	73	.45
As ‘assets’ (e.g. images or text extracts) within a classroom lesson	48	.50
To give to learners as compulsory self-study materials	48	.50
purposes have you used, or intend to use -To give to learners as optional self-study materials	45	.50
To provide e-learning materials to online learners.	57	.50
To broaden the range of resources available to my learners	64	.48
To engage my students more fully in a topic area	46	.50
To interest hard-to-engage learners	21	.40

Table 8.

Descriptive Statistics for All Predictors and Behaviors

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Attitude	414	1.33	5.00	3.88	.67
Subjective Norms	414	1.17	5.00	3.70	.73
Perceived Behavioral Control	414	2.71	5.00	4.10	.48
Reflective Practice	414	1.00	5.00	3.09	.69
Preparing for instruction	414	.00	10.00	4.09	2.67
Use in course	414	.00	9.00	4.13	2.26

Valid N (listwise)	414

Results of Research Questions

The study set out to answer three research questions. The first question asks what are the attitudes, subjective norms and perceived behavioral controls of teaching faculty that predict their use of OER in preparing for instruction? The second question examines the attitudes, subjective norms and perceived behavioral controls that predict faculty use of OER within their course. The final research question looks at these same predictors as they related to the reflective practices of faculty who use OER.

Regression analysis was used to answer the research questions and determine acceptance or rejection of the null hypotheses. Linear regression is a method of modeling the relationship between one or more independent and dependent variables (Cohen, et al., 2011). Simple linear regression was conducted first, in order to determine the proportion of variance in each predicted behavior based on the values of the components in the TPB - attitude, subjective norms and perceived behavioral control. Multiple regression was conducted next to evaluate the multiple independent variables of the TPB that simultaneously affect the behavior in question.

When conducting any regression analysis it is important to determine if underlying assumptions have been met. There are four main assumptions: linearity, homoscedasticity, independence and normality. Before running any of the regressions the data were examined to ensure that none of these assumptions were violated. Scores for all behavior and predictor variables were normally distributed. Standardized residuals were also normally distributed. Scatterplots were analyzed, and no curvilinear relationships between the criterion variable and the predictor variables or heteroscedasticity were evident.

Faculty use of OER in preparing for instruction

The first research question addressed the attitudes, subjective norms and perceived behavioral controls of teaching faculty that predict their use of OER in preparing for instruction. The associated hypothesis (below) was tested using linear regression.

H_{01} = There is no relationship between faculty attitudes towards OER and their use of OER in preparing for instruction

A simple linear regression was calculated to test if attitude towards OER predicted faculty use OER in preparing for their teaching (Table 9). The results of the regression indicated that the model was significant and 19.3% of the variance in faculty use of OER to prepare for instruction is explained by attitude towards OER.

Table 9

Attitude as Predictor of Faculty Use of OER to Prepare for Instruction

Variable	**B**	**95% CI**
Constant	-2.74**	[-4.12, -1.37]
ATT	1.76**	[1.41, 2.11]
R^2	.19	
F	98.29**	

Note. N = 414. CI = confidence interval. ATT = attitude. **$p < .01$.

H_{02} = There is no relationship between faculty subjective norms of their department chair, department colleagues, academic peers, and their use of OER in preparing for instruction.

A simple linear regression was calculated to predict use of OER in preparing for instruction based on the subjective norms of faculty (Table 10). The analysis showed that subjective norms significantly predicted use OER in preparing for their teaching. The regression model explains that 5.4% of the variance in faculty use of OER in preparing for instruction can

be associated with their subjective norms. For every one unit of increase in subjective norms there is a .85 increase in how they use OER in their class preparation.

Table 10

Subjective norms as predictor of faculty use of OER to prepare for instruction

Variable	**B**	**95% CI**
Constant	.94	[-.36, 2.24]
SN	.85**	[.50, 1.19]
R^2	.05	
F	24.00	

Note. *N* = 414. CI = confidence interval. SN = subjective norms. . **$p < .01$.

H_{03} = There is no relationship between faculty perceived behavioral controls and their use of OER in preparing for instruction.

A simple linear regression was carried out to test if perceived behavioral control predicted use of OER in preparing for instruction (Table 11). The results of the regression indicated that the model was significant and explained 1.5% of the variance in how faculty use OER to prepare for their teaching. It was found that perceived behavioral control significantly predicted use of OER in preparing for instruction.

Table 11

Perceived Behavioral Control as Predictor of Faculty Use of OER to Prepare for Instruction

Variable	**B**	**95% CI**
Constant	1.29	[.91, 3.48]
PBC	.683*	[.151, 1.22]
R^2	.015	
F	6.36*	

Note. *N* = 414. CI = confidence interval. PBC = perceived behavioral control. *$p < .05$.

H_{04} = There is no relationship between faculty attitude, subjective norms and perceived behavioral control combined and their use of OER in preparing for instruction.

A multiple regression was carried out to investigate whether faculty attitude of OER, subjective norms, and perceived behavioral control could significantly predict use of OER in preparing for instruction. Descriptive statistics are reported in Table 12. The results of the regression (Table 13) indicated that the model explained 20.2% of the variance and that the model was a significant predictor of OER use in preparation for instruction. While attitude and subjective norms contributed significantly to the model perceived behavioral control did not.

Table 12

Mean, Standard Deviations, and Intercorrelations for TBP Predictor Variables and Use of OER in Preparing for Instruction

Variables	**Mean**	**Std. Deviation**	**ATT**	**SN**	**PBC**	**Preparing for instruction**
ATT	3.88	.67		.32**	.26**	.44**
SN	3.71	.73			.14**	.23**
PBC	4.10	.48				.12*
Preparing for instruction	4.09	2.67				

Note: $N = 414$. ATT = attitude; SN = subjective norms; PBC = perceived behavioral control. * $p < 0.05$, ** $p < 0.01$.

Table 13

Regression Analysis Summary for TBP Variables Predicting Use of OER to Prepare for Instruction

Variable	B	95% CI
Constant	-3.71**	[-5.99, -1.44]
ATT	1.62**	[1.25, 2.00]
SN	.38*	[.04, .72]
PBC	.02	[-.48, .52]

R^2	.20
F	34.67**

Note. *N* = 414. CI = confidence interval. ATT = attitude; SN = subjective norms; PBC = perceived behavioral control. *$p < .05$. **$p < .01$.

Faculty use of OER in the classroom

The second research question addressed the attitudes, subjective norms and perceived behavioral controls of teaching faculty that predict their use of OER during their course. The associated hypothesis (below) was tested using linear regression.

H_{01} = There is no relationship between faculty attitudes and their use of OER in their course.

A simple linear regression was calculated to test if attitude towards OER predicted faculty use of OER in their course (Table 14). The results of the regression indicated that the model explained 10% of the variance in how faculty use OER when teaching their course. It was found that faculty attitude significantly predicted use of OER in the course. For each unit increase in attitude there was a 1.05 increase in faculty use of OER in their course.

Table 14

Attitude as Predictor of Faculty Use of OER Within Their Course

Variable	**B**	**95% CI**
Constant	.06	[-1.17, 1.30]
ATT	1.05**	[.73, 1.36]
R^2	.10	
F	43.14**	

Note. *N* = 414. CI = confidence interval. ATT = attitude. **$p < .01$.

H_{02} = There is no relationship between faculty subjective norms and the use of OER in their course.

A simple linear regression was calculated to predict faculty use of OER in their course based on the subjective norms of faculty (Table 15). The regression model was significant and explained 3.1% of the variance. It was found that subjective norms significantly predicted use of OER in the course.

Table 15

Subjective Norms as Predictor of Faculty Use of OER Within Their Course

Variable	**B**	**95% CI**
Constant	2.11**	[1.00, 3.23]
SN	.54**	[.25, .84]
R^2	.03	
F	13.00**	

Note. N = 414. CI = confidence interval. SN = subjective norms. **p < .01

H_{03} = There is no relationship between faculty perceived behavioral control, and the use of OER in their course.

A simple linear regression was carried out to test if perceived behavioral control predicted faculty use of OER in the classroom (Table 16). The results of the regression indicated that the model was not significant. It was found that perceived behavioral control did not significantly predict use of OER in the course.

Table 16

Perceived Behavioral Control as Predictor of Faculty Use of OER Within Their Course

Variable	**B**	**95% CI**
Constant	2.63*	[.76, 4.50]
PBC	.37	[-.09, .82]

R^2	.01
F	2.50

Note. N = 414 . CI = confidence interval. PBC = perceived behavioral control. *p < .05.

H_{04} = There is no relationship between faculty attitude, subjective norms and perceived behavioral control combined and their use of OER in the course.

A multiple regression was carried out to investigate whether faculty attitude of OER, subjective norms, and perceived behavioral control could significantly predict faculty use of OER in the course. Descriptive statistics are reported in Table 17. The results of the regression (Table 18) indicated that the model explained 10.2% of the variance and that the model was a significant predictor of OER use in the classroom. Attitude contributed significantly to the model but subjective norms and perceived behavioral control did not.

Table 17

Mean, Standard Deviations, And Intercorrelations for TBP Predictor Variables and Use of OER Within Their Course

Variables	Mean	Std. Deviation	ATT	SN	PBC	Use in course
ATT	3.88	.67		.315**	.260**	.308**
SN	3.71	.73			.137**	.175**
PBC	4.10	.48				.078
Use in course	4.13	2.26				

Note: N = 414. ATT = attitude; SN = subjective norms; PBC = perceived behavioral control.** p<.001

Table 18

Regression Analysis Summary for TBP Variables Predicting Use of OER Within Their Course

Variable	**B**	**95% CI**
Constant	-.45	[-2.50, 1.60]
ATT	.96**	[.62, 1.30]
SN	.27	[-.03, .57]
PBC	-.04	[-.48, .41]
R^2	.10	
F	15.45**	

Note. $N = 414$. CI = confidence interval. ATT = attitude; SN = subjective norms; PBC = perceived behavioral control. $^{**}p < .01$.

Reflective practices of faculty

The third research question addressed the attitudes, subjective norms and perceived behavioral controls of teaching faculty that predict their reflective practices. The associated hypothesis (below) was tested using linear regression.

H_{01} = There is no relationship between faculty attitudes towards OER and their reflective practices.

A simple linear regression was calculated to test if faculty attitude towards OER predicted their reflective practices (Table 19). The results of the regression indicated that the model explained 2.2% of the variance and that the model was significant. It was found that faculty attitude significantly predicted reflective practices. For each unit increase in attitude the reflective practice of faculty increased .15.

Table 19

Attitude as Predictor of Reflective Practices of Faculty

Variable	B	95% CI
Constant	2.50**	[2.10, 2.88]
ATT	.15*	[.06, .25]
R^2	.02	
F	9.26*	

Note. *N* = 414. CI = confidence interval. ATT = attitude. *$p < .05$. **$p < .01$.

H_{02} = There is no relationship between faculty subjective norms and their reflective practices.

A simple linear regression was calculated to predict the reflective practices of faculty based on their subjective norms related to OER (Table 20). The regression model was significant and explained 1.8% of the variance. It was found that subjective norms significantly predicted use of OER in reflective practices. For each unit change in subjective norms there was a .13 increase in the reflective practices of faculty.

Table 20

Subjective Norms as Predictor of Reflective Practices of Faculty

Variable	**B**	**95% CI**
Constant	2.62**	[2.27, 2.96]
SN	.13*	[.04, .22]
R^2	.02	
F	7.55*	

Note. *N* = 414. CI = confidence interval. SN = subjective norms. *$p < .05$. **$p < .01$.

H_{03} = There is no relationship between faculty perceived behavioral control and their reflective practices.

A simple linear regression was carried out to test if perceived behavioral control predicted the reflective practices of faculty (Table 21). The results of the regression indicated that the model was significant with 13.3% of the variance explained. It was found that perceived behavioral control significantly predicted reflective practices. For each unit increase in perceived behavioral control faculty reflective practices increased by .53.

Table 21

Perceived Behavioral Control as Predictor of Reflective Practices of Faculty

Variable	**B**	**95% CI**
Constant	.94*	[.40, 1.47]
PBC	.53**	[.40, .66]
R^2	.13	
F	63.25**	

Note. N = 414. CI = confidence interval. PBC = perceived behavioral control. *p < .05. **p < .01.

H_{04} = There is no relationship between faculty attitude, subjective norms and perceived behavioral control combined and their reflective practices.

A multiple regression was carried out to investigate whether faculty attitude of OER, subjective norms, and perceived behavioral control could significantly predict reflective practices of faculty. Descriptive statistics are reported in Table 22. The results of the regression indicated (Table 23) that the model explained 14.1% of the variance and that the model was a significant predictor of reflective practice. Perceived behavioral control contributed significantly to the model. The other two predictors, attitude and subjective norms were not significant contributors to the model.

Table 22

Mean, Standard Deviations, And Intercorrelations for TBP Predictor Variables and the Reflective Practices of Faculty

Variables	**Mean**	**Std. Deviation**	**ATT**	**SN**	**PBC**	**Reflective Practice**
ATT	3.88	.67		.315**	.260**	.148*
SN	3.71	.73			.137**	.133*
PBC	4.10	.48				.175**
Reflective Practice	3.09	2.26				

Note: n = 414. ATT = attitude; SN = subjective norms; PBC = perceived behavioral control.* $p < .05$, ** $p < .01$

Table 23

Regression analysis summary for TBP variables Predicting Reflective Practices of Faculty

Variable	B	95% CI
Constant	.64*	[.03, 1.26]
ATT	.04	[-.07, .14]
SN	.07	[-.02, .16]
PBC	.50**	[.36, .63]
R^2	.14	
F	22.47**	

Note. *N* = 414. CI = confidence interval. ATT = attitude; SN = subjective norms; PBC = perceived behavioral control. *$p < .05$. **$p < .01$.

Summary

The purpose of this study was to determine the relationship between attitude, subjective norms, and perceived behavioral control and faculty behavior associated with the use of open educational resources. This chapter included an analysis of data collected from 414 responses to a survey sent to higher education faculty in the United States. Descriptive statistics examined characteristics of the respondents and found that the majority of the respondents had a positive

attitude towards OER and have previously used them in their teaching. The first research question examined predictors of how faculty use OER when preparing for their teaching. Attitude was found to be a significant predictor explaining 19.3% of the variance. Subjective norms was also a significant predictor of 5.4% of the variance in preparing for instruction. The final component of the TPB, perceived behavioral control, was also found to be significant. When all of the variables were combined in the model both attitude and subjective norms were significant, while perceived behavioral control was not, when holding all others constant. The second research question used the same variables to predict how faculty use OER in their course. When looking at each variable separately attitude and subjective norms were both significant and could explain the variance in behavior, however, perceived behavioral control did not. When all of the predictors were combined in the model only attitude was found to be a significant contributor when holding all others constant. The final research questions looked at the reflective practices of the faculty who use OER. All three variables, when examined individually, were found to be significant predictors of reflective practices. In a model where all three were included, although the model was significant, only perceived behavioral control was a significant contributor. Chapter 5 will discuss the implications of these findings, make recommendations for further study and conclude the entire study.

CHAPTER 5 – DISCUSSION

Since the Cape Town Declaration, open educational resources are seen as having the potential to transform teaching and learning. Underlying this research study is the OER Research Hub hypothesis that the use of OER leads to critical reflection by educators, with evidence of improvement in their practice (Farrow et al., 2016). McGreal et al. (2013) support this notion and explain that the use of OER can improve the quality of teaching practice and can encourage pedagogical innovation. While most research related to OER has focused on the impact on students, this research study examined how faculty are using OER to change their teaching. Using the Theory of Planned Behavior the research questions in this study focused on whether attitudes, subjective norms and perceived behavioral control have an impact on the teaching behavior of faculty that are using OER. Three areas of teaching practice were studied. First, the study examined how OER impacts the way faculty prepare for their courses. Second, the study looked at how faculty were using OER with their students. Lastly, it examined the reflective practices of faculty that are using OER. This study, unlike others before, look at OER users across the United States, regardless of the source of the OER they are using (Jung et al., 2017) or the discipline they are teaching (Bowen et al., 2012; Feldstein et al., 2012; Hilton III & Laman, 2012). It also focuses on the educator rather than the student because faculty who are using OER and other open teaching practices are leading the transformation to open pedagogy.

This chapter will discuss the findings for each research question and how they relate to previous research. After each question is answered, I will use the evidence from this study to suggest how OER advocates can have a greater impact on transforming current practices to align

with open pedagogy. No research study is without limitations, therefore a section of this chapter will identify limitations to the current study. Lastly, the chapter will suggest areas for future research.

Overall Themes

When looked at independently, attitude, subjective norms and perceived behavioral control significantly explained the use of OER in preparing for instruction and reflective practices. In a multivariate model incorporating all three of the major constructs of the TPB, attitude and subjective norms were significant predictors of the use of OER in a course, while perceived behavioral control was not. The full model was significant in explaining the use of OER. However, in both the univariate and the multivariate models, the amount of variance explained was very low, with there being no explanation above 20%. This suggests that the Theory of Planned Behavior may not be the best model for explaining faculty behavior associated with OER use. As Oleson and Hora (2013) discovered, there are many other factors that influence how someone teaches. Such factors can include past experience in the classroom, both as a student and a teacher, interactions with other instructors, and the approaches to research of faculty in specific disciplines.

The primary impetus for increasing the use of OER has been to reduce the cost of education by offering students alternatives to expensive textbooks. A focus on cost savings for students by faculty can make it more difficult to disentangle teaching behaviors associated with the use of OER. Weller et al. (2016) would classify this type of user as an OER consumer; someone who is less interested in the OER's capabilities and are more focused on the ease of use and the quality of the resource. While the study was focused on intrinsic motivation and changes in faculty behavior, many faculty said saving student money was *how* they used OER to prepare

for instruction. In response to the question asking about the use of OER in teaching practices one respondent summed it up by commenting, “I've just used OER as the primary educational resources in my classes, rather than commercial non-OER, because of the impact of price on my students.” This study was designed to try to understand “how” faculty are using OER rather than “why”. While selecting a free textbook can be seen as using OER, it does not address specific uses associated with teaching practices. This demonstrates that faculty may not see uses for OER other than a simple substitution for high-cost textbooks thereby hindering the expansion of open educational pedagogy. The low use of OER for specific teaching practices, inside and outside of the classroom, will be discussed in greater detail later in this chapter.

By emphasizing the “free” aspect of OER faculty are seeing OER as a substitution for traditional material, yet they are frequently missing the benefits of the “open” aspects. OERs with creative commons licenses permit faculty to customize the content and organization of the course materials to better address course objectives and learning outcomes and offer new ways for student engagement. The results of this study show that of the 5Rs (reuse, revise, remix, retain, redistribute), reuse is by far the most frequently used permission. However, it is in the revising and remixing that OER has the greatest impact on teaching practices. Hood (2018) points out that just using a resource as-is limits the compatibility between the resource and the teacher’s teaching style, the learning objectives and the needs of the students. Yet, results in this study show low use of these permissions to tailor OER content to the faculty member’s particular course. Redistribution was reported as the permission least frequently used. The lack of redistribution and sharing is contrary to the idea of openness. Conole’s (2013) principles of openness included collaboration and sharing, communicating about experiences, collectively

growing knowledge and innovation from use. By not sharing their remixes and experiences faculty are preventing others from benefiting from open education.

Theory of Planned Behavior components related to OER

The TPB posits that attitude, subjective norms and perceived behavioral control predict the intent to perform behaviors. This study used previously developed scales to empirically measure each of these variables.

Attitude – Previous studies tried to gauge faculty attitude toward OER based on the quality of the materials, the perceived impact on students, including learning outcomes, or the deterrents that influenced the use of OER. The current study of faculty already using OER examined attitudes of faculty toward OER as they relate to their role as practitioners, rather than faculty attitudes of how OER impacts student. The survey questions, adapted from Mishra et al.'s (2016) Attitude Towards Open Educational Resources (ATOER) Scale, did not measure attitude about the specific faculty behaviors included in the study, but rather, their overall attitude toward OER in the context of their teaching. However, it is likely that a positive association with OER for teaching predisposes the teacher to make use of OER in planning instruction and when engaging with students. Faculty in this study reported the positive benefits of OER as indicated by the high percentage agreeing or strongly agreeing that OER provided the opportunity to learn new things (84.3%) and build new partnerships (70.8%). Questions of quality likely influence attitude as 44.2% of respondents felt that OER provided access to the best materials and teachers. Overall the faculty in the study had a strong positive attitude toward OER and the benefits of their use on their pedagogy.

Subjective Norm –Subjective norms of colleagues play a role in influencing behavior because faculty trust colleagues who share similar attitudes toward teaching or teach similar

subjects (Baker, Hovey, & Gruning, 2015). Teachers' willingness to try new things is often dependent on institutional expectations and policies and the influence of role models. This study looked at groups of people - departmental peers, supervisors, and administrators - that potentially influence faculty behavior.

This study found that the respondents largely agree that those within their sphere of influence are supportive of OER use, particularly those within their department and in supervisory roles. The results also show that faculty using OER are not alone in their departments. Over 70% indicated that others in their department are also using OER. Despite previous research indicating that a top-down approach is less effective in encouraging OER adoption, this study finds that faculty using OER are at institutions that are supportive of their work (Harley, 2009). The use and support of others likely leads to a willingness to change behavior.

Perceived Behavioral Control – PBC, a person's perceived ability to perform a behavior, is similar to Bandura's construct of self-efficacy. Sandra Torres (2018) suggests that a teacher's perception of self-efficacy using OER can affect their open pedagogy.

In this study, several measures showed high self-efficacy that could relate to how faculty use OER in their courses. Faculty reported that they felt they had 'quite a bit' or 'a great deal of' ability in crafting good questions for students, providing alternative explanations or examples when students are confused, and can implement alternative teaching strategies in the classroom. This high level of self-efficacy should make it easier for faculty to incorporate more aspects of OER into their teaching. Previous research has found a positive correlation between teacher self-efficacy and their innovative behavior (Thurlings et al., 2015).

Faculty Behavior

In addition to investigating attitudes, norms, and self-efficacy as potential determinants of behavior, this study also examined specific OER-related teaching behaviors. The respondents in this study were all faculty that reported using OER in at least one course. The survey measured aspects of their behavior before, during and after teaching.

Faculty use of OER to prepare for instruction

The first research question asked how the attitudes, subjective norms, and perceived behavioral control relate to how faculty use OER in preparing to teach. A lot of the work of teaching is done before the faculty steps into the classroom. Teachers spend a great deal of time designing the instruction, staying current on the subject, determining what concepts to teach, and planning how they will communicate their knowledge.

Faculty can use OER in a number of ways outside of the classroom during the planning process. Faculty use of OER outside of the classroom may include "dark reuse" (Beaven, 2018) in which teachers may find resources online, from colleagues or from their personal collection. The questions in this survey tried to capture these types of reuse. Mostly the respondents use OER outside of the classroom to prepare for teaching, get new ideas and inspiration, and broaden the range of teaching methods. The open sharing of resources offers opportunities for faculty to interact. However, only 20% use OER to connect with teachers who have similar interests. Nine options were given as ways faculty could use OER in preparing to teach. Only 30% selected more than 5 of the options.

Faculty use of OER within a course

The second research question looked at how faculty are using OER when interacting with students within a course. OER enabled pedagogy, as defined by Wiley and Hilton (2018) are teaching and learning practices that are only possible or practical in the context of the 5R permissions that are characteristic of OER. Robinson, Fischer, Wiley, and Hilton (2014) argue that copyrighted materials, including textbooks, can lead to the deskilling of teachers. By relying on textbook publishers to provide ancillary products such as PowerPoint presentations, supplemental content and quiz banks, teachers no longer need to spend time on instructional design. Using OER enables educators to recapture some of the academic control which was perceived as lost when relying on costly textbooks and publisher-provided content. Faculty using OER have the ability to change how they teach by creating renewable assignments and being co-creators of knowledge with their students. While this study attempted to understand how faculty are currently using OER, as previously mentioned, most faculty only associated use as the replacement for costly textbooks. One respondent did say that they were writing an OER textbook with their students, which is helping the students engage more deeply with the material. Other than this response, there was little indication of pedagogical changes. This is consistent with Bliss et al.'s (2013) finding that changes in teaching practices were more likely the result of technology and not the result of the features of OER.

Reflective practices of faculty

The final research question asked OER users about how they reflected on their teaching. Schön (1987) explains that reflective practice through critical self-analysis provides individuals a way to thoughtfully consider their experiences and apply that knowledge for self-improvement. In Schön's model, there are two types of reflection. *Reflection in action* is when faculty can monitor their own actions during an experience and make changes and generate understanding

within the situation. *Reflection on action* is after the event, whereby faculty look back at their experience to generate new understanding and influence future behavior (Munby, 2012).

The questions from this study relate exclusively to reflection on action as each survey option asked about activities that take place outside of the classroom after the teaching experience was completed. Perceived behavioral control was found to be a significant factor in reflective practices. This is likely because the questions dealt exclusively with reflecting on events that happened in the context of teaching where the notion of self-efficacy is most apparent.

Previous research regarding the reflective practices of faculty using OER associated reflection with the redesign of the course. Reflection is likely to occur during the revising and remixing of content since faculty need to closely examine what and how they are teaching the new content.

Implications

TPB as a theoretical framework

This research study used the Theory of Planned Behavior as the theoretical framework with the intent to understand factors that influence faculty behavior associated with the use of OER. The results indicated that attitude, subjective norms and perceived behavioral control did influence behaviors, although the amount of variance explained was low for all behaviors. This model is not a good fit for predicting faculty behavior as it relates to OER because there are many other variables that impact faculty teaching habits. Some of these include a commitment to instruction, degree of interest in teaching and the amount of effort they want to devote to it (Blackburn & Lawrence, 1995). This study did include a number of demographic questions that may have an impact on teaching habits. In the TPB these are considered background factors and

thought to indirectly influence behavior and that they are moderated by the components of attitude, norms and behavioral control. However, it may be useful to take a closer look at these to see how they impact the components themselves.

The use of the TPB requires empirical measurements of each predictor and the behaviors in question. While the questions asked in this survey were from a previously used scale, they served as proxies for each construct and as such did not adequately fit together as the model intended. Different questions may be better able to measure the predictors in relation to the specific behaviors. Furthermore, qualitative research methods may be a more appropriate approach to understand the nuances of how faculty view their work.

Implications for practice

During the OpenEd18 conference, a panel of students from Santa Ana College shared their experiences using OER. They stressed that the quality of the OER experience depends on the professor and the effort put in to create a positive student OER experience. Mishra et al. (2016) found that a student's learning was moderated by the teacher's lack of experience with OER. Faculty are often left alone to develop their courses and assignments. A low percentage of respondents were using OER to prepare for instruction or as resources within the course other than as a traditional textbook substitute. This shows the need for greater awareness of how to capitalize on the permissions of OER. While training and support are offered in how to find and incorporate OER content there remains a need to become familiar with OER enabled pedagogy. More training is needed on how to take advantage of the 5Rs, either by contributing their work to repositories, sharing their practices, or by understanding how they can benefit from the openness of others. Baas, Admiraal and van den Berg (2019) in a study of faculty at a Dutch university concluded that teachers would like additional training on the pedagogical uses of OER and recommend including this in basic training and on the job support to take advantage of the 5R

characteristics. Part of the professional development can also include intentional reflective practices. Karunanayaka and Naidu (2018) developed a professional development program for faculty new to OER. Through the activities in the program, faculty experienced ways to interact with OER and used a structured framework by Rolfe, Freshwater, and Jasper (2001)for capturing reflections on the experience. In the United States groups are also creating programs to help faculty better use OER. One example is the Faculty Guild's Reflective Teaching Fellowship OER (*Reflective Teaching Fellowship,* n.d.). Future programs that support OER initiatives would benefit from working with centers of teaching and learning at the home institutions of the faculty involved.

Gaining greater awareness of the features of OER needs to extend beyond the faculty themselves to the instructional designers that help faculty develop their courses and integrate instructional technology (Ren, 2019). Instructional designers develop instructional materials and learning experiences based on learning and teaching theories (Kumar & Ritzhaupt, 2017) . One program that currently provides this type of training for instructional designers is the Open Education Group's Designing with OER (DOER) Fellows Program with the goal of increasing instructional designers' capacities to design effective and engaging learning experiences with OER (Designing with OER, 2020). Instructional designers working together with faculty can use OER to transform learning in higher education (Campbell et al., 2009).

The study also found that faculty are influenced by the subjective norms of others. For advocates trying to increase the number of faculty using OER the practice of finding champions on campuses to help increase usage is a good approach. Gaining support from administrators and department chairs, not just for adoption, but also for instructional innovation, will have the greatest impact.

Limitations

This study has a number of limitations related to data collection, methodology, and design. Data collection was done using a self-reporting survey distributed via the Internet. Fowler (2014) explains that self-reporting surveys can lead to errors because respondents may misunderstand the questions or select answers that make themselves look good. Dillman & Redline (2004) point out that one problem with a self-administered questionnaire is that the respondents may not understand what kind of answers were expected or in providing an answer to the questions as posed. While cognitive interviews were conducted, the written comments indicate that there was still confusion regarding use and cost savings. The survey was administered as an Internet survey with mostly closed-ended questions. Survey question answer options were mostly Likert scale and the options may be interpreted differently by respondents. For example, the answer option "somewhat agree" may represent different things to different subjects, and have its own meaning to each individual respondent. Another limitation of self-reporting surveys is social desirability bias (Grimm, 2010). For this study, faculty may want to select answers that demonstrate greater use and knowledge of OER.

Snowball and convenience sampling were used to recruit respondents. This approach created a bias towards OER users because of the way that participants were solicited. The sample does not include all faculty using OER and there is no way to know if the sample is representative of this population. Faculty who are not interested in sharing their OER experiences may have chosen not to participate thereby resulting in selection bias. All communication was done through email correspondence therefore if there was no email address

or faculty do not use it, they were not included. Based on these limitations the results of this study cannot be generalized to all faculty.

The final area of limitation relates to the research design. Each of the variables in this study is not directly measurable. Quantitative data was collected using questions as a proxy for behaviors. For example, findings in relation to the effect of OER use on teaching are based on educators' perceptions rather than actual measurements of changes in practice. This study did not look at the specific uses of OER for these faculty. While other qualitative studies have looked at specific assignments or teaching strategies, this study only looked at broad categories of uses (i.e. to supplement existing lessons, give learners self-study materials, engage students more fully in a topic).

Recommendations for future research

This was the first study to use TBP to understand faculty behavior with OER. Because of the minimal variance explained by each construct, this model may not be a good tool for understanding OER-related behaviors. Additional research is needed to understand how faculty interact with OER in order to see the impact that OER is having on teaching practices. This study used scales from other areas of social science to serve as proxy measures of educational behavior. While it is helpful to be able to compare responses with others using the OER Research Hub questions and other published instruments, the scales used for ATT, SN, and PBC could be refined. Future research using the TPB may want to look at the individual questions, in line with those suggested by Ajzen (2006), rather than creating or adapting existing scales, in order to better understand influences on specific behaviors.

This study clearly demonstrated the need for additional professional development around using the 5R permissions to improve both teaching and learning. Future research can look to the

scholarship of teaching and learning to draw on best practices for introducing new pedagogical practices. Additionally, as more states issue OER requirements additional research should look at how the programs support the faculty beyond just identifying and delivering content and then measure the changes that faculty are making to the way they approach teaching. Another area of research that could contribute to understanding faculty use of OER is getting the student perspective. Studies have looked at faculty perspectives of student interactions with OER but not what students think about how faculty use has impacted their learning.

Conclusion

The purpose of this study was to understand the factors that lead faculty to use OER and to learn how their use is related to teaching behaviors. It is broadly based on an OER Research Hub hypothesis that the use of OER leads to critical reflection by the educator with evidence of improvement in their practices. Within that hypothesis is the suggestion that the use of OER causes faculty to incorporate a wider range of content, consider different teaching approaches and reflect on their practices as an educator. In this study, the components of this hypothesis are dissected by directly measuring faculty teaching and reflective practices and using the components of the Theory of Planned Behavior to explain factors that contributed to the behavior.

Faculty are hearing the message that OER has the potential to save students money, providing them greater access to education and ultimately contributing to student success. Faculty are using OER in greater numbers than ever before, whether that is because of governmental or administrative mandates, or out of concerns for their students. OER advocates no longer need to emphasize this aspect and instead can focus on how these resources can lead to open pedagogies and OER enabled practices. Faculty have positive attitudes towards OER and

have support at their institutions. The next step is to increase their self-efficacy with incorporating OER into the way they approach their teaching.

OER may be able to change teaching practice but it will only be through a concerted focused effort on addressing pedagogical questions. Through professional development and incorporating research from the scholarship of teaching and learning that demonstrates OEP with the use of OER faculty can capitalize on the agency they have as practitioners.

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APPENDICES

Appendix A

Dissertation Instrument

Start of Block: Default Question Block

YOUR INPUT IS IMPORTANT!

Thank you for helping us understand faculty use of open educational resources (OER).

Description: The purpose of this research project is to understand how teaching faculty engage with OER and the factors that influence their use.
Cost and Payments: It will take you approximately ten minutes to complete this survey.
Risks and Benefits: There are no anticipated risks to you from participating in the study. Your responses may help develop strategies for increasing faculty use of OER.
Confidentiality: All information in the study will be collected from you anonymously: it will not be possible for anyone, even the researchers, to associate you with your responses.
Right to Withdraw: You do not have to take part in this study and you may stop participation at any time. If you start the study and decide that you do not want to finish, all you have to do is to exit the survey.
IRB Approval: This study has been reviewed by The University of Mississippi's Institutional Review Board (IRB). If you have any questions, concerns, or reports regarding your rights as a participant of research, please contact the IRB at (662) 915-7482 or irb@olemiss.edu.

I have read and understand the above information. By completing the survey I consent to participate in the study.

I am over 18 years of age.

- Yes
- No

Skip To: End of Survey If I am over 18 years of age. = No

What is your role in selecting the required materials for your course(s)?

- I am solely responsible for the selection (1)
- I lead a committee/group that makes the selection (2)
- I am a member of a committee/group that makes the selection (3)
- I influence the selection, but do not have decision-making power (4)
- Others make the selection, I have no role (5)
- Other (6) _____

OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

How aware are you of Open Educational Resources (OER)? [Select one answer]

- I am not aware of OER (1)
- I have heard of OER, but don't know much about them (2)
- I am somewhat aware of OER but I am not sure how they can be used (3)
- I am aware of OER and some of their use cases (4)
- I am very aware of OER and know how they can be used in the classroom (5)

Skip To: Q18 If How aware are you of Open Educational Resources (OER)? [Select one answer] = I am not aware of OER

OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

Please indicate your level of agreement with each of the following statements.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I believe OER is "good" for people as it improves their learning. (1)					
OER gives me opportunities to learn new things. (2)					
OER caters to the innate desire to learn, improve and progress. (3)					
OER improves professional image. (4)					
OER provides access to the best materials and teachers. (5)					
OER provides me with opportunities for establishing new partnerships (6)					

OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

Have you used, or intend to use, Open Educational Resources in any of the following ways for any of your courses? [Select all that apply]

- ☐ Have used in previous academic years (1)
- ☐ Using in the current academic year (2)
- ☐ Intend to use during the next academic year (6)
- ☐ Intend to use sometime in the future (7)
- ☐ Not used (3)
- ☐ Don't Know (4)
- ☐ Other (open ended response) (5) _____

Skip To: Q14 If Have you used, or intend to use, Open Educational Resources in any of the following ways for any... = Not used
Skip To: Q14 If Have you used, or intend to use, Open Educational Resources in any of the following ways for any... = Don't Know
Skip To: Q14 If Have you used, or intend to use, Open Educational Resources in any of the following ways for any... = Other (open ended response)

OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

For which of the following purposes have you used, or intend to use, open educational resources in your teaching practices? [Select all that apply]

- ☐ To prepare for my teaching/training (1)
- ☐ To get new ideas and inspiration. (2)
- ☐ To compare them with my own teaching/training materials in order to assess the quality of my materials (8)
- ☐ To broaden the range of my teaching methods (9)
- ☐ To make my teaching more culturally diverse or responsive (11)
- ☐ To enhance my professional development (12)
- ☐ To stay up-to-date in a subject or topic area (13)
- ☐ To learn about a new topic (14)
- ☐ To connect with teachers or learners who have similar interests (e.g. by reading comments they have posted about resources) (16)
- ☐ Other (please specify). (18) _____

OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

For which of the following purposes have you used, or intend to use, open educational resources in your course? [Select all that apply]

- To supplement my existing lessons or coursework (3)
- As 'assets' (e.g. images or text extracts) within a classroom lesson (4)
- To give to learners as compulsory self-study materials (5)
- To give to learners as optional self-study materials (6)
- To provide e-learning materials to online learners. (7)
- To broaden the range of resources available to my learners (10)
- To engage my students more fully in a topic area (15)
- To interest hard-to-engage learners (17)
- Other (please specify). (18) _____

OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

When using OER have you engaged in, or intend to engage in, any of the following activities?

	Yes	No
Reuse – Use content created by others without any modification (1)		
Retain – Download, duplicate, store and manage content created by others (2)		
Revise – Adapt, adjust, alter or modify the content (3)		
Remix – combine the original or revised content with other material to create something new (4)		
Redistribute – share copies of the original content, your revisions or your remixes with others (5)		

OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

Please indicate your level of agreement with each of the following statements.

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
People who influence my behavior think that I should use OER. (1)					
People who are important to me think that I should use OER. (2)					
Other faculty in my department use OER. (3)					
University administrators have been helpful in the use of OER (4)					
My supervisor is very supportive of the use of OER. (5)					
In general, the organization has supported the use of OER. (6)					

OER is defined as "teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others." Unlike traditionally copyrighted material, these resources are available for "open" use, which means users can edit, modify, customize, and share them.

To what extent do you feel that the following are deterrents to the adoption of Open Educational Resources in your courses?

	Strongly Agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
Too difficult to find what I need (1)					
No comprehensive catalog of resources (2)					
Not enough resources for my subject area (3)					
No available ancillary resources (4)					
Unprofessional appearance (5)					
Not current, up-to-date (6)					
Not relevant to my local context (7)					
Not knowing if I have permission to use or change (8)					
Lack of support from my institution (9)					
Lack of support from the department committee (10)					
Too difficult to change or edit (11)					
Too difficult to integrate into technology I use (12)					
Not used by other faculty I know (13)					
Not high-quality (14)					
Other (15)					

Please indicate your opinion about each of the questions below.

	None At All	Very Little	Some Degree	Quite A Bit	A Great Deal
How much can you do to motivate students who show low interest in school work? (1)					
How much can you do to help your students value learning? (2)					
To what extent can you craft good questions for your students? (3)					
How much can you do to get students to believe they can do well in school work? (4)					
To what extent can you use a variety of assessment strategies? (5)					
To what extent can you provide an alternative explanation or example when students are confused? (6)					
How well can you implement alternative teaching strategies in your classroom? (7)					

Please select the option that best describes your teaching practices.

	Never	Rarely	Sometimes	Often	Always
I have a teaching portfolio or file where I keep accounts of my teaching for reviewing purposes. (1)					
I talk about my classroom experiences with my colleagues and seek their advice /feedback. (2)					
After each lesson, I write about the accomplishments and/or failures of that lesson or I talk about the lesson to a colleague. (3)					
I discuss practical/theoretical issues with my colleagues. (4)					
I ask my peers to observe my teaching and comment on my teaching performance. (5)					
I observe other teachers' classrooms to learn about their efficient practices. (6)					

In which subject area(s) do you teach? [Select all that apply]

- Applied science, technology, engineering
- Economics, Business & Management
- Education
- Health/Medicine
- Humanities
- Life Science
- Medicine
- Physical Science
- Social Science
- Other (please specify) _____

What type of institution do you teach for?

- 2-Year
- 4-Year
- Other

Teaching status

- Part-time
- Full-time

Tenure status

- Tenured
- Tenure track, not tenured
- Not tenure track

In which state do you currently teach?

▼ Alabama... I do not teach in the United States

What is your gender?

- Female
- Male
- Prefer not to say
- Prefer to self-describe _____

Age

- Under 35
- 35-44
- 45-54
- 55+

Thank you for completing this survey.

Would you like to be entered into a drawing for a chance to win one of four $50 Amazon gift cards?

- Yes
- No

End of Block: Default Question Block

Appendix B

IRB Approval

irb@olemiss.edu

Wed 6/19, 11:54 AM

PI:

This is to inform you that your application to conduct research with human participants, "Faculty Use of Open Educational Resources: Attitudes, Norms, and Self-efficacy as Behavioral Predictors" (Protocol #19x-318), has been approved as Exempt under 45 CFR 46.101(b)(#2).

Please remember that all of The University of Mississippi's human participant research activities, regardless of whether the research is subject to federal regulations, must be guided by the ethical principles in The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research.

It is especially important for you to keep these points in mind:

- You must protect the rights and welfare of human research participants.
- Any changes to your approved protocol must be reviewed and approved before initiating those changes.
- You must report promptly to the IRB any injuries or other unanticipated problems involving risks to participants or others.
- If research is to be conducted during class, the PI must email the instructor and ask if they wish to see the protocol materials (surveys, interview questions, etc) prior to research beginning.

If you have any questions, please feel free to contact the IRB at irb@olemiss.edu.

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REMINDER: YOU CANNOT HAVE CONTACT WITH RESEARCH SUBJECTS UNTIL YOU RECEIVE THE FORMAL IRB PROTOCOL APPROVAL LETTER OR EMAIL

Appendix C

Recruitment Letters

Snowball Sample Recruitment Email

Hello OER Champions. I am writing my dissertation on faculty use of open educational resources and am at the data collection phase of the research process. I know that you work with faculty who have an interest in OER and I'm hoping you can help me recruit participants to take my survey. It should only take 10 minutes, and respondents get a chance to win an Amazon gift card. This research has been approved by the University of Mississippi IRB. Your help is entirely optional. In the spirit of open, everything published with this data will have a CC-BY license and the dataset will also be openly licensed.

If you are willing to help, can you please share the information below with your colleagues? I'm happy to answer any questions and can be reached at jttipton@olemiss.edu, or 662-915-2340.

Thank you.

Jocelyn

Recruitment Letter

I am a doctoral student at the University of Mississippi in the Higher Education Department. I am conducting research for my dissertation entitled: Faculty Use of OER: Attitudes, Norms, and Self-efficacy as Behavioral Predictors. The intention is to better understand how faculty use Open Educational Resources, and I am inviting you to participate because of your use or interest in OER. I am working with two faculty advisors, Dr. Neal Hutchens, Department of Higher Education and Dr. Marie Barnard, Pharmacy Administration.

Participation in this research involves taking a survey about your teaching practices and how you use OER, which will take approximately 10 minutes. After completing the survey you will have the opportunity to be entered into a drawing for one of four $50 Amazon gift cards.

Please click the link below to go to the survey Web site (or copy and paste the link into your Internet browser)
http://uofmississippi.qualtrics.com/jfe/form/SV_eXIyzkvcOTPwQlf

Participation is completely voluntary and you may withdraw from the study at any time. The study is completely anonymous; therefore, it does not require you to provide your name or any other identifying information.

If you have any questions about this research, I can be reached at *662-915-2340* or *jttipton@olemiss.edu*.

Thank you for your time and participation.

Sincerely,

Jocelyn Tipton
Doctoral Student
University of Mississippi

Appendix D

Written responses to survey questions

What is your role in selecting the required materials for your course(s)? Other.

- But our group includes a wide range of materials that I have the ultimate choice over
- Depends on the class. For the class with OER I made the selection.
- Dept selects text. I select other materials.
- For the info lit course it is decided for us, but when I teach composition I choose my materials.
- I also choose for all sections of General Psychology (program coordinator)
- I also have discretion within the context of my class
- I am a Program Coordinator, and I can mandate textbooks for the instructors who work for me.
- I can make selection for some and others are decided as a team
- I do not teach a course. Rather I help publish OERs and help others adopt them.
- I make the selection, but it must be endorsed by three others from my department before it can be adopted
- I produce the oer material
- I'm an instructional designer; I support faculty in their selection and use of OER
- In one course, I selected the material, in another it is already selected for me.
- Instructional designer, making recommendation and providing support for OER resources
- It's course dependent. I make all decisions for some courses and not for others.

- my department coordinates to minimize the financial burden to the student among related courses
- Sometimes I disregard committee selections and make my own.
- Upper level - sole responsibility, lower committee chooses a selection of books to choose from
- varies over these choices depending on the course
- When using OER materials, I can choose solely, but if I use materials for cost I do not have decision-making power.

To what extent do you feel that the following are deterrents to the adoption of Open Educational Resources in your courses? Other.

- Faculty members who work for publishers work to derail OER adoption
- I would guess that some faculty don't know about it or are unwilling to make a switch to an e-book.
- Images and assessments are lesser quality
- Lack of awareness about OER
- lack of test bank and other supplements
- Limited broadband in this rural area presents a barrier for some students
- more high quality OER texts need to be written
- My own learning curve!
- No LMS system or homework problems
- Not available for ALL topics or subjects, and some hesitation that some students may not want all online resources but prefer print

- OER textbooks are not as good as traditional published texts
- Producing OER resources is not valued the same for merit and tenure review. Time spent customizing an oer text means I’m not writing my own traditionally copyright text that will be valued during review.
- Stalwarts in other disciplines at my institution that do not support the use of OER.
- Teachers who choose not to use it just don't like change.
- Telling student to just buy the access key is so much easier
- tends to be a pulling of material from textbooks, not original
- The most difficult aspect has been,addressed above. I can usually contact someone for permission to use the materials I locate, however not all materials have that option and cannot be used. Some of these resources seem strong so I wish there was a catelog as mentioned previously.
- TIME & ENERGY TO FIND & INTEGRATE
- time required
- Too time consuming to curate and adopt, much less create
- Unpaid Labor

Have you used, or intend to use, Open Educational Resources in any of the following ways for any of your courses? Other.

- Currently supporting faculty in using OER
- Developed OER course materials
- happily using public domain texts since 1999 :-)
- Have authored or co-authored three OER textbooks.

- Have created OER resources for others that are in use
- I am considering discontinuing use of my current OER because I’m not happy with the quality.
- I am currently working with another professor in hopes of gathering student-generated content to incorporate into an OER.
- I am writing an OER textbook now for piloting this year
- I have a traditional textbook and wrote an OER lab manual for my class
- I never intend to assign a commercial textbook ever again. :)
- I plan to begin teaching on the graduate level in a couple of years.
- I use them exclusively in some courses and not in others.
- I wrote an Intro Psych OER from which I and others teach widely.
- I'm an OER author
- No longer teaching.
- Not teaching at the moment but in law school and taking an OER course. So have used, am using (as a student), intend to use in the future when I'm teaching again.
- OER is the entire content of my course, enhanced by personal thoughts and reactions.
- Others are using my oer materials
- retiring this year
- there is little to nothing available in my field
- tried to use but could not find source specific to my field
- Using outside of traditional classroom context such as corporate training and professional development

For which of the following purposes have you used, or intend to use, open educational resources in your teaching practices? Other.

- affordable
- all resources I use are OER, there is no reason ever to use other materials
- As a cost effective practice for students.
- As resources for my students
- because writing them myself was better quality than available materials
- Better accessibility for my students
- cost savings for students
- course content
- Course Materials
- Created a textbook that covered what I had been covering, but free to students
- created by colleagues
- creating with doctoral students
- Cut costs to students
- Financial Reasons for students benefit
- Have not used to inform teaching practices
- Help students afford to be in college; help retention of students
- I develop my own materials
- I use an open source textbook because it's free and reasonably good. A standard textbook would cost >$100
- I use my own OER in the classroom
- I use OER to cut the cost of course materials

- I use OER to reduce education costs for students
- I use them as a free resource for my students
- I'm not sure I understand these options: I've just used OER as the primary educational resources in my classes, rather than commercial non-OER, because of the impact of price on my students and the impact of the 5Rs on my academic freedom to teach how I want.
- in place of a textbook
- none of the above
- None of the above
- Provide no cost, high quality materials to students
- reduce cost of materials to students
- reduce student spending on textbooks
- Reduce the cost of student education
- Reducing cost of materials for students.
- remove cost of textbook
- Save my students money.
- Save students money
- Social justice is the most important reason
- There is a BIG push in Oregon to use OER to save students money. This is my primary reason for the creation and use of OER materials.
- To allow students in financial difficulties to access otherwise very expensive materials
- To eliminate textbook costs in my courses and to make an e-book that is 100% relevant to the content.
- To enhance student learning and achievement

- To enhance the learning experience in my classrooms
- To facilitate access to course content by low income students.
- to give students access to free textbooks and resources
- To give students an affordable (free) textbook that is curated to our class.
- to guarantee student access to materials
- to improve student engagement in my courses
- To make it cheaper for students
- To make material more accessible to students
- To make materials affordable for students
- To make materials available to students for college education who would otherwise not be able to afford them
- To make materials more easily accessible to students.
- To make my assigned readings more affordable
- To provide a low-cost alternative to students
- To provide a service to students by decreasing their financial load
- to provide an additional resource for my students
- To provide cost free materials for my students
- To provide free materials to my students (why isn't that on the list?)
- To provide lower cost courses
- To provide my students will low-cost options
- To provide my students with free learning materials
- to provide open access materials for my students' learning
- to provide students with affordable course materials

- To provide students with free alternatives to traditional, much more costly, textbooks, especially in core level courses
- to provide students with no-cost textbooks
- To reduce costs for my students
- To reduce costs for students
- to reduce student cost
- To reduce student cost
- to save my students money
- To save my students money
- to save students money
- To save students money
- To save students money for rent, food, childcare, etc. (this is far and away the most important purpose of OER in my teaching practice)
- To save students money on materials costs.
- To train teachers
- Used an OER text in a course

For which of the following purposes have you used, or intend to use, open educational resources in your course? Other.

- Again, weird question. I used them as the primary educational resources to support my classes.
- As a primary text in my class
- as a primary textbook

- As primary course textbook
- As primary source materials and as course projects (i.e., OEP)
- As the main. Materials for two classes, to save students money vs the cost of regular textbooks
- as the primary textbook
- As the primary textbook for a class
- Better fit ADA accomodations
- cost
- cost - no charge for students
- course text
- fully replacing required commercial textbook
- I am writing an OER textbook with my students. By writing and editing content, they are engaging more deeply with the material than ever before.
- I use OER textbook as THE main text for my core-level history survey. I also use OER materials as supplements for upper-level and graduate courses
- Low cost alternative to conventional text
- Lower costs for students.
- Main class textbook
- more accessible and affordable for students
- Primary teaching resource in lieu of textbook
- reduce class costs to students
- reduce student expenses on course materials
- save them money

- Saves students money and makes state officials happy.
- textbook alternative
- THe main course text for my blended courses
- To avoid students withdrawing from the class since they cannot afford required texts or other materials
- To disseminate knowledge to stakeholders (e.g., parents) in clinical work.
- To fully replace my textbook
- To give students access to the text from day one at no cost to them.
- To give students cost-free resources
- to give students no-cost textbook
- To give them free resources instead of paid ones
- to provide affordable course materials to students
- To provide low/no cost materials to students.
- To provide students with an affordable option
- to reduce textbook cost
- To reduce the cost of books/resources
- to replace a textbook
- to save my students money
- To save my students money
- To save students money
- to save students money on the high cost of textbooks
- To say students money and create equity for all learners
- To use exclusively in my courses

In which subject area(s) do you teach? [Select all that apply] Other.

- Agriculture
- Art
- Asian Studies
- ASL-English Interpreting
- Chemistry
- Communication
- Communication Studies
- Computer Science
- criminal justice
- Dev Ed
- Do not currently teach
- early childhood education
- English
- English as a Second Language
- ESL
- Film Production
- GED
- General Education
- GIS and Geography
- Honors
- I *work with* faculty in all these areas. I've personally taught IT, critical thinking, and education courses

- I'm in humanities but my students are in Applied sciences, Accountancy, and Education.
- Information Science
- Interdisciplinary environmental issues
- interdisciplinary environmental studies
- Kinesiology
- Language (Spanish)
- language learning
- law
- Law
- Library Science
- Math
- mathematics
- Mathematics
- Mathematics (strange that math is missing!)
- Mathematics and Statistics
- mathematics, statistics
- Mathematics; I couldn't tell if you intend it to be part of the first option
- Multimedia Design
- Music
- Music, performing arts
- Psychology
- public health
- Retailing/Business

- Special Education
- Sport Management
- Student Success
- sustainability
- Technical Communication
- World Languages

Vita
Jocelyn Tipton

Education

University of Mississippi
Ph.D. in Higher Education, anticipated completion 2020
Graduate Certificate in Program Evaluation, 2017

Eastern Illinois University, Charleston, Illinois
M.A. in Political Science, 2002

University of Maryland, College Park, Maryland
M.L.S., 1993

McDaniel College (formerly Western Maryland College), Westminster, MD
B.A. in Political Science and Secondary Education, 1990

Employment History

University of Mississippi, University of Mississippi Libraries, University, Mississippi

- Assistant Dean for Public Services, June 2013 – present

Eastern Illinois University, Booth Library, Charleston, Illinois

- Head, Reference Services 2010 – 2013, sabbatical replacement 2008
- Reference and Collection Development Faculty 2000 - 2010

Yale University, Social Science Libraries & Information Services (SSLLIS), New Haven, Connecticut

- Data and Electronic Services Librarian, Social Science Library 1997 – 2000
- Assistant Documents Librarian, Government Documents & Information Center 1994 – 1997

Johns Hopkins University, Milton S. Eisenhower Library, Baltimore, Maryland

- Librarian, Government Publications/Maps/Law Department 1993 – 1994
- Processing Supervisor, Government Publications/Maps/Law Department 1990 – 1993

Teaching Experience

Assistant Professor, Eastern Illinois University, Political Science Department, Charleston, Illinois,

- PLS 1153G - American Government and Constitution. - Spring 2006, Fall 2006, Fall 2007
- PLS 2253G - Introduction to International Relations - Fall 2004 – Fall 2005, Spring 2007, Spring 2008 - Spring 2011

Adjunct, University of Illinois Urbana-Champaign, Graduate School of Library and Information Science, LEEP

- LIS523LE - Information Sources and Services in the Social Sciences - Fall 2009, Fall 2010

SERVICE AT UNIVERSITY OF MISSISSIPPI

University Service

- QEP Advisory Board, 2019 -2020
- Flagship Constellation Review Committee, 2017
- Search Committee, University Provost, 2017
- Search Committee, Vice Chancellor for Diversity and Community Engagement, 2016
- Search Committee, Dean, University Libraries, 2015-2016
- University Assessment Committee, 2015- 2020t
- Graduate Council, 2016-2017
- Council on Community Engagement, 2013-2020

Department Service to J.D. Williams Library

- Chair, Search Committee for Diversity Resident Librarian, 2019
- Managers Committee, 2013-2020t
- Resource Managers Committee, 2013-2020
- Emergency Planning and Preservation Committee, Chairperson 2013-2018t
- Library Assessment Committee, 2013-2019

SERVICE AT EASTERN ILLINOIS UNIVERSITY

University Service

- Eastern Illinois University Strategic Planning Steering Committee, 2011 - 2013
- Eastern Reads Planning Committee, 2006-2013
- Social Issues Discussion Committee, 2009 - 2013
- Minority Affairs Advisory Committee, 2006-2013
- Faculty Development Advisory Committee, 2007-2011
- Faculty Development Grant Subcommittee, 2007-2011
- Council for University Planning and Budget, 2003-2009
- Academic Affairs Subcommittee, 2007-2009
- Asian Heritage Month Planning Committee 2006-2009
- Achievement and Contribution Award Committee, 2006

- University Mission Statement Review Committee, 2006
- University Professionals of Illinois, EIU Chapter
- House of Delegates, 2003-2006
- Web Master, 2002-2003
- EIU Writing Competency Exam Scorer, 2000-2003

Department Service to Booth Library

- Public Services Committee, Chairperson 2010-2013, Member, 2005-2009
- Library Services Council, Member, 2010-2013
- Collection Development Committee, Member, 2000-2013
- Web Committee, Member, 2000 - 2013
- Programming Committee, Member 2006-2013
- Search Committee for Science Librarian, Chairperson, 2010
- Search Committee for Institutional Repository Librarian, 2010
- Homecoming Parade, Library Coordinator, 2005-2010
- Departmental Personnel Committee, Chairperson, 2007-2008, Committee Member 2005-2008
- Booth Library Building and Signage Committee, Chairperson, 2006-2009
- National Library Week Committee, Chairperson, 2001-2008, Committee Member, 2009-2010
- Pantherpalooza, library participant, 2005-2008
- Panther Fairs for incoming students, library participant, Summer 2008 - 2013
- Student Move-In Day, library participant, Fall 2007 - 2013

PROFESSIONAL PARTICIPATION

- ACRL, New Roles Changing Landscape Committee, 2018-2022
- ACRL, Standards for Libraries in Higher Education Review Task Force, 2016-2017
- ASERL, New Metrics Task Force, 2016-2017
- Team Leader – ACRL – Assessment In Action – 2014-2015
- Mentor for Synergy: Illinois Library Leadership Initiative, 2010
- Illinois Association of College and Research Libraries
  - President 2007-2008
  - Conference Planning Committee Chairperson, 2007-2008
  - Vice-President/President Elect 2006-2007
- Illinois Library Association
  - Executive Board 2006-2009
  - Government Document Roundtable Forum Manager, 2005 – 2006
  - Membership Committee, 2005-2006, 2008-2009
  - ILA Reporter Advisory Board, 2004-2006
  - Conference Co-Chair, 2004
- Illinois Library Day
  - Planning Committee Member 2006-2008
  - Attended Library Day Activities, April 2008

- National Library Day
  Delegate representing Illinois
- Thinking Outside The Borders National Library Leadership Program Participant 2006
- Lincoln Trail Libraries System Strategic Planning Committee 2005-2006
  Grant reviewer for the Illinois State Library, Library Services and Technology Act Grants, grants ranged from $50,000 – 250,000, 2005, and 2008
- Synergy: Illinois Library Leadership Initiative. Chosen as a participant through a competitive statewide selection process, 2003
- Association of Public Data Users
  Editor of journal "Of Significance…" 2002-2003
  Board of Directors, 2000 – 2003
  Conference Co-Chair, 2000 – 2001
  University Representative, 1997 – 1999
- Illinois State Library Government Depository Council 2003-2009, 2011-2013
- Subcommittee of Public Outreach of the Illinois State Library Government Depository Coordinating Council, 2002-2003
- User Interface/User Needs Advisory Group for the National Historical Geographic Information System (NHGIS) grant project funded by National Science Foundation.
- International Association of Social Science Information Services and Technology (IASSIST),
  1998 Annual Conference Co-Chair,
  1999 Annual Conference – Panelist
  2000 Annual Conference – Program Committee member and Poster Session Chair
- American Library Association
  Government Documents Round Table
  Member of the Government Information Technology Committee, 1995 – 1997
  Ad Hoc Committee on the Continuing Education Fund – Chair, 1996 – 1997

PRESENTATIONS

- "Championing open educational resources to open access users." Open Ed Conference, October 11, 2018
- "Open education from A-Z-degree: A collaborative Approach to advancing open education in Mississippi higher education." ACRL-Mississippi Chapter, Summer Meeting, July 26, 2018
- "Z-degree Mississippi" ASERL OER-Roundup, March 2018
- "A new kind of academic freedom: Library-led initiatives to promote adoption of open educational resources." MLA Annual Conference, October 18, 2017
- "OER and Curation" #GoOpen Regional Summit – U.S. Department of Education, Columbus, MS, February 23, 2017
- "Student Outcomes Using Free Alternative Textbooks" Poster Session presented at ALA, Annual Conference, June 2015
- "Discover Government Provided Health Resources" Health Science Librarians of Illinois Conference, November 2, 2012

- "E-Government Resources for Your Patrons" Reaching Forward South Conference, September 21, 2012
- "Connecting the campus and community through library programs." Illinois Association of College and Research Libraries Conference, March 16, 2012
- "What can .gov do for you and your patrons? On the Front Lines Conference, March 13, 2012
- "What can .gov do for you?" presenter, Lincoln Trail Libraries System, April 14, 2011
- "Transforming K-12 Students Today into College Students Tomorrow" poster presentation, Illinois Library Association Annual Conference, October 8, 2009
- "Advancing Excellence & Promoting Diversity" Panel member, August 18, 2009
- "Academic freedom in the age of information technology and the industrial model of education" Panel member, March 9, 2009
- "Find Information Fast" workshop given to Booth Library employees, January 7, 2009
- "The Thesis and the Graduate Student" given at Eastern Illinois University, October 20, 2008
- "Academic Integrity and the College Student" speaker, with Ann Brownson and Elaine Fetyko Page, Illinois Library Association Annual Conference, September 25, 2008
- "Academic Freedom in Libraries and on Campuses" speaker, Illinois Library Association Annual Conference, September 24, 2008
- "Passport to the World @ Booth Library" poster presentation, Illinois Library Association Annual Conference, October 11, 2007
- Academic Librarian Luncheon, Speaker, Alliance Library System, Galesburg, IL September 26, 2007
- "Every Library a Depository?" moderator and discussant, Illinois Library Association 2006 Annual Conference, October 2006
- "Looking for Fiction in All the Right/Wrong Places" poster presentation, Illinois Library Association 2006 Annual Conference, October 2006
- Camtasia Software Training, For the Consortium of Research and Academic Libraries of Illinois, Eastern Illinois University, Charleston, December 13, 2005
- Camtasia Software Training, For the Consortium of Research and Academic Libraries of Illinois, Southern Illinois University, Edwardsville, December 2, 2005
- "Beyond the Statistical Abstract: Doing More with Government Data." Illinois Library Association 2005 Annual Conference, October 2005.
- "History of Illinois Libraries: Preparing an exhibit." Shawnee Library System, February 11, 2005
- "Making the Most of Government Information." Illinois Library Association 2004 Annual Conference, Chicago, IL, September 2004.
- "Roadmap to Government Information." Illinois Library Association Government Documents Roundtable Workshop, Springfield, IL, May 2004.
- "If you offer it will they come? Building Town-Gown Relations." Illinois Association of College and Research Libraries Conference, Oak Brook, IL, April 2004.
- "Framing the Media War: Government Strategies Used During the Kosovo Conflict." Poster Session presented at the EIU Graduate Student Expo, April 2003.
- "Italy's Framing Strategies During the Kosovo Conflict." International Studies Association Midwest, St. Louis, MO, November 1, 2002.
- "Italy's Framing Strategies During the Kosovo Conflict." Political Science Colloquium, Eastern Illinois University, Charleston, IL, October 16, 2002.

- "Digital Government Resources." Stockman Institute Ninth Annual Conference, Charleston, IL, October 11, 2002.
- "Data and Statistics: Understanding the Basics." Government Documents Roundtable of Ohio Annual Conference, Columbus, OH, May 3, 2002.
- "Using Intranets to Share Collection Management Information." Illinois Association of College and Research Libraries, Oakbrook, IL, April 2002.
- "Census 2000 Data Products: Concepts and Use." Workshop presented at the Annual Association of Public Data Users, October 2001.
- "What's New in Reference Services?" Panel discussion at the Rolling Prairies Library System Seminar. Presented a talk on how reference services for government information have changed. March 2001.
- "Introduction to Basic Data Concepts and Statistical Literacy." Association of Public Data User Workshop "Using Public Data In Libraries." APDU Annual Conference, October 2000.
- "Creating a Data Service: Where Do You Start?" International Association of Social Science Information Services and Technology Workshop at Annual Conference, June 2000.
- "Data in Libraries: Collections and Access." ALA Annual Conference for the American Library Association/Association of College & Research Libraries, Anthropology and Sociology Section, July 2000.
- "Making Things Add Up for the End-User: Issues in Statistical Literacy." Plenary Session. Association of Public Data Users Annual Conference, October 1999.
- "Data Librarianship: Evolution or Extinction?" Conference Paper. International Association of Social Science Information Services and Technology Annual Conference, May 1999.

PUBLICATIONS

- "Mueller v. Allen" in Encyclopedia of the U.S. Constitution, edited by David Shultz, Facts on File. 2008
- "Government Statistical Data: Changes Impacting Access and Service." In Changing Face of Government Information: Providing Access in the Twenty-First Century, edited by Suhasini L. Kumar, Haworth Press: 2006
- "Government Statistical Data: Changes Impacting Access and Service." The Reference Librarian 45(94), Spring 2006
- Review of Alliance Politics and NATO's War: Allied Force or Forced Allies? in National Security Studies Quarterly, 8(1), Winter 2002
- "Statistical Literacy: A Selected Annotated Bibliography." Of Significance. 1(1), 1999
- Review of StatBase Locator on Disk in the Journal of Government Information, 22(3), 1995
- Review of National Security Archive Index on CD-ROM, in the Journal of Government Information, 22(5), 1995
- Review of Naked in Cyberspace: How to Find Personal Information Online, in the Journal of Government Information, 25(2), 1998

GRANTS AWARDED

- 2011 American Library Association /National Endowment for the Humanities grant for Civil War Sesquicentennial National Traveling Exhibition: "Lincoln: The Constitution and the Civil War" August 2011, $700
- 2007 Grant awarded for "JASC Tsukasa Taiko Event" by the Illinois Arts Council, April 2007, $800
- 2007 Carnegie-Whitney Award, $4800 – "Constitutional Resources for College Libraries"
- 2005 Library Services and Technology Act Grant – "Reaching Out to Increase Public Access to Government Information."
- 2004 Redden Grant for the purchase of materials for creating library exhibits.
- 2003 Redden Grant for the purchase of streaming video software and hardware to produce on-line bibliographic instruction sessions.
- 2002 Library Services and Technology Act Grant to purchase a government documents workstation.
- 2001 Redden Grant for the purchase of a scanner to provide library materials for distance education students.

HONORS AND AWARDS

- 2013 Alumni of the Year, Political Science Department, Eastern Illinois University
- 2008 Eastern Illinois University Achievement and Contribution Award - Service
- 2004 Eastern Illinois University Achievement and Contribution Award - Balanced
- 2004 Eastern Illinois University's Distinguished Master's Thesis Award
- 2003 Booth Library Summer Research Award to research community use of academic libraries
- 2003 Distinguished Graduate Student Award for Political Science
- 2002 Williams Travel Award
- 2002 Booth Library Summer Research Award to research framing strategies used during the Kosovo conflict