

A BASELINE STUDY OF THE IMPACT OF FACULTY AWARENESS OF OPEN  
EDUCATIONAL RESOURCES ON FACULTY PERCEPTION OF OPEN  
EDUCATIONAL RESOURCES

by

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## DEDICATION

First and foremost, I would like to dedicate this to the individual without whom this accomplishment would not have been realized: myself. This is not a self-absorbed pat on the back but is instead an open acknowledgement that imposter syndrome is a real thing for many and is also something that can be overcome by removing the negative self-talk and self-doubt from the equation. There have been numerous key contributors across this journey to whom I owe a special debt of gratitude. To my loving wife, Melanie, thank you for always pushing me to be the best version of myself and for your advice, patience, and faith in me; now that we have both received our terminal degrees, we have quite a few vacations and anniversaries to catch up on. To my children, Alex and Madison, thank you for putting up with the limited family time while I was chasing my dream and for never knowingly making me feel guilty about it; I hope being part of my journey inspires you to always chase your dreams and believe in yourselves as much as your mom and I believe in you. Finally, to my mom and dad, thank you for believing in me from the beginning, even when I was too blinded by life's events to always believe in myself; your steadfast love and encouragement made all of this possible.

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## ABSTRACT

The importance of textbooks and other materials to the educational process cannot be overstated. Unfortunately, the prices on these vital learning materials have continued to grow steadily year over year (Hanson, 2021). Open educational resources (OER), which are “teaching, learning, and research materials that are either (a) in the public domain or (b) licensed in a manner that provides everyone with free and perpetual permission to engage in the 5R activities” (Creative Commons, 2020) have been offered by some educational pundits as a potential means of addressing these skyrocketing prices (Parks et al., 2020; Wiley, 2007). This nonexperimental, baseline study sought to analyze the relationship between faculty awareness of OER and their perceptions of OER as a viable alternative for or supplement to the more traditional publisher textbooks and resources.

The survey instrument, created by Elder (2018) and administered by Elder et al. (2020), was used to collect demographic information, gauge current knowledge and awareness of OER, measure respondents’ awareness of the OER development support systems available to them, gauge interest in OER, assess familiarity with open licensing, and get a pulse on discipline-specific considerations from among the responding population. The researcher interpreted participants’ self-reported awareness and perception of OER through a primarily quantitative lens to maintain a narrow focus on these variables, though a fair amount of qualitative coding was required for various open-ended questions to allow for those parts to be included in the subsequent analysis in SPSS.

Via a chi-square test of independence, the researcher was forced to reject the research hypothesis and was unable to determine if a significant relation existed between faculty awareness of OER and faculty perceptions of OER. This inability to make a determination likely resulted from (1) a low response rate; (2) a plurality of respondents who were already well versed in the topic; and (3) a tendency for possible respondents who were less than familiar with the topic to shy away from completing the survey for fear of negatively impacting the data (though this last possibility can only be linked anecdotally). It was determined that additional research is warranted to assess the degree to which the findings of this study are generalizable to the university teaching population as a whole; a follow-up study with minor tweaks in methodology could address the issues that occurred during this study. Nevertheless, the results of this study can serve as a starting point for further research and communications.

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## CHAPTER I

### INTRODUCTION

#### Introduction

Textbooks are an integral part of education. In 2021, the average cost of textbooks and supplies for full-time undergraduate students was staggering: public four-year universities averaged approximately \$1,240; public two-year colleges averaged \$1,420; and private four-year colleges averaged \$1,220 (Hanson, 2021). While the pandemic led many colleges to freeze or impose only minimal increases in tuition (Ma & Pender, 2021), the same was not valid for textbook publishers and their prices. Despite publishers losing traction in the hard copy textbook market recently, they have made up for it with their digital learning products (Hanson, 2021). One alternative to traditional textbooks that has gained traction is Open Educational Resources (OER). Ozdemir and Hendricks (2017) state that current efforts to provide students with free and open textbooks have allowed them to experience significant cost savings and have increased students' overall access to higher education. However, as Spilovoy, Seaman, and Ralph (2020) explain, "while faculty and institutions have shown increasing awareness and acceptance of OER, many remain unfamiliar with what they are, or how to utilize them" (p. 3). This study examined the relationship between faculty awareness of and perceptions toward OER and their decision to adopt them as required or supplemental course materials.

## **Problem Statement**

According to the report provided by one of the leading textbook publishers (Cengage, 2018):

College students consider buying course materials to be their top source of financial stress after tuition, and the lack of access and affordability of materials has a negative impact on their learning and performance, according to a new survey of 1,651 current and former college students. (para. 1)

Students must either forego purchasing course materials because of their inflated prices, take on additional debt to purchase their course materials, or find other sources of income to pay for the expense. Regardless of their decision, the extra stress placed on students by this additional financial burden leads many to sacrifice basic needs (e.g., food, shelter, time with loved ones) to make ends meet, whereas others attempt to get by with outdated copies of course materials, while still others forego purchasing required course materials altogether.

Viable textbook alternatives exist that would address this issue without contributing to students' financial burden and causing undue stress. According to the report provided by the Midwestern Higher Education Compact (MHEC) (Jaggars, Rivera, & Akani, 2019): "colleges and universities are saving students millions of dollars through textbook affordability initiatives, primarily through OER creation and adoption programs and Inclusive Access bulk-purchase discount programs" (p. 1). Both routes provide students with additional funds to purchase other necessities, sign up for additional classes to potentially reduce their overall time-to-degree, and countless other options. As it

becomes increasingly difficult to attract large numbers of new students, higher education institutions (HEIs) would be wise to consider all practical means by which they can bolster their value propositions to ensure their long-term viability. Faculty will play a critical role in this process.

The course design process involves countless decisions by all involved parties. One decision central to this process is the selection of course content to facilitate accomplishing outlined course learning objectives. Zhadko and Ko (2019) suggest that faculty pragmatism is often the ultimate decider in the selection of learning materials. “Coverage of course topics, quality of the materials, appropriateness for the student audience, and access and cost to the student are usually the main considerations for faculty” (Zhadko & Ko, 2019, p. 11). It is incumbent upon those charged with selecting required course materials to give equal consideration to all viable options. This is not to say that faculty are solely responsible for these decisions, as many stakeholders are often involved in the design and development processes. However, faculty are and must remain central to the course design and development processes, and their choices carry considerable weight.

### **Statement of Purpose**

Based on the increasing demands to make higher education more affordable for students, in addition to the growing number of OER initiatives aimed at making textbooks and other pertinent course materials available at no or minimal costs to students, the purpose of this study was to explore faculty awareness of and perception toward OER to establish a baseline against which the effectiveness of subsequent OER

efforts could be measured. The study also sought to determine whether there were target levels of faculty OER awareness that would produce more positive faculty perceptions and to determine whether a point of diminishing returns between awareness and perception could be established.

### **Research Question**

1. What is the relationship between faculty awareness of OER and faculty perception of OER?

### **Research Hypothesis**

**H<sub>1</sub>:** Faculty with higher reported awareness of OER are more likely to have a positive perception of OER.

### **Assumptions**

1. All faculty, graduate teaching assistants, and administrators and staff members with assigned teaching duties were eligible to participate in the study.
2. Respondents selected for analysis were included once.
3. All respondents were able to choose the required and supplemental course materials for the courses assigned to them during a given semester.

### **Definition of Terms**

1. Open Education(al) Resources (OER): The literature provides varied definitions of OER; however, more recent research references the definition provided by the



William and Flora Hewlett Foundation, which provides a more well-rounded understanding. OER are freely available materials that are openly licensed, allowing anyone to adapt, copy, reuse, and share them freely (Griffiths et al., 2020; UNESCO, 2019). OERs can include textbooks, syllabi, audio, image, and video files, assignments, tests, and software.

2. Awareness: Before faculty can opt to use OER as required course materials, they must know about them and be allowed to use them in their courses. There is also a growing importance for faculty awareness of OER to include a basic awareness of the various licensing and Creative Commons (CC) copyright options available for the developed materials.
3. Perception: This is a tough concept to nail down. Proceeding with the psychological definition for the purposes of this study makes the most sense. Stangor and Walinga (2014) describe perception as “the total package that the brain puts together from the pieces it receives through our senses and that the brain creates for us to experience” (5.5 Accuracy and Inaccuracy in Perception, para. 1). Because perceptions are created by the individual, it is possible for different individuals to have different perceptions of the same item. Individual differences cause people to perceive things differently.
4. Copyright: Seaman and Seaman (2020) provide the following definition from the U.S. Copyright Office:

A form of protection provided by the laws of the United States for “original works of authorship,” including literary, dramatic, musical, architectural, cartographic, choreographic, pantomimic, pictorial, graphic,

sculptural, and audiovisual creations. “Copyright” literally means the right to copy but has come to mean that body of exclusive rights granted by law to copyright owners to protect their work.... Copyright covers both published and unpublished works. (p. 3)

There are three main categories into which published works are divided:

- Traditional copyright: Materials protected by a traditional copyright cannot be used, adapted, copied, or published without permission from the copyright holder.
- Public domain: Materials in the public domain can be used and repurposed without any restrictions; there is no need to seek permission from the original creator. Materials in the public domain were published before 1923, are no longer under copyright, or were intentionally placed there by their creator(s). Unlike their CC counterparts, works in the public domain are not always easily discernable.
- Creative Commons licenses: Not all OER materials have a CC license, but all materials with a CC license are OER. Materials with CC licenses may be used, under certain circumstances, without permission from the original creator(s) (Moist, 2017). There are six main CC licenses (Creative Commons, n.d.):
  - Attribution (CC BY): This license lets others distribute, remix, adapt, and build upon an author’s work, even commercially, if they credit the author for the original creation. CC BY is the

most accommodating of the licenses offered and recommended for maximum dissemination and use of licensed materials.

- Attribution-ShareAlike (CC BY-SA): This license lets others remix, adapt, and build upon an author's work even for commercial purposes, if they credit the author and license their new creations under identical terms. This license is often compared to "copyleft" free and open-source software licenses. All new works based on an author's original work will carry the same license, so any derivatives will also allow commercial use. CC BY-SA is the license used by Wikipedia and is recommended for materials that would benefit from incorporating content from Wikipedia and similarly licensed projects.
- Attribution-NoDerivs (CC BY-ND): This license allows for redistribution, commercial and non-commercial, if it is passed along unchanged and in whole, with credit to you.
- Attribution-NonCommercial (CC BY-NC): This license lets others remix, tweak, and build upon an author's work non-commercially. Although their new works must also acknowledge the author and be non-commercial, they do not have to license their derivative works on the same terms.
- Attribution-NonCommercial-ShareAlike (CC BY-NC-SA): This license lets others remix, tweak, and build upon an author's work

non-commercially, if they credit the author and license their new creations under identical terms.

- Attribution-NonCommercial-NoDerivs (CC BY-NC-ND): This license is the most restrictive of the six main licenses, only allowing others to download an author's works and share them with others if they credit the author, but they cannot change them in any way or use them commercially.

5. 5R framework: A concept encompassing all possible activities one can engage in concerning OER. Wiley (n.d., as cited in Wiley & Hilton, 2018) provides a detailed description of each of the 5Rs of openness:

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

6. Sustainability: Some OER projects have been successful over the shorter term but fizzled after their initial efforts. Wiley (2007) explains that these projects cannot be labeled as sustainable because they lacked two key components: a continuing nature and a focus on accomplishing goals, both of which are critical for sustainability measures. He provides the definition by which many have measured the ability to push forward with their OER initiatives: “an open educational resource project’s ongoing ability to meet its goals” (p. 5).
7. Inclusive access: Seaman and Seaman (2020) explain that many traditional textbook publishers have been forced to incorporate digital-only distribution models into their repertoire to address the increasing acceptance levels among students and faculty where digital materials are concerned. These inclusive access distribution models address the increasing pressure to reduce costs as well. “The ‘inclusive’ aspect of the model means that every student has the same materials on the first day of class, with the charge included as part of their tuition (McKenzie, 2017).

### **Limitations**

This study was limited by the examination and data collection coming from faculty at one institution, and, therefore, the results may not be representative of faculty across all institutions. In addition, as participants were solely drawn from a single institution, a low response rate was a definite concern. Also, this limited participant pool may have prevented the investigator from being able to draw a statistically significant sample from any one discipline or subdiscipline. Moreover, as is a common limitation of

surveys, the study relied on self-report data which could have been subjectively skewed. As faculty awareness of and faculty perceptions toward OER, not actual usage, were what was investigated, the variability of any significant findings may have been affected. Further, some departments rely more heavily upon graduate teaching assistants (GTAs) than others to ensure adequate course coverage. These GTAs may have been aware of and/or had positive perceptions related to OER; however, they may have had little to no say in the selection of required course materials for the courses to which they had been assigned, which may not have provided a true reflection of the effects that awareness of and favorable perceptions toward OER have on actual usage statistics of these resources as required or supplemental course materials. Lastly, several other contributing factors (e.g., departmental support, misconceptions and preconceived notions, and institutional support) may have impacted a faculty member's decision to adopt or not adopt OER as required or supplemental course materials but were not the focus of this study and were, therefore, not investigated.

### **Delimitations**

The investigator attempted to control for variability among different higher education populations (e.g., faculty, administrators, students, staff) by only soliciting participation from faculty, GTAs, and administrators and staff members with assigned teaching responsibilities. It was assumed that by including all members of the university community with assigned teaching responsibilities, a larger participant pool would be created, which would at least partially address the concern related to low response rate. Moreover, as the self-report data would not include an option for respondents to submit

their contact information for follow-up purposes, additional context may have been missing that could have deepened the understanding of the provided responses.

Furthermore, the survey's overall lack of open-ended questions and the study's primarily quantitative focus may have prevented the investigator from being able to further explore any significant trends in the data with respect to this specific study. Finally, although there may have been other significant contributing factors to faculty adoption of OER materials as required or supplemental course content, the investigator determined that faculty awareness of and perceptions toward OER were the primary differentiating factors among the population being investigated, and, therefore, were the most significant variables for examining how awareness levels of and general perceptions toward OER affect faculty decisions to either adopt them as required or supplemental course materials or stick with their more traditional textbook counterparts.

### **Chapter Summary**

This chapter highlighted the importance of textbooks in education while also showing potential issues with the current textbook pricing models. OER was presented as a potential means for addressing these unchecked textbook prices. As explained by Annand and Jensen (2017), substituting OER for commercially produced textbooks results in noticeable cost savings for most students. Despite this fact, OER use has remained somewhat constrained, and progress toward larger-scale adoptions across most of higher education has remained slow. This study was designed to establish a baseline by which to assess future OER efforts at one southeastern four-year public university.

Chapter II contains a review of the literature pertinent to, more broadly, OER as a concept and pedagogy, and to, more specifically, this study and its localized context.



## CHAPTER II

### REVIEW OF LITERATURE

#### **Introduction**

OER have been around in one form or another for many years. The term OER, however, dates back a little more than 20 years to the spring 2002 United Nations Educational, Scientific and Cultural Organization (UNESCO) Forum on the Impact of Open Courseware for Higher Education in Developing Countries. This forum, organized with the support of the WICHE Cooperative for Educational Technologies (WCET) and the William and Flora Hewlett Foundation, was where the term OER was coined. One of the issues inherent with OER is its lack of a canonical definition, which leads to confusion among many. The most recent definition provided by UNESCO defines OER as “[l]earning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, reuse, repurpose, adaptation and redistribution by others” (UNESCO, 2019, p. 5). As the cost of a higher education degree has continued to rise, the pleas for equitable ways to address this ballooning price tag have grown louder. The desire to improve student learning outcomes (SLOs) and the materials used to facilitate students’ achievement of these SLOs have been an ever-present phenomenon in higher education.

OER and open pedagogy have developed a cult following in recent years, with many pointing to them as a potential solution to the price and SLO achievement problems. This 20-year history, combined with OER’s current growing recognition

among academics, might lead one to assume that their incursion into the traditional academic landscape is all but a foregone conclusion. However, the current calls for OER to replace traditional textbooks are contradicted by the low overall adoption rates of OER as required course materials in standard educational practice (Baas, Admiraal, & van den Berg, 2019; Mishra, 2017; Otto, 2019). The success of OER going forward likely hinges on the ability to (1) increase faculty awareness of OER as a viable alternative to traditional course materials, which Wiley (2015) argues is the most pressing need; (2) evaluate how they are perceived by faculty members and students alike, which Hilton (2020) states a majority of students and faculty reported having had a positive experience with; and (3) alter misconceptions and misperceptions throughout both of the above processes.

The COVID-19 pandemic aided in increasing faculty awareness, as many faculty members now report at least some level of awareness of OER as a potential alternative to traditional textbooks (Seaman & Seaman, 2021). “Higher OER adoption remains linked to OER initiatives at the institutional level. Across the WICHE [Western Interstate Commission for Higher Education], SREB [Southern Regional Education Board], NEBHE [New England Board of Higher Education], and MHEC [Midwestern Higher Education Compact] regional compacts, OER adoption remains higher when faculty report being aware of OER initiatives at their institutions” (Spilovoy, Seaman, & Ralph, 2020, p. 23). To that end, Zhadko and Ko (2019) recommend approaching OER initiatives as one would any other strategic higher education initiative: increase faculty buy-in by getting them involved early in the process, ensuring they are allowed to remain actively involved for as long as they choose, and providing various professional

development opportunities that are suitable for faculty at different points in their OER processes.

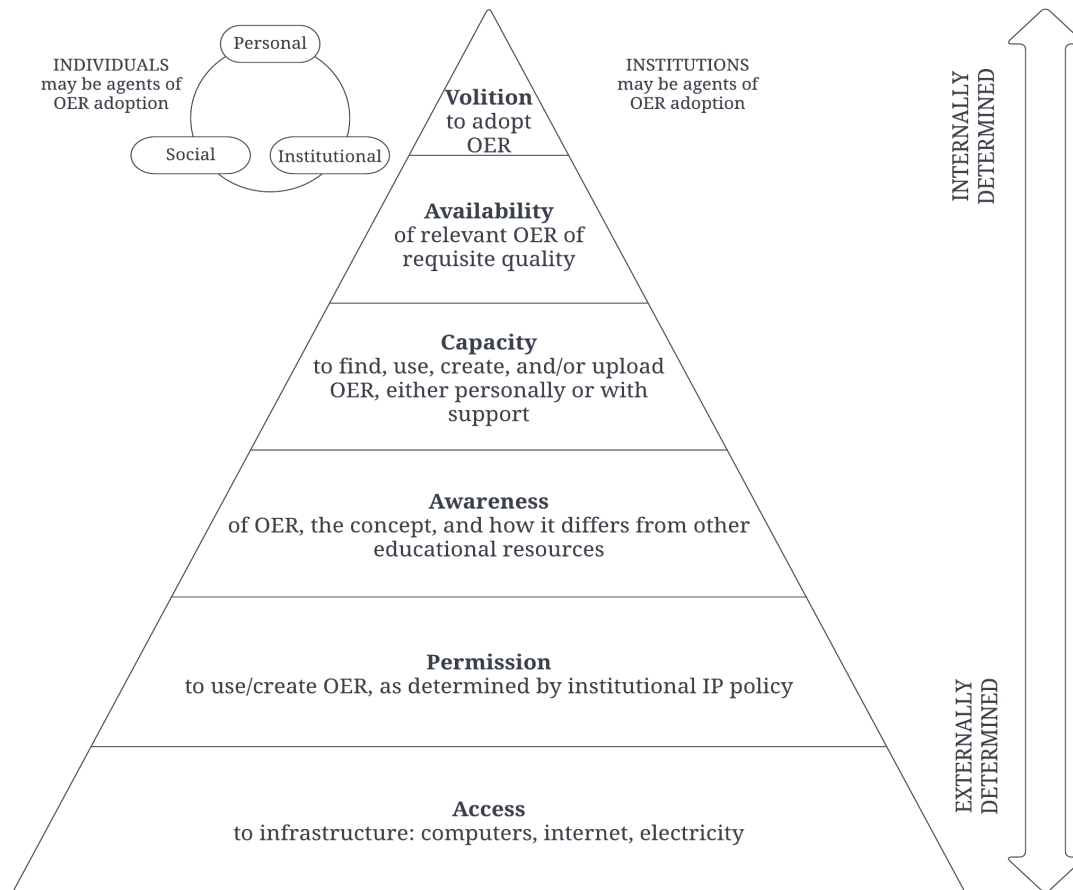
### **The OER Adoption Pyramid**

One issue not addressed by early-stage OER research are considerations associated with the processes and steps involved in adopting OER into faculty professional practice. Schuwer and Janssen (2016, as cited in Schuwer & Janssen, 2018) state that faculty are “by far the most important catalyst in keeping materials up-to-date, guaranteeing the quality of the content, adding metadata to the learning materials, and in arranging and determining the rights and licenses to be used” (p. 152). A deeper understanding of the factors involved in the OER decision-making process is critical for the long-term viability of any OER venture. For the purposes of their research, Cox and Trotter (2017) devised a framework (Figure 1), inspired by Maslow’s hierarchy of needs, to address the considerations and potential pitfalls inherent in OER adoption decision-making processes. They sought to analyze existing OER activity and assess the relative importance of specific factors on and evidenced by faculty members’ OER adoption decisions.

Cox and Trotter (2017) explain that the factors at the bottom of their pyramid, which tend toward the externally determined end of the spectrum, form the foundation of all items above them. The pyramid shape was chosen to represent the belief that each factor layer must be accomplished in sequential order before any of the subsequent layers can be fully realized. “Without the factors at the bottom being positively provided for, it is difficult for the factors at the top to make much of a difference to eventual OER

engagement (Cox & Trotter, 2017, p. 155). Without providing for the lower levels, one cannot expect the higher levels to have as much of an effect on OER adoption rates.

Through this framework, essential adoption factors are consolidated into six categories, with the factors that faculty have the least control over beginning at the bottom and gradually transitioning over to factors over which they wield a higher level of control.

**Figure 1***The OER Adoption Pyramid*

*Note.* From “An OER framework, heuristic and lens: Tools for understanding lecturers’ adoption of OER,” by G. Cox & H. Trotter, 2017, p. 155 (<https://doi.org/10.5944/openpraxis.9.2.571>).

Access refers to the requisite physical infrastructure necessary to engage with OER materials (e.g., computer, internet access, electricity) from both the faculty and student perspectives. Permission includes the licensing permission(s) attached to a specific OER for the actual usage of the material but also includes intellectual property considerations

for the actual creation component. Awareness refers to the faculty's recognition of OER and an understanding of how they differ from more traditional options. Capacity is linked to an individual's or institution's technical ability to fully engage in the OER 5R framework. Availability refers to the readiness of suitable OER materials that can be openly distributed, which can vary depending on the faculty member's specific discipline and subdiscipline. Volition involves the individuals' or institutions' motivation to adopt OER. There is a circle adjacent to volition, which represents the three different types of volition that influence OER adoption and their cyclical nature: personal, institutional, and social. Personal motivations can be related to a preferred teaching style, educational philosophy, or self-confidence in one's abilities, but can also stem from both institutional (support mechanisms, strategic initiatives, or recognition programs) and social (departmental or collegial norms relating to the use of OER) motivators.

### **Trending Toward an Expanded, More Comprehensive View of OER Awareness**

While the concept of OER just reached its twentieth year, the practice of OER is just nearing its teenage years. As such, it should come as no surprise that a plurality of faculty is unaware of the idea and all its constituent parts. Mishra et al. (2016) found that there are some faculty members who are not aware of the concept and meaning of OER, whereas others are aware of the basic concept and meaning but lack awareness where copyright is concerned. This conflicting awareness shows up in the research literature as well, with some focusing on the understanding of OER as an overarching concept, whereas others focus on total awareness. Seaman and Seaman (2020) expound on their view of the concept of total OER awareness, pointing to a much broader awareness,

which must include at least a basic understanding of copyright and licensing. An issue identified with current self-reported awareness levels is that they may include faculty who have heard the term without fully understanding it. As such, reported awareness levels have varied a bit from project to project. Seaman and Seaman (2020) suggest removing respondents from the aware category if they report being unaware of the copyright, public domain, and CC licensing areas, as this more accurately reflects the total or complete OER awareness of survey respondents.

This shifting awareness is a recent trend, with a growing number now at least referencing a general understanding of copyright, public domain, and CC licensing. Spilovoy, Seaman, and Ralph (2020) state, “Measuring faculty awareness of OER requires a measure of both the term itself and an understanding of the ideas of open licensing and the ability to [participate in the 5R activities], which are central to the concept of OER” (p. 10). Raising OER awareness is no easy task and will require a significant amount of work for all who are involved. Planning is a key component of most successful ventures and OER is no different. Successful OER initiatives require significant, purposeful planning with intentionality in mind.

### **General Faculty Awareness of OER**

The importance of faculty awareness of and buy-in to OER cannot be stressed enough. Schuwer and Janssen (2018) state that faculty remain the single-most important piece where OER creation, publication, reuse, and adoption are concerned. Spilovoy, Seaman, and Ralph (2020) explain that “the adoption of OER is intrinsically linked to awareness of what OER are, and what benefits they might provide to students, educators

and their institutions” (p. 8). While textbook publishers’ awareness of OER competition is evidenced by their shifting focus and marketing strategies geared toward an acceptance of digital materials and inclusive access approaches, the lack of faculty awareness where OER are concerned continues to be a bigger impediment to increasing adoption rates than shifting publisher market strategies.

Seaman and Seaman (2021) explain that faculty who report being aware of OER may confuse it with any free online materials or open-source materials. When focusing solely on general faculty awareness of OER, Seaman and Seaman (2020) found that 17% of respondents reported being very aware, 25% aware, 16% somewhat aware, and 42% not aware. Their findings show that an equal percentage of respondents reported being either very aware or aware as reported being not aware, a 17% swing from the findings of their 2016-2017 study, which had 56% of respondents report being unaware, with only 10% very aware and 20% aware. These numbers themselves show a continued trend of increased OER awareness, which has been observed through the surveys Bay View Analytics has administered since 2014. However, the numbers alone do not tell the entire story.

Zhadko and Ko (2019) caution that while the percentage of awareness is creeping closer to 50%, this still leaves half with a general lack of knowledge of OER, which is a significant impediment to realizing OER’s full potential. With greater awareness of OER comes a greater understanding of the value of OER. While most of the attention OER garners is focused on the cost savings, it is important to point out the other research-supported benefits: increased student engagement, increased control over course learning materials, improved SLOs, and increased faculty ownership. Increases in awareness and



understanding are often accompanied by increases in faculty buy-in, as well as involvement by more institutional stakeholders.

### **Faculty Awareness of Copyright, Public Domain, and Creative Commons Licensing**

While any increase in faculty awareness is a good thing, looking at faculty awareness of OER alone provides a constrained view of their total understanding of the concept. Awareness of OER licensing is acutely important in the broader context of OER awareness and understanding (Spilovoy, Seaman, & Ralph, 2020). Through their ongoing efforts, Spilovoy, Seaman, and Ralph (2020) report total faculty OER awareness, which includes awareness of both OER and CC licensing, continuing to show steady year-over-year growth from 2014-2019. While the continued growth is a good sign, the majority of faculty still report being unaware of OER. This fact was corroborated by Baas, Admiraal, and van den Berg (2019) who found that “a little under half of the teachers (42.0%) indicated...that they have heard of OER. However, teachers’ awareness on Creative Commons is more limited” (p. 5), with only 14% of participants (n = 143) even knowing what Creative Commons means, let alone what they do. According to estimates, another five years at the current rate of increase would be required before a majority of teaching faculty would claim to be aware of OER and the associated licensing options (Spilovoy, Seaman, & Ralph, 2020).

When it comes to licensing for published works, items fall into three main categories: materials holding a traditional copyright, items in the public domain, and materials licensed via CC. Many who are new to the concept of open education mistakenly associate materials that are readily available via the internet with the

permission to use them in their courses however they see fit. Because this could lead to unforeseen legal issues, it is often best to assume the strictest licensing possible until information to the contrary is located since U.S. law provides for automatic copyright protection for all original works (Zhadko & Ko, 2019). Materials that fall into the traditional copyright category are restricted and cannot be used without first receiving permission, whereas public domain works can be incorporated freely without restriction or permission. The creators of works assigned CC licensing set the rules for the manner(s) in which their content can be used (Creative Commons, n.d.), with licenses ranging from those that are completely open to those with more restrictions.

The 5Rs of openness, a framework developed by Wiley (n.d.), are an essential component of one's full understanding of OER, both what can be done with OER as well as the flexibility provided through utilization of OER materials for the support of student learning. An understanding of this framework facilitates a deeper understanding of and a smoother transition into the various OER licensing conditions as outlined by CC (Zhadko & Ko, 2019). Materials that lack a clear indication of the copyright licensing type associated with them, which can often be the case with those materials in the public domain, can lead to faculty developing a feeling of uncertainty. Without timely assistance from a knowledgeable other, this uncertainty can often mistakenly lead to the misperception that OER is too time-consuming. CC licensing attempts to alleviate this uncertainty by providing explicit information regarding the allowable terms of use, the type of modifications that are or are not allowed by the new user, as well as the specific attributions that are to be given in the revised or remixed material before redistribution begins.

## Faculty Perceptions of OER

Significant research has been conducted to better understand both student and faculty perceptions of the quality and general usability of OER. Bliss, Robinson, et al. (2013) stress the importance of measuring faculty perceptions, as they “have the potential to shed light on conflicting use patterns and outcomes” (p. 2). Elder et al. (2020) provide additional context with respect to the importance of faculty perceptions on OER:

“Faculty perceptions are particularly impactful because instructors are usually the decision-makers about the materials they use in class. It is vital that faculty understand the pros and cons of different types of course materials and the support available to faculty through their institutions, so they can take advantage of the support available to them.” (p. 132)

A common perception related to OER relates to the quality of the materials. Some are under the misguided impression that if it is free or low-cost to students, it must be lacking in overall quality.

Wang and Towey (2017) report that faculty misperceptions regarding the lack of overall quality of OER materials could adversely impact overall adoption rates as these faculty members do not feel they can use these resources with confidence. Faculty members also perceive the lack of valuable ancillary materials (e.g., test banks, auto-graded homework and review assignments, presentation materials) as a knock on the overall quality. Many OER textbooks have accompanying ancillary materials, which have been developed after the fact by other faculty who were interested in supplementing the available content.

Contrary to the misconceptions reported by Wang and Towey (2017), studies have found that faculty have generally perceived the quality of the reviewed or utilized OER textbooks and accompanying materials to be of high quality (Bliss, Hilton, et al., 2013; Hilton, 2016; Ozdemir & Hendricks, 2017). Studies have also found that student learning was not adversely impacted by OER usage (Bliss, Robinson, et al., 2013; Hilton, 2016). A summary of the findings from these studies can be found in Table 1. In their study of community college faculty and students, Bliss, Hilton, et al. (2013) found that perceived OER quality was generally high. However, they noted that internet and other computer related issues, screen fatigue, and texts that are poorly maintained could adversely impact overall perceptions of the materials. As such, it is necessary to proactively build in alternatives (e.g., providing a low-cost print option for OER texts, opting to revise a copy of the original OER text to keep it current if allowed by the original author) to circumvent the potential issue. Both Bliss, Robinson, et al. (2013) and Ozdemir and Hendricks (2017) found that faculty perceptions of OER quality were like their traditional text counterparts, overall student usage was like with traditional texts, and reported student preparedness, which is likely a better predictor of actual quality, was slightly higher with OER than traditional options. However, Bliss, Robinson, et al. (2013) found that, although faculty perceived the OER materials to be of a high quality, the perceived additional prep time would be cause for hesitation.

**Table 1***Perceptions of OER Quality and Usage*

| <b>Author(s)</b>               | <b>Focus of study</b>     | <b>Topic of research</b>                   | <b>Findings</b>  |
|--------------------------------|---------------------------|--|--|
| Bliss, Hilton, et al. (2013)   | HEI faculty & students    | OER perceptions & general user experiences | Students and faculty perceived OER quality to be high and liked the potential cost savings.  |
| Bliss, Robinson, et al. (2013) | HEI faculty & students    | OER perceptions                            | Faculty could see the value of OER but did not like the increased preparation time. Students' overall usage patterns and learning with OER were like with traditional textbooks. |
| Hilton (2016)                  | HEI faculty & students    | OER efficacy & perceptions                 | Both students and faculty perceived the OER quality to be high and felt they did not negatively impact learning.   |
| Ozdemir & Hendricks (2017)     | CA HEI faculty & students | General user experiences with OER          | Students and faculty perceived OER quality to be high and liked the potential cost savings.  |

Studies have shown a positive attitude and perception toward OER among respondents. Belikov and Bodily (2016) found that a major impediment to increasing OER adoption rates among faculty who reported general positive perceptions was the lack of OER, or at least a dearth in terms of discoverability of quality OER, in their respective disciplines. With the compounding factors of varying degrees of quality, general discoverability, and a lack of time to properly evaluate found materials, many opt for the more traditional route for the sake of convenience.

## OER Gatekeepers

It is not uncommon for OER initiatives to be led by groups with diverse representation. Spilovoy, Seaman, and Ralph (2020) emphasize that it is not uncommon for OER initiatives to vary across key characteristics such as foci, general leadership and project scope, duration, and funding because these characteristics are all dependent upon the stakeholders' needs. Many of these efforts, regardless of the group composition, are focused on leveraging OER for students' benefit, with the end goals being unique to the institution implementing the OER initiative, either alone or via a collaborative approach with one or more additional schools. Nevertheless, a common goal across all OER efforts continues to be their "focus on reducing the cost of learning materials, enabling faculty to customize the curriculum, and increasing educational equity and access for students" (p. 14). Because of the diversity inherent in these initiatives and the variations in group makeup, there can be no one-size-fits-all model where OER efforts are concerned.

Increasing faculty awareness and improving faculty perceptions of OER is a crucial component of any successful initiative; however, this is not to say that they must all become experts in all things OER. Zhadko and Ko (2019) suggest that providing professional development opportunities that include information on campus resources available to assist in the development of high-quality OER materials could be enough to get adoption numbers trending upward. Campus resources that could be available to assist include:

- Librarians, as their familiarity with intellectual property rules and knowledge of best practices in searching for, evaluating, and selecting materials via research databases can both prove beneficial.
- Instructional designers and technologists, as their familiarity with digital creation, hosting, and sharing and general knowledge of educational technology is an asset based on OER's digital nature.
- An OER coordinator, as one of their assigned duties is likely to assist faculty and other interested parties with their OER endeavors.
- Another faculty members with expertise specific to OER, as they can provide a faculty perspective of the creation process and potential pitfalls to avoid in the development process.
- Someone with subject-matter expertise, as having a sounding board to discuss content-specific items during the development phase can prevent the likelihood of project delays.

Any of these individuals could prove to be an invaluable resource throughout the development process and beyond, and it is likely that some combination of these resources is available to most content developers.

## Identified Impediments to Broader OER Adoption

As it is likely a new concept for many, the process for selecting and incorporating OER into a course (re)design could require external assistance. Gallant and Lasseter (2018) found that facilitating a broader use of OER requires: expanding faculty awareness of OER, increasing the availability of OER and other no-cost resources to courses beyond the first few years of college, developing OER resources that are of the highest possible quality, expanding available resources into subjects that have expressed difficulty finding quality materials, improving the discoverability of existing high-quality OER materials, and continuing to provide high-quality OER support and professional development opportunities to interested faculty members.

Despite their increasing notoriety, inherent cost savings for students, and expressed demands for OER from the general higher education community, OER has yet to be embraced by much of higher education, evidenced by their low adoption rates in current educational practices (Marín, et al., 2022; Otto, Schroeder, Diekmann, & Sander, 2021). Through their work in assessing the national OER landscape, Parks et al. (2020), as members of the regional higher education compacts, identified impediments to encouraging the broader adoption of OER among faculty: (1) struggles to bring OER to scale at the institutional, system, and state levels; (2) a general lack of coordinated efforts at the institutional, system, state, and national levels, which results in significant duplication of work; (3) the development of a shared understanding within key OER areas that can inform future research efforts; and (4) faculty and administrative concerns about the general sustainability of OER initiatives. These impediments echo similar



findings from other studies (Annand & Jensen, 2017; Fischer et al., 2020; Marín et al., 2022; Meng, Cui, & Wang, 2020; Mishra, 2017; Otto, 2019; Towey et al., 2019; Wiley, 2007) while pointing to potential remedies for the perceived issue(s) as well.

### **Bringing OER to Scale**

While OER are free to students, it must be noted that there is a significant amount of opportunity cost associated with them from the faculty perspective. Allen and Seaman (2014) report that a significant limiting factor to increasing OER adoption rates is the amount of faculty time required to identify, thoroughly vet, and incorporate OER materials into new and existing course designs. Allen and Seaman (2016) confirmed this finding in their follow-up study. Faculty members expressed concern that the return on investment was hurt by the amount of personal time required for the complete OER vetting process, which has contributed to keeping total OER adoption rates down.

Annand and Jensen (2017) identified several successful initiatives, including but not limited to MIT's Open Education Consortium, OpenStax, the OpenLearn project at the U.K. Open University, and BCcampus' Open Textbook project. Hilton (2016) adds the Saylor Foundation, Washington State's Open Course Library, and the Minnesota Open Textbook Library to this list of successful providers. Unfortunately, these initiatives are the exception, not the rule. "All these projects are well-supported by internal grants, or external grants from private donors or governments that have enabled them to develop a wide range of curricula" (p. 4). However, faculty who are just starting with OER can use the resources provided by any of these initiatives, which removes a few barriers from the outset.

Tlili et al. (2020) provide a listing and quick synopsis of the ten identified and validated OER funding models included in the research literature:

1. *Internal funding*: The university includes all OER costs as a line item in its annual budget.
2. *OER network membership*: The university pays to be a part of a larger OER consortium that handles all OER activities.
3. *Public funding*: International, national, and local public monies (e.g., grant-funded projects) are used to cover all OER expenses.
4. *Endowments/donations*: Charities, foundations, and private donations, which could include crowdfunding, cover OER funding.
5. *Sponsorship/advertisement*: Sponsors cover OER expenses in exchange for advertising and promotion.
6. *Supplemental services*: Students pay for services (e.g., tutoring), and these monies cover OER costs.
7. *Selling learner-centric data to companies*: Learner activities data are sold to analytics companies to cover the cost of OER.
8. *OER on-demand*: The institution produces OER content on behalf of individuals or entities that pay to have the OER released to them.
9. *OER authors*: Individual authors volunteer their time, either work or personal, to produce OER.
10. *Community-based*: Members of a community create OER for others to use. This model has two sub-variations:
  - a. Student cohorts create OER for use by their fellow students.

- b. Students co-create content with a faculty member or faculty members.

It is worth noting that institutions can use more than one of the above models simultaneously. Tlili et al. (2020) go on to rate the ten models according to their maturity on a scale of 1 to 4, “where 1 corresponds to an established model; 2 to an emergent model; 3 to a future potential model; and 4 to an inapplicable model within present conditions” (p. 8). Table 2 shows the Tlili et al. (2020) model ratings and examples.

**Table 2***Results of the Maturity of the OER Model Based on the Experts' Rating*

| <b>Model</b>                                       | <b>Mean</b> | <b>SD</b> | <b>Examples</b>                                   |
|--|-------------|-----------|---|
| Model 3. Public funding                            | 1.35        | 0.69      | BCcampus  |
| Model 1. Internal funding                          | 1.69        | 0.97      | UK Open University                                |
| Model 4. Endowments/donations                      | 2           | 1.02      | Wikipedia, OpenStax, Khan Academy                 |
| Model 2. OER network membership                    | 2.15        | 1.01      | OERu  |
| Model 6. Supplemental services                     | 2.31        | 1.01      | Khan Academy, Lumen Learning, OpenStax            |
| Model 9. OER authors                               | 2.36        | 1.22      | Jörn Loviscach                                    |
| Model 10. Community-based                          | 2.62        | 1.13      | Educred.ro, OER communities in OSGeo or Mastodon  |
| Model 8. OER on-demand                             | 2.85        | 0.78      | PNLD program (federal textbook program in Brazil) |
| Model 5. Sponsorship/advertisement                 | 3.16        | 0.94      | Global Text Project                               |
| Model 7. Selling learner-centric data to companies | 3.54        | 0.76      | Hootsuite Academy                                 |

*Note.* From “The evolution of sustainability models for Open Educational Resources: insights from the literature and experts,” by A. Tlili et al., 2020, p. 8 (<https://doi.org/10.1080/10494820.2020.1839507>).

Wiley (2007) mentions the difficulty of sustaining OER efforts since the products of these efforts are given away freely. Bringing OER to scale, as with any major initiative in higher education, requires a reliable funding stream or revenue model. The referenced models provide schools with a bit of flexibility, as being able to use different approaches within the same institution can serve as a stopgap measure until the school

can either allocate institutional funds or procure external funding to cover the production and delivery of OER materials. Either way, acknowledging the amount of faculty time that goes into creating OER is a key component of any successful model and should not be overlooked when scaling up projects.

### **The Lack of Coordinated Efforts**

OER as a global practice is viewed by many as a blessing, as this allows the incorporation of multiple and varied perspectives. However, this blessing can quickly turn into a curse if the joint efforts lack coordination. “The open education community is a broad, global entity built on sharing, making connections, and collaborations” (Lowe-Wincentsen, et al., 2020). Many hands make light work; however, the lack of a coordinated effort among those hands runs the risk of at least some of them duplicating one another’s work. Not only this counterproductive, but it can also be confusing to stakeholders and can amount to significant wasted energy and ineffective use of valuable resources. Bremer et al. (2018) state, “OER and the whole debate and movement surrounding Open Access [cannot be sustained] as a detached phenomenon” (p. 136) but should be pursued across disciplines and issues. Zhadko and Ko (2019) supplement this: “In order for OER initiatives to be long-lasting, they require careful planning and cross-unit collaboration” (p. 97). Understanding how OER efforts contribute to the HEI’s strategic goals and mission will assist with reviewing the overall effectiveness of the venture and identifying and measuring of key success metrics.

Parks et al. (2020) state that the regional higher education compacts have included challenges in coordinating efforts in their impediments to wider OER adoption rates,

noting that these challenges “can result in duplicative, inefficient and occasionally conflicting work to scale and sustain OER efforts” (p. 3). A concerted, group effort must be made to link common OER efforts across departments and colleges to increase their chances of being successfully integrated into the HEI’s overarching goals and missions. This successful integration and implementation requires ongoing strategic planning for all involved parties, with the goal being to leverage existing internal expertise to complement rather than compete with one another. Zhadko and Ko (2019) state, “Having a unified effort...can ensure long-lasting success, as faculty and staff know where to turn in their efforts to advance their OER use” (p. 125). Being able to focus on a shared goal prevents any one individual from having to shoulder too much of the load.

Otto (2019) suggests assigning OER administrative duties to a central point of contact or a taskforce at the institutional level, one who is charged with monitoring the overall strategic alignment of institutional efforts with larger state, regional, national, and international efforts and increasing awareness of OER efforts and elevate the ongoing work into a strategic objective. Zhadko and Ko (2019) stress that successful coordination of efforts will also facilitate the tracking of strategic goals. “Taking a collaborative approach is far more effective in getting faculty on board and achieving the shared goals for OER” (p. 100). Involving a taskforce spreads the initiative responsibilities across multiple individuals who will serve as ambassadors and advocates for the initiative throughout its lifecycle.

Otto (2019) goes on to explain that the central contact or taskforce will also ensure necessary training and workshops are offered in a timely manner to maintain project momentum. For example, awareness efforts should begin as early in the process

as possible and should involve administrators, faculty, and students in the process as they are important stakeholders. “Providing teachers with sustainable guidance is necessary to enshrine OER in the long run. This recommendation comprises both the technical aspects, as well as networks for the exchange of OER materials and experiences” (p. 134) resulting from the provided faculty development opportunities. Zhadko and Ko (2019) provide support for this position: “faculty development presents a scalable and sustainable strategy for implementing OER on a course, program, institutional, or system-wide basis” (p. 109). Because grassroots faculty engagement along with administrative support play such an important role in successful OER initiatives (Griffiths et al., 2020), their active involvement and advocacy are critical. As such, providing faculty with valuable development opportunities and support from senior-level administrators throughout the OER implementation process are critical components and must be included in ongoing coordinated HEI efforts targeting the increase of OER adoption rates.

### **The Need for a Shared Understanding**

The creation of a shared vocabulary and understanding is crucial to moving the conversation on OER practice and adoption forward. Seaman and Seaman (2017; 2020) found that many faculty members possess only a vague understanding of what constitutes OER, which hampers their general awareness. Some are under the misguided impression that anything free is classified as OER by default. In contrast, others mistakenly link open-source with OER, thinking OER only refers to open-source software and other technologies. Research suggests the need for a shared understanding and vocabulary to

ensure that subsequent research is better understood and more accessible to a broader audience (Parks, et al., 2020; Spilovoy, Seaman, & Ralph, 2020). There are many HEIs and organizations nationally that are engaged in OER efforts presently. However, as Parks et al. (2020) suggest, “many lack a comprehensive understanding of each other’s priorities and ambitions” (p. 3), which causes challenges regarding their ability to sustain the progress of existing efforts and to upscale these efforts when the time arises.

The four regional higher education compacts—the Midwestern Higher Education Compact (MHEC), the New England Board of Higher Education (NEBHE), the Southern Regional Education Board (SREB), and the Western Interstate Commission for Higher Education (WICHE)—act as non-partisan partners at the intersection of higher education’s policy, practice, and research agendas and facilitate deeper levels of understanding of these critical functions. As such, the compacts have a common interest where OER are concerned since OER, too, touches on all three of these agendas.

To this end, the compacts actively assist and promote the adopting and scaling of OER in their respective regions, while also supporting one another in the broader context of advocating for OER usage, research, and policy advancement whenever possible. Spilovoy, Seaman, and Ralph (2020) report that through involvement with one of the regional compacts, “potentially all 50 states, the District of Columbia, territories, and freely associated states may participate in regional efforts to support the scaling and adoption of [OER]” (p. 6). Through shared advocacy, governance, and understanding, which begins with the creation of a shared vocabulary, OER efforts are provided with increasing chances of success.



## Questioning the Sustainability of OER

According to Wiley (2007), the ability of an OER initiative to accomplish the goals it sets forth on an ongoing basis is the key measure of sustainability. Parks et al. (2020) stress the importance of prioritizing OER at the institutional level and discourage against treating it as an add-on. Instead, they insist that OER needs to be included in the budgets of HEIs to demonstrate its importance and the value placed upon increasing adoption rates. Spilovoy, Seaman, and Ralph (2020) suggest that the regional HEI compacts need to play a significant role where long-term sustainability efforts are concerned. Schuwer and Janssen (2018) also stress the important role individual HEIs play in sustainability efforts. To increase the chances of self-sustaining OER initiatives, higher education may need to reevaluate the current emphasis placed on research compared to education. “Being an excellent researcher and being less in teaching is accepted much more than vice versa” (Schuwer & Janssen, 2018, p. 162). Tenure-track faculty members, especially, might feel differently about creating OER materials if they began the process with the knowledge that their institutions viewed these publication efforts along the same lines as research publications when making tenure and promotion decisions.

One common concern reported among faculty members regarding long-term sustainability is determining who will be responsible for keeping the materials up to date as the understanding of their subjects evolves. Research points to the role HEI libraries and information technology departments, often-underutilized resources where long-term OER sustainability efforts are concerned, can play to address this concern (Fischer, et al., 2020; Todorinova & Wilkinson, 2020; Zhadko & Ko, 2019). The William and Flora

Hewlett Foundation (Hewlett Foundation, 2020) state that “enabling OER adoption and use requires collaboration among faculty, librarians, and instructional designers, while coordinating and structuring this work calls for financial, political, and social support from the institution” (p. 6) to ensure the long-term viability of these efforts.

This also circles back around to and dovetails nicely with the need for a coordinated effort. Faculty using an open textbook have not struggled as much with keeping content up to date, as reviewing an updated version of the OER text was akin to what was done when reviewing a new traditional textbook option. The need for a coordinated effort comes into play when curating learning materials and using multiple sources. Academic librarians have significant experience with locating relevant materials and are likely to have a solid understanding of CC licensing rules and regulations, while instructional designers can assist with integrating these materials into a pedagogically-sound learning experience for students.

### **Other Potential Challenges and Possible Solutions**

Increasing buy-in for any new initiative is no small task and requires significant work on the part of all stakeholders with vested interest in the initiative’s success. Faculty buy-in is no different. Per Zhadko and Ko (2019), one potential challenge lies in how the institution opts to weigh OER efforts for the purposes of faculty tenure and promotion. “A focus on helping tenured faculty understand the value of OER is important, as these faculty might become advocates for OER, influencing others to explore the potential” (Zhadko & Ko, 2019, p. 127). Encouraging the use of OER could involve one or more of the following: a stipend, release time, faculty showcases where

their works can be presented to the university community, supporting faculty travel to conferences and events to showcase their OER efforts, and recognition of the authorship of OER materials as part of the tenure process for tenure-track faculty members.

Belikov and Bodily (2016) conducted a study to determine potential incentives and barriers to faculty adoption of OER for their courses. Most faculty respondents expressed the need for more information and a clearer understanding of OER, which the authors believed to be a limitation of their research. Baas et al. (Baas, van der Rijst, Huizinga, van den Berg, & Admiraal, 2022) received similar results in the pre-association maps created during their study: the majority of faculty reported a limited or shallow understanding of OER. However, their post-association maps revealed a shift: faculty reported an increased understanding of both the quintessential components of OER as well as the various licensing mechanisms available to them. Faculty need a better and broader understanding of OER to be able to speak to the incentives and barriers associated with their adoption. After omitting responses that were lacking in understanding from consideration, Belikov and Bodily (2016) assembled a list of barriers and incentives to OER adoption provided by the surveyed faculty. Their lists have been combined and provided in Table 3.

**Table 3***Incentives and Barriers to OER Adoption*

| <b>Barriers</b>                      | <b>Incentives</b>              |
|--------------------------------------|--------------------------------|
| Lack of discoverability              | General positive perceptions   |
| Confusing OER with digital resources | Cost benefit                   |
| Not applicable for faculty           | Equal to traditional resources |
| Lack of time to evaluate resources   | Pedagogical benefit            |
| Lack of quality                      |                                |

*Note.* Adapted from “Incentives and barriers to OER adoption: A qualitative analysis of faculty perceptions,” by O. M. Belikov & R. Bodily, 2016, pp. 240-242 (<https://files.eric.ed.gov/fulltext/EJ1112527.pdf>).

This list aligns with the findings from other studies (Allen & Seaman, 2016; Baas et al., 2022; Elder et al., 2020; Fischer et al., 2020; Seaman & Seaman, 2021; Seaman & Seaman, 2020; Spilovoy, Seaman, & Ralph, 2020).

Spilovoy, Seaman, and Ralph (2020) state that while increased OER adoption has been hampered by a general lack of knowledge on the part of faculty, an issue among faculty who reported being aware is “the time and effort required to find OER materials appropriate to their needs remains far greater than that required to select commercial alternatives” (p. 9). Wang and Towey (2017) provide additional insight into this potential challenge:

successful OER adoption is often more than just knowing about what is available and how to find it. Rather, [faculty] want to know what resources they should choose, how they should adapt them to their own context, and how they should

integrate them into their various teaching and learning activities to meet specific pedagogical aims. Lack of experience in this poses challenges, often reducing [their] motivation to use OERs.” (p. 317)

The creation of a university website focused on OER, which shares available resources and points of contact, is a great place to start with addressing and mitigating the effects of this potential challenge and goes a long way toward opening additional lines of communication for OER novices and experts alike.

### **Chapter Summary**

This chapter included a review of OER Adoption Pyramid, the framework into which Cox and Trotter (2017) consolidated the essential OER considerations for faculty considering incorporating OER into their course design(s). This chapter also referenced literature outlining the importance of increasing the overall awareness of OER as a viable alternative to or supplement for the more traditional publisher textbook approach and the need to also devote attention to managing faculty perceptions relating to these alternative sources of information (Bliss, Hilton, et al., 2013; Bliss, Robinson, et al., 2013; Hilton, 2016; Ozdemir & Hendricks, 2017). Potential barriers to more widespread adoption patterns, which included the need for a shared understanding where OER is concerned, lack of discoverability, confusing OER with other available resources, lack of time to evaluate and/or a lack of quality among the procured materials, the general lack of a shared understanding at present, sustainability concerns, and trouble locating materials that are applicable for more niche topics and/or subjects, were also presented for consideration (Belikov & Bodily, 2016; Lowe-Wincentsen, et al., 2020; Parks, et al.,

2020; Spilovoy, Seaman, & Ralph, 2020). Chapter III contains the methodology by which the study will be conducted.

## **CHAPTER III**

### **METHODOLOGY**

#### **Introduction**

This chapter will begin with a description of the nature and purpose of the study and a justification of the research design. This is followed by a description of the context for the study, which includes information about the eligible participants and a description of the survey instrument. Finally, a description of the analysis methods used, including the coding process used for the open-ended survey responses and chi-square test of independence used to analyze the potential association between the two categorical variables, to address the stated research question is presented.

#### **Purpose of Study**

The purpose of this study was to explore the awareness of and perceptions toward OER at a large southeastern four-year public institution. The goal was to provide a baseline benchmark against which the progress and effectiveness of the institution's subsequent OER endeavors could be assessed and compared. The study also sought to gauge whether there were target levels of OER awareness for producing more positive perceptions and whether a point of diminishing returns could be established where the relation between awareness and perception were concerned.

## **Positionality Statement**

In the name of full transparency, it must be noted that the researcher planned, designed, and executed the study entirely by himself. The researcher holds strong beliefs that alternatives to traditional textbooks, including OER, must be considered during the course development process. As a member of the participating institution's OER steering committee during the grant initiative and a current member of a unified cross-curricular group planning the next steps for the institutions continuing OER efforts, the researcher is committed to open resources and practices. However, it must also be said that the researcher kept himself mostly detached from the data collection process in an attempt to mitigate any potential influence he could have had on the study. Remaining wholly separate from the survey participants was an impossible task, as the researcher worked regularly with faculty on OER projects. While these faculty members were made aware that discussion of the research project was off limits to avoid exerting any influence over the final results, comments letting the researcher know that faculty members had been advocating for colleagues to complete the survey were not uncommon.

## **Context and Sample**

For the purposes of this study, the investigator solicited participants from among faculty, GTAs, and administrators and staff members with assigned teaching responsibilities at a four-year public university in the American Southeast with an enrollment of more than 20,000 students. According to the American Council on Education (ACE) (2023b), the university was listed under the "Research Doctoral: Comprehensive programs, no medical/veterinary school" classification on the Carnegie



Classification of Institutions of Higher Education. ACE (2023a) states that this category is indicative of institutions that award “research doctoral degrees in the humanities, social sciences, and STEM fields. They may also offer master’s or professional practice/other degrees in fields other than medicine, dentistry, or veterinary medicine” (Comprehensive programs, no medical/veterinary school, para. 1).

It was important that the subjects deemed eligible to complete the survey have assigned teaching responsibilities, as these would be the individuals with the most control over the selection of teaching and learning materials. All individuals from within this subset of the university population were offered the opportunity to participate. In total, 1,012 individuals received the opportunity to complete the survey instrument.

### **Research Design**

This study adopted a nonexperimental, baseline research approach focused on integrating theory and research with practice (Johnson & Christensen, 2020). As the selected survey instrument contained both open- and close-ended questions, a mixture of data analysis techniques were used to study the submitted responses. However, as the study sought to maintain a narrow focus on a few causal factors, it was viewed through a primarily quantitative lens.

Both the independent variable, faculty awareness of OER, and dependent variable, faculty perception toward OER, were viewed categorically, each being assigned to one of three groups. The researcher also did not control for any mitigating or moderating variables. Much of the research literature surrounding faculty awareness of OER indicated that while general awareness was spreading, there existed a lack of

understanding, “which is indicative that awareness and understanding of OER are still important issues that should continue to be addressed” (Belikov & Bodily, 2016, p. 243). Faculty perception toward OER has proven to be more of a mixed bag as far as the research literature was concerned. However, there had been some agreement as far as the importance of faculty perceptions were concerned:

Faculty perceptions are particularly impactful because instructors are usually the decision-makers about the material they use in class. It is vital that faculty understand the pros and cons of different types of course materials and the support available to faculty through their institutions, so they can take advantage of the support available to them. (Elder et al., 2020, p. 132)

The above excerpt referenced understanding, which was frequently mentioned in the research literature in the same breath as awareness (e.g., faculty are aware of OER and understand the associated CC licensing guidelines). As such, determining the degree to which, if at all, awareness impacted perception in this localized context had the potential to inform future practice.

The nonexperimental nature of the study prevented it from being able to draw any causal relationships between the variables and any potential mitigating or moderating factors that could be revealed during the analyses, which is a potential limitation and weakness inherent in this type of research. To this end, Reio (2016) explained, “the research design that matters the most is the one that will most elegantly, parsimoniously and correctly, within ethical boundaries, support answering the research questions or testing the hypotheses associated with a study” (p. 678). It was also possible that the localized context in which the research was conducted, and the specific pool of eligible

participants associated with it might not have been fully representative of the larger higher education population. Despite this potential issue with generalizing findings from the sample population to the broader population, it is important to note that potential still exists for being able to generalize across specific subpopulations within the target population (Johnson & Christensen, 2020).

To follow appropriate university protocol, the investigator submitted an exempt review application to the Institutional Review Board (IRB), as the proposed research fell under category two of the listed exemption protocols. The dataset was collected via an online Qualtrics survey and required no personally identifiable information be provided by the participants during the survey completion process.

### **Survey Instrument**

Cook and Cook (2008, as cited in Reio, 2016) stated that “surveys are very useful...for measuring perceptions, attitudes, and behaviors such that the data generated can be used for correlational analyses to establish the strength and direction of important relations that can guide future experimental study” (p. 680). A survey instrument, developed by Elder (2018) and administered by Elder et al. (2020), which is considered valid and reliable, was used to collect responses from teaching faculty to better understand faculty attitudes, perceptions, and practices relating to the selection of required and supplemental course materials. The survey consisted of five sections: Demographics (five questions), Current Knowledge and Awareness of OER (twelve questions, eight of which were contingency-based), Institutional Support of OER Use (seven questions, four of which were contingency-based), Interest in Open Educational

Resources (five questions, one of which was contingency-based), and Open Licensing and Discipline-Specific Considerations (three questions). Of the 32 total questions, the maximum number a participant could expect to receive after opting in, based on the built-in contingencies, was 29 questions. The minimum number of questions a participant could receive after opting in was 22 questions. The estimated time to complete the survey was 35-40 minutes; however, the average time across all completed surveys was slightly under 58 minutes, with some respondents spending a considerable amount of time providing highly substantive responses to the open-ended questions. The complete survey instrument can be found in Appendix A.

The survey was administered via Qualtrics. An email inviting university community members with assigned teaching responsibilities to participate in the online survey was distributed to all teaching faculty by the Vice Provost for Faculty Affairs and the College of Graduate Studies. The email lists included over 1,000 recipients in total. The data collection process was explained in the introductory email, with participant informed consent and opt-out information included on the opening page of the survey instrument. It was predetermined that a reminder email might be necessary at some point during the data collection window depending on the overall response rate. At the midpoint of data collection, it was determined that a more targeted reminder email would be more beneficial, as a specific subset of the total population (i.e., GTAs) were falling short of the others in terms of their relative response rate. To address this data deficiency, reminder emails were distributed to GTAs via their respective college, department, or program coordinators. Participants were able to complete the survey whenever and wherever they choose and had the ability to discontinue participation in the

study at any point. Participants were not coerced into participation and received no compensation, monetary or otherwise, for their participation in the study.

### **Analysis of the Data**

The open-ended questions were run through NVivo 12 for *a priori* coding, then assigned categorical identifiers—positive, neutral, and/or negative—based on the dependent variable (perception), before finally being reincorporated back into the quantitative dataset for further analysis. These *a priori* codes have been used with great success in market research perception studies of companies (see Table 4), and it was determined that they would be adequate for the perception scoring in this study as well.

**Table 4**

*KPIs and Benchmarks Commonly Used in Market Research Studies on Perception*

| <b>Perception Score Rankings</b> | <b>Net Promoter Score (NPS)</b>  |
|----------------------------------|----------------------------------|
| Negative (-1)                    | Detractors (0-6 on Likert scale) |
| Neutral (0)                      | Passives (7-8 on Likert scale)   |
| Positive (1)                     | Promoters (9-10 on Likert scale) |

*Note.* Adapted from information provided by Taylor (2021) and Kuhn (2023) of Drive Research, a market research company, and Canada (2020) of Tatvam Insights, a qualitative data analytics group.

The alternative perception scoring metric included in Table 4—Net Promoter Score—would be more fitting for a study aimed at determining the likelihood of recommending the use of OER to others. The quantitative data were analyzed using the Statistical Package for Social Sciences (SPSS, Version 27).

To test the research hypothesis, likelihood of a positive perception of OER based on the independent variable of awareness, Chi-square tests of independence were run to determine if a significant relationship existed between faculty awareness of OER and faculty perception toward OER.

### **Coding of Open-Ended Responses**

Data entry was handled by the respondents themselves via the close- and open-ended questions in the Qualtrics survey. The open-ended response questions, which were directly related to participant perception of OER, were segmented and assigned *a priori* codes (Table 5) relative to the overall tone of their responses to the questions to allow for frequency counting by the researcher.

**Table 5**

*A Priori Awareness and Perception Codes and Basis Used for Assignment to Each Category*

| <b>Awareness / Perception Codes</b> | <b>Basis for Assignment</b>   |
|-------------------------------------|---|
| Low (L) / Negative (NEG)            | Majority of scores on Perception (P) or Awareness (A) items at the L/NEG level and not more than 3 at the H/POS level |
| Moderate (M) / Neutral (NEU)        | Plurality of P/A scores at the M/NEU level and/or no real distinction between L/NEG and H/POS responses               |
| High (H) / Positive (POS)           | Majority of scores on P/A items at the H/POS level and not more than 3 at the L/NEG level                             |

This aligned with the sentiment analysis process presented by Canada (2020), which involves the “identification and interpretation of emotions by analyzing text feedback” (What is Sentiment Analysis, para. 1). Responses with a plurality of negative words relative to OER were coded as L/NEG, responses with a plurality of positive words relative to OER were coded as H/POS, and responses coded as M/NEU lacked a positive or negative plurality.

After the *a priori* codes were assigned, it was determined that they may not be specific enough for the variation in tone among some of the provided responses. The researcher decided that multiple coding approaches would be necessary to address apparent shortcomings with respect to the *a priori* codes. As such, inductive codes were generated via an open coding process to more accurately reflect the varying degrees of sentiments expressed in responses received on the high and low ends of the perception and awareness continuums (Johnson & Christensen, 2020). These inductive codes are provided in Table 6.

**Table 6**

*Inductive Awareness and Perception Codes and Basis Used for Assignment to Each Category*

| <b>Awareness / Perception Codes</b> | <b>Basis for Assignment</b>   |
|-------------------------------------|---|
| Very Low (VL)                       | No scores on Perception (P) or Awareness (A) items above the VL level |
| Low (L)                             | 1 or more P/A scores above the VL level but none above the M level    |
| Moderate (M)                        | Majority of P/A scores at the M level but none at the VL or VH levels |
| High (H)                            | 1 or more P/A scores below the VH level but none below the M level    |
| Very High (VH)                      | No scores on P/A items below the VH level                             |

This aligned more closely with the evolving nature of the categorical variables. Both the *a priori* and inductive coded responses were then returned to the quantitative dataset where each respondent was assigned an individual awareness and perception score for each before being imported into SPSS for chi-square analysis testing.

### **Chi-Square Test of Independence Analysis**

According to Field (2018), Pearson's chi-square test can be used to determine if a relationship exists between two categorical variables. "This statistic is based on the simple idea of comparing the frequencies you observe in certain categories to the frequencies you might expect to get in those categories by chance" (p. 838). As the data collected was categorical, and the end goal was to predict a categorical outcome variable,



Chi-square was deemed an appropriate fit for determining whether a relationship existed between the categorical variables (awareness and perception) being studied (Field, 2018). Both variables were originally to have three assigned categories. The awareness responses were assigned to either the low (L), moderate (M), or high (H) category based on their responses to the awareness-specific questions; those with a plurality of affirmative responses were categorized as having H awareness, those with a plurality of negative responses were assigned to the L awareness category, and those lacking a plurality of affirmative or negative responses were categorized as having M awareness. The responses measuring perception were assigned an *a priori* code of negative (NEG), neutral (NEU), or positive (POS) based on the overall tone of each respondent's answers. After noticing a concentration of responses in the M and H awareness categories and the NEU and POS perception categories, the researcher opted to assign a set of inductive codes to the data as well. This resulted in the development of a five-by-five model that was to be evaluated alongside the three-by-three model to see which one best fit the resultant data. Following the initial analysis of responses, the researcher determined that a two-by-two model would be required for hypothesis testing because the expected frequency assumptions were not met in the existing three-by-three and five-by-five models. As the three-by-three model was closer to satisfying the needs for hypothesis testing, it was determined that the modified two-by-two model would be based off of its assigned codes. Because there was a general lack of responses in the L/NEG categories, all respondents with either a L designation, NEG designation, or both designations were eliminated from hypothesis testing moving forward. As such, awareness designations of

M and H and perception designations of NEU and POS were solely used in the subsequent two-by-two model.

### **Chapter Summary**

This chapter described the methodology used for this study. The researcher explained the goal of the study (i.e., providing a baseline benchmark against which the progress and effectiveness of the institution's subsequent OER endeavors can be assessed and compared). The design of the study also sought to determine which mitigating or moderating factors, if any, influenced faculty awareness of and perceptions toward OER and to determine the degree to which, if at all, these factors impacted one another. Data collection took place over a four-week period during fall 2022, and the data analysis period followed shortly thereafter, taking another four weeks. Chapter IV contains the results of the study.

## CHAPTER IV

### RESULTS

#### **Introduction**

This study sought to establish a baseline for faculty awareness of and perception toward OER as a primary or supplemental resource in the educational process. The survey approach allowed the researcher to poll all faculty and university staff with assigned teaching responsibilities. To provide a foundation for understanding the results, the purpose of the study and a brief synopsis of the participant demographics are provided.

#### **Purpose of Study**

The purpose of this baseline study was to measure overall faculty awareness of and perception toward OER to provide a baseline benchmark against which the progress and effectiveness of subsequent institutional OER endeavors could be assessed and compared. The study also sought to determine if there were target levels of OER awareness that would produce more positive perceptions and whether a point of diminishing returns, where the association between awareness and perception were concerned, could be established. This chapter contains the results of this nonexperimental study conducted, specifically, to answer the research question:

**RQ1:** What is the relationship between faculty awareness of OER and faculty perception of OER?

## **Research Findings**

### **Data Collection**

The survey instrument was distributed to all members of the university community with assigned teaching responsibilities during the fall semester of 2022. The survey was open for a total of five weeks, which was one more than originally planned, to allow for the solicitation of additional responses from the GTA population. A personal email was distributed to each of the GTA coordinators on campus seeking their assistance with distributing the call for participants to any GTAs who were actively teaching during the semester. Of the 1,012 recipients of the survey, 135 were completed in their entirety, resulting in a 13.3% response rate. Respondents comprised a diverse set of faculty classification, years of teaching experience, and teaching disciplines. A detailed breakdown of each category follows.

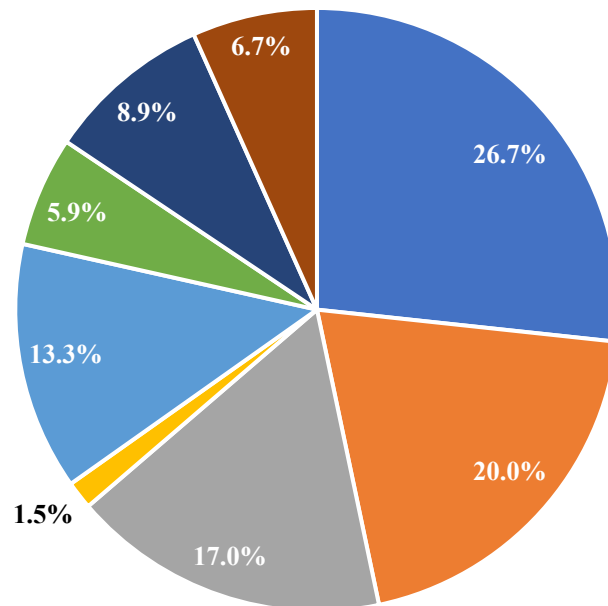
### ***Faculty Classification***

From the responding population, 36 identified as professors, 27 identified as assistant professors, and 23 identified as associate professors. Combined, 63.7% of respondents were on the tenure track. Additionally, 18 identified as full-time non-tenure track faculty, eight identified as part-time non-tenure track faculty, 12 identified as postdoc or graduate teaching assistants, two identified as clinical professors, and nine identified as professional staff with teaching responsibilities. A summary of these participant demographics and the associated percentages are presented in Figure 2.

**Figure 2**

*Participant Demographics: Faculty Classification (N = 135)*

- Professor (36)
- Assistant Professor (27)
- Associate Professor (23)
- Clinical Professor (2)
- Full-time Non-tenure Track Faculty (18)
- Part-time Non-tenure Track Faculty (8)
- Postdoc or Graduate Teaching Assistant (12)
- Professional Staff with Teaching Responsibilities (9)



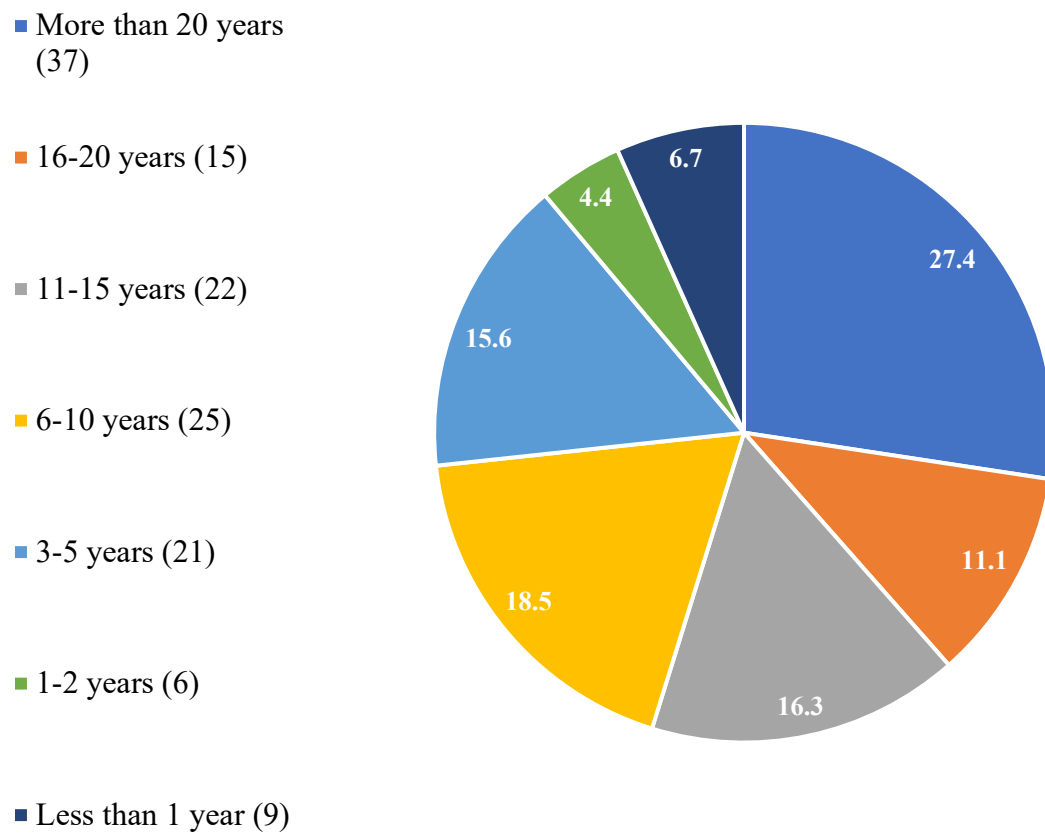
### *Years of Teaching Experience*

From the responding population, 37 identified as having more than 20 years of teaching experience, 15 identified as having 16-20 years of teaching experience, 22 identified as having 11-15 years of teaching experience, 25 identified as having 6-10 years of teaching experience, 21 identified as having 3-5 years of teaching experience, six identified as having 1-2 years of teaching experience, and nine identified as having less

than 1 year of teaching experience. A summary of these participant demographics and the associated percentages are presented in Figure 3.

### Figure 3

*Participant Demographics: Years of Teaching Experience (N = 135)*



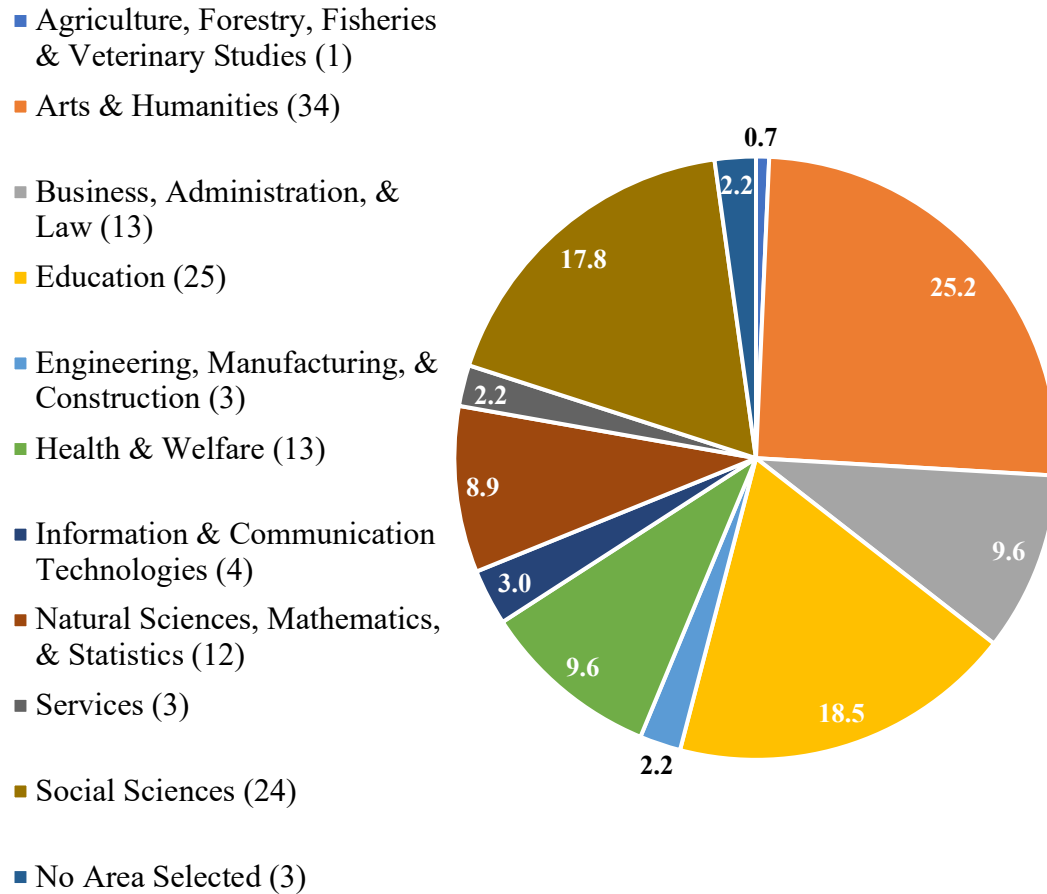
### *Faculty Breakdown by Discipline*

From the responding population, one identified as teaching in Agriculture, Forestry, Fisheries & Veterinary studies, 34 identified as teaching in Arts & Humanities, 13 identified as teaching in Business, Administration, & Law, 25 identified as teaching in

Education, three identified as teaching in Engineering, Manufacturing, & Construction, 13 identified as teaching in Health & Welfare, four identified as teaching in Information & Communication Technologies, 12 identified as teaching in Natural Sciences, Mathematics, & Statistics, three identified as teaching in Services, 24 identified as teaching in Social Sciences, and three did not select a content specialization. A summary of these participant demographics and the associated percentages are presented in Figure 4.

**Figure 4**

*Participant Demographics: Teaching Discipline (N = 135)*



*Note.* The Services discipline includes Hotel, Restaurants, & Catering, and Travel, Tourism, & Leisure sub-disciplines.

Within the overarching Arts and Humanities classification, Literature and Linguistics (10.3%) and History and Archaeology (5.9%) were most common. Within the Education grouping, Teacher Training (8.1%) was the most common, with Interdisciplinary Programs and Education Science both receiving the same (5.2%) percentage of responses. Within the Social Sciences, Communication Studies (4.4%) was



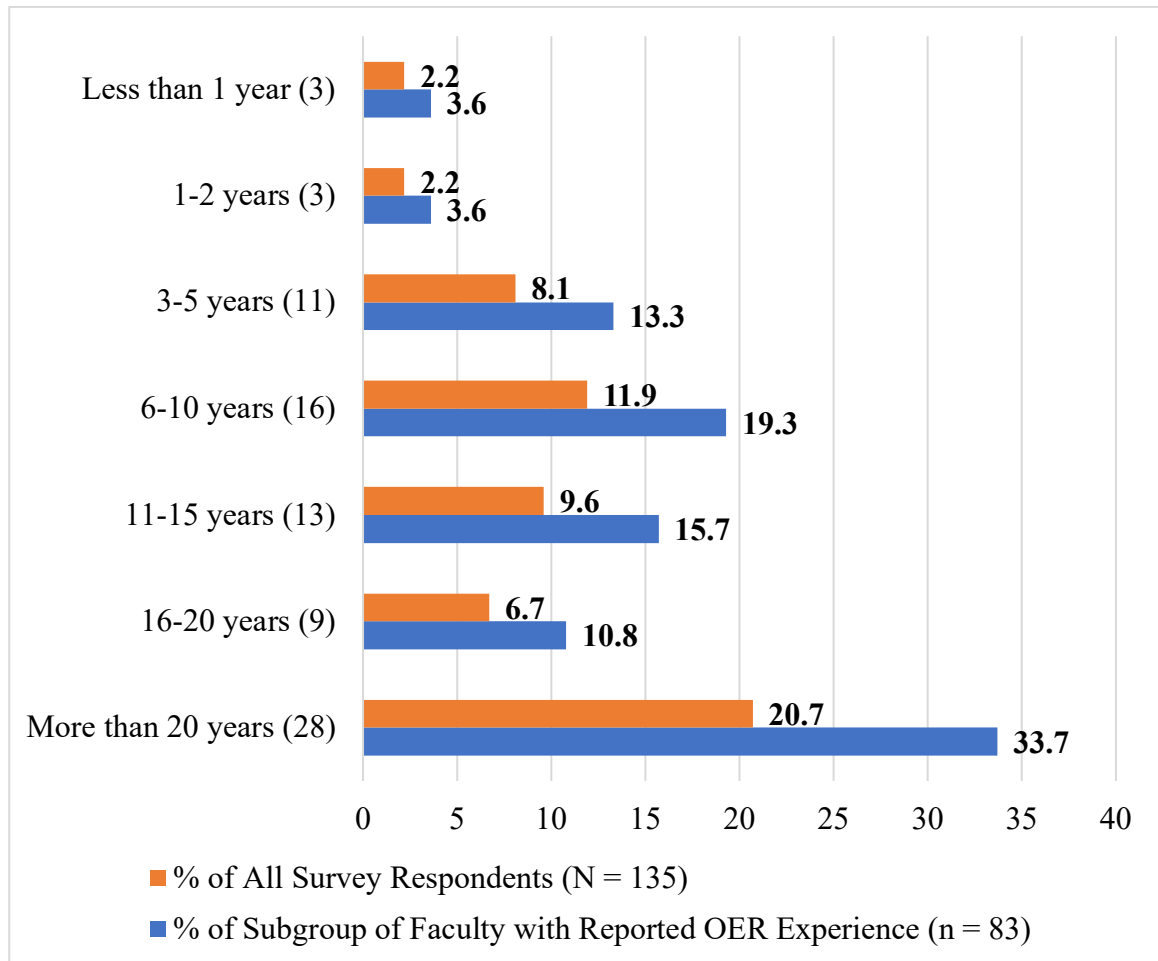
home to the greatest number of respondents. Within the Business, Administration, and Law area, Management and Administration (6.7%) was overwhelmingly the most common. Within the Natural Sciences, Mathematics, and Statistics group, Biology and Mathematics and Statistics received the same (3.7%) percentage of responses.

### ***Previous Experience with OER and Barriers to Increased Use***

The majority of respondents (61.5%) reported previous experience with OER in some form or fashion. Of the respondents with previous experience, the overwhelming majority (28 of 83, 33.7%) reported having more than 20 years of teaching experience, which constituted 20.7% of all survey respondents. A comparison of the subset of faculty with previous OER experience ( $n = 83$ ) to the full dataset of survey participants ( $N = 135$ ) is presented in Figure 5.

**Figure 5**

*Percentage of Respondents with Reported OER Experience Compared to Percentage of All Respondents (n = 83, N = 135)*



Within the subset of respondents who reported having previous experience with OER ( $n = 83$ ), neither adapting nor creating OER (33 of 83) was the most reported approach, with adapting (30 of 83), creating (4 of 83), and a combination of adapting and creating (15 of 83) also reported. Full professors were the group that reported greatest engagement with OER (28 of 83), comprising a good percentage of both faculty who reported neither adapting nor creating OER (13 of 33) and faculty who reporting having

experience with adapting OER (10 of 30). Associate (15 of 83) and assistant (13 of 83) professors also reported previous engagement with OER, with their combined engagement equaling that of their full professor counterparts. On the other end of the spectrum, clinical professors (1 of 83) and part-time non-tenure track faculty (2 of 83) reported the least engagement with OER; however, it is worth highlighting that only two survey respondents identified as clinical professors, and only eight identified as part-time non-tenure track faculty.

The majority of respondents (107 of 135, 79.3%) provided responses to the open-ended questions related to potential barriers to incorporating OER materials into course re/designs. The potential barriers mentioned by respondents in this study are included in Table 7.

**Table 7**

*Barriers Mentioned as Potential Hindrances to Increased OER Use (n = 107)*

| <b>Barrier</b>  | <b>Frequency</b> |
|---|------------------|
| Lack of awareness and/or of the supports available to assist with OER development | 44               |
| Quality of available materials  | 33               |
| Time (lack of)  | 47               |
| Intellectual property rights  | 12               |
| Limited availability of resources   | 26               |

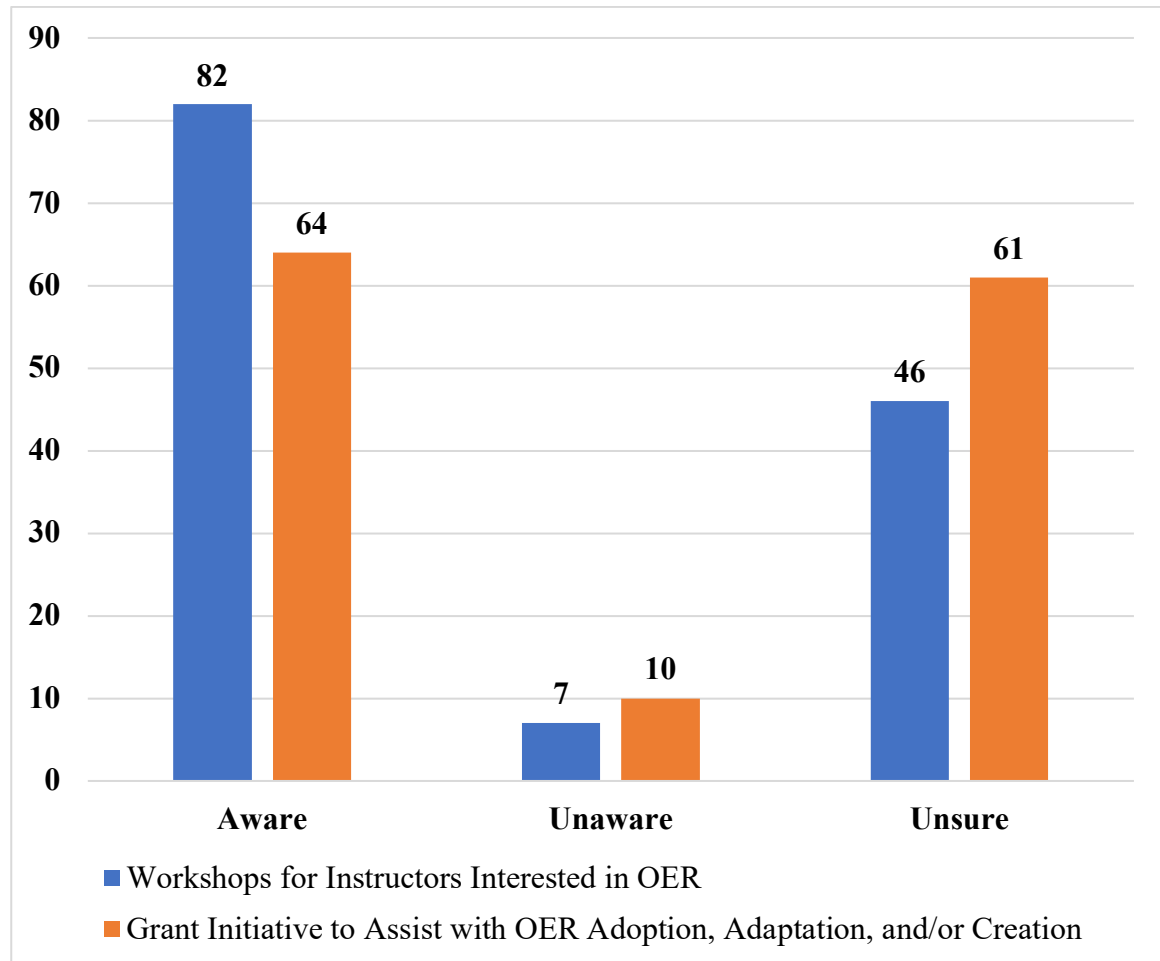
### ***Institutional Support for OER Use***

The majority of respondents (60.7%) reported awareness of university-sponsored workshops for instructors who might be interested in using OER in their courses; the

remaining respondents reported being either unsure (34.1%) if the university offered these workshops or unaware (5.2%) that such workshops were available. A plurality of respondents (47.4%) reported awareness of an institutional grant initiative focused on encouraging instructors to adopt, adapt, or create OER; the remaining respondents reported being either unsure (45.2%) if such a grant initiative existed or unaware (7.4%) that such an initiative existed. A full breakdown of this information is presented in Figure 6.

**Figure 6**

*Reported Awareness of University-Sponsored Workshops and Grant Initiative Supporting OER Development*



### **Coding**

A forced shift from a PC to a Mac during data collection precipitated a modification of the software used for coding, as the originally planned QDA Miner Lite was not compatible with the Mac operating system. The coding and analysis phases involved a significant amount of memoing on the researcher's part as data trends and other insights came to light. During the coding phase of the research project, the open-ended

questions were first run through NVivo 12 for *a priori* coding (i.e., high (H), moderate (M), or low (L) for awareness, and positive (POS), neutral (NEU), or negative(NEG) for perception). The categories and scoring ranges used are provided in Table 8.

**Table 8**

*A Priori Perception and Awareness Categories and Score Ranges*

| <b>Category</b>                     | <b>Score Range</b> |
|-------------------------------------|--------------------|
| <b>Negative (NEG) / Low (L)</b>     | (-100) – (-34)     |
| <b>Neutral (NEU) / Moderate (M)</b> | (-33) – 33         |
| <b>Positive (POS) / High (H)</b>    | 34 – 100           |

To categorize the responses, individual awareness and perception scores were calculated for each participant by subtracting the number of negative responses from the number of positive responses and dividing this by the sum of all H/POS and L/NEG responses (i.e., M for awareness and NEU for perception were omitted since they do not move the needed toward either end of the continuum) for each participant

$\left( \frac{H \text{ or POS participant responses} - L \text{ or NEG participant responses}}{\text{sum of ALL participant's H or POS and L or NEG responses}} \right)$ . The results after applying the

*a priori* categorizations are provided in Table 9.

**Table 9**

*Participants Assigned to A Priori Perception and Awareness Categories (N = 135)*

| <b>Category</b> | <b>Perception</b> | <b>Awareness</b> |
|-----------------|-------------------|------------------|
| <b>NEG / L</b>  | 15                | 12               |
| <b>NEU / M</b>  | 76                | 35               |
| <b>POS / H</b>  | 44                | 88               |
| <b>Total</b>    | <b>135</b>        | <b>135</b>       |

Upon completion of the *a priori* coding process, the data were input into the three-by-three multi-way contingency table (Table 10) to evaluate the association between reported awareness of OER among research participants and their reported perception toward OER.

**Table 10**

*Three-by-Three Model Used with A Priori Categories to Evaluate the Relation Between Awareness of OER and Perception of OER (N = 135)*

| N = 135             |              | <b>Awareness</b> |             |                  |  |
|---------------------|--------------|------------------|-------------|------------------|--|
| <b>Perception</b>   | <b>-1(L)</b> | <b>0(M)</b>      | <b>1(H)</b> | <b>Row Total</b> |  |
| <b>-1(NEG)</b>      | 3            | 9                | 3           | 15               |  |
| <b>0(NEU)</b>       | 6            | 20               | 50          | 76               |  |
| <b>1(POS)</b>       | 3            | 6                | 35          | 44               |  |
| <b>Column Total</b> | 12           | 35               | 88          | 135              |  |

With a three-by-three model, the degrees of freedom (*df*), represented by  $(r - 1)(c - 1)$ , where *r* represented the number of rows and *c* the number of columns, would be equal to four.

After preliminary analysis, it was determined that classifying participants' responses via the *a priori* codes was not going to provide a clear enough representation of the data due to a significant concentration of responses around the extrema of the M and NEU categorizations on the awareness and perception spectrums. As such, responses were re-categorized via the following inductive codes to reflect the provided responses more accurately: very high (VH), high (H), moderate (M), low (L), and very low (VL). The individual awareness and perception scores that were calculated and assigned in the previous step were used to re-categorize the responses according to the new categorizations, which are presented in Table 11.

**Table 11**

*Inductive Awareness and Perception Categories and Score Ranges*

| <b>Category</b> | <b>Score Range</b> |
|-----------------|--------------------|
| Very Low (VL)   | (-100) – (-61)     |
| Low (L)         | (-60) – (-21)      |
| Moderate (M)    | (-20) – 20         |
| High (H)        | 21 – 60            |
| Very High (VH)  | 61 – 100           |

The results after applying the new categorizations are provided in Table 12.



**Table 12***Participants Assigned to Inductive Awareness and Perception Categories (N = 135)*

| <b>Category</b> | <b>Awareness</b> | <b>Perception</b> |
|-----------------|------------------|-------------------|
| VL              | 5                | 13                |
| L               | 10               | 7                 |
| M               | 21               | 67                |
| H               | 44               | 7                 |
| VH              | 55               | 41                |
| <b>Total</b>    | <b>135</b>       | <b>135</b>        |

Upon completion of the inductive coding, the data were input into the five-by-five multi-way contingency table (Table 13) to evaluate the relation between reported awareness of OER among research participants and their reported perception toward OER.

**Table 13**

*Five-by-Five Model Used with Inductive Categories to Evaluate the Relation Between Awareness of OER and Perception of OER (N = 135)*

| N = 135      |    | Awareness |    |    |    |           |  |
|--------------|----|-----------|----|----|----|-----------|--|
| Perception   | VL | L         | M  | H  | VH | Row Total |  |
| VL           | 2  | 1         | 4  | 3  | 3  | 13        |  |
| L            | 0  | 1         | 1  | 2  | 3  | 7         |  |
| M            | 2  | 5         | 11 | 30 | 19 | 67        |  |
| H            | 0  | 0         | 1  | 0  | 6  | 7         |  |
| VH           | 1  | 3         | 4  | 9  | 24 | 41        |  |
| Column Total | 5  | 10        | 21 | 44 | 55 | 135       |  |

With a five-by-five model, it was determined that the degrees of freedom (*df*), represented by  $(r - 1)(c - 1)$ , where *r* represented the number of rows and *c* the number of columns, would be equal to 16.

After Chi-square analysis testing, it was determined that the three-by-three and five-by-five models were not going to allow for proper hypothesis testing, as the expected frequency assumption regarding not more than 20% of the expected counts being less than five was not met in either instance (Field, 2018). The researcher determined that a two-by-two model derived from the three-by-three model's data would be required for hypothesis testing because the expected frequency assumption was not met in the existing three-by-three model. Because there was a dearth of responses in the L/NEG categories,

all respondents with either a L designation, NEG designation, or both designations were eliminated from hypothesis testing moving forward. As such, the responses that were deemed to have the least impact on the overall awareness and perception ratings (i.e., L and NEG) were removed, and the individual awareness and perception scores calculated and assigned in the previous step were used to re-categorize the responses according to the new two-by-two model's categories presented in Table 14.

**Table 14**

*Modified Awareness and Perception Categories and Score Ranges*

| <b>Category</b> | <b>Score Range</b> |
|-----------------|--------------------|
| <b>M / NEU</b>  | (-33) – 33         |
| <b>H / POS</b>  | 34 – 100           |

The results after assigning the remaining eligible participants via the above categories are provided in Table 15.

**Table 15**

*Participants Assigned to Modified Awareness and Perception Categories (N = 111)*

| <b>Category</b> | <b>Awareness</b> | <b>Perception</b> |
|-----------------|------------------|-------------------|
| <b>M / NEU</b>  | 26               | 70                |
| <b>H / POS</b>  | 85               | 41                |
| <b>Total</b>    | <b>111</b>       | <b>111</b>        |

Upon completion of the modified coding, the data were input into the two-by-two multi-way contingency table (Table 16) to evaluate the relation between reported awareness of OER among research participants and their reported perception toward OER.

**Table 16**

*Two-by-Two Model Used with Modified Categories to Evaluate the Relation Between Awareness of OER and Perception of OER (N = 111)*

| n = 111<br>Perception | Awareness |      | Row Total |
|-----------------------|-----------|------|-----------|
|                       | 0(M)      | 1(H) |           |
| 0(NEU)                | 20        | 50   | 70        |
| 1(POS)                | 6         | 35   | 41        |
| <b>Column Total</b>   | 26        | 85   | 111       |

With a two-by-two model, it was determined that the degrees of freedom ( $df$ ), represented by  $(r - 1)(c - 1)$ , where  $r$  represented the number of rows and  $c$  the number of columns, would be equal to 1.

Once coding had been completed, the data was re-incorporated into the quantitative dataset for further analysis using the Statistical Package for Social Sciences (SPSS, Version 27).

### Chi-Square Analysis

To test the research hypothesis, likelihood of a positive perception of OER based on the independent variable of awareness, Chi-square tests were calculated to determine if a significant relationship existed between faculty awareness of OER and faculty perception toward OER. A chi-square test of independence was performed to examine

the relation between faculty awareness of OER and perception of OER. Results of the 3x3 model analysis are depicted in Tables 17 and 18, while results of the 5x5 model analysis are depicted in Tables 19 and 20. Each respondent contributed to only one cell of the contingency table, thereby ensuring that the chi-square test was meaningful.

**Table 17***Perception \* Awareness Crosstabulation (3x3)*

|                   |                 | <b>Awareness</b> |              |             |             |              |  |
|-------------------|-----------------|------------------|--------------|-------------|-------------|--------------|--|
|                   |                 |                  | <b>-1(L)</b> | <b>0(M)</b> | <b>1(H)</b> | <b>Total</b> |  |
| <b>Perception</b> | <b>-1(NEG)</b>  | <b>Count</b>     | 3            | 9           | 3           | 15           |  |
|                   |                 | <b>Expected</b>  | 1.3          | 3.9         | 9.8         | 15.0         |  |
|                   |                 | <b>Count</b>     |              |             |             |              |  |
|                   |                 | <b>% of</b>      | 2.2%         | 6.7%        | 2.2%        | 11.1%        |  |
|                   |                 | <b>Total</b>     |              |             |             |              |  |
|                   | <b>0(NEU)</b>   | <b>Count</b>     | 6            | 20          | 50          | 76           |  |
|                   |                 | <b>Expected</b>  | 6.8          | 19.7        | 49.5        | 76.0         |  |
|                   |                 | <b>Count</b>     |              |             |             |              |  |
|                   |                 | <b>% of</b>      | 4.4%         | 14.8%       | 37.0%       | 56.3%        |  |
|                   |                 | <b>Total</b>     |              |             |             |              |  |
|                   | <b>1(POS)</b>   | <b>Count</b>     | 3            | 6           | 35          | 44           |  |
|                   |                 | <b>Expected</b>  | 3.9          | 11.4        | 28.7        | 44.0         |  |
| <b>Count</b>      |                 |                  |              |             |             |              |  |
| <b>% of</b>       |                 | 2.2%             | 4.4%         | 25.9%       | 32.6%       |              |  |
|                   | <b>Total</b>    |                  |              |             |             |              |  |
| <b>Total</b>      | <b>Count</b>    | 12               | 35           | 88          | 135         |              |  |
|                   | <b>Expected</b> | 12.0             | 35.0         | 88.0        | 135.0       |              |  |
|                   | <b>Count</b>    |                  |              |             |             |              |  |
|                   | <b>% of</b>     | 8.9%             | 25.9%        | 65.2%       | 100.0%      |              |  |
|                   | <b>Total</b>    |                  |              |             |             |              |  |

**Table 18***Chi-Square Test Results for 3x3 Model*

|   | <b>Value</b>        | <b>df</b> | <b>Asymptotic<br/>Significance<br/>(2-sided)</b> | <b>Exact Sig.<br/>(2-sided)</b> |
|---|---------------------|-----------|--|---------------------------------|
| <b>Pearson Chi-Square</b>               | 17.760 <sup>a</sup> | 4         | .001   | .002                            |
| <b>Likelihood Ratio</b>                 | 17.612              | 4         | .001   | .002                            |
| <b>Fisher-Freeman-Halton Exact Test</b> | 17.498              |           |  | <.001                           |
| <b>N of Valid Cases</b>                 | 135                 |           |  |                                 |

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.33.

The results showed that the apparent association between awareness of OER and perception toward of OER was significant,  $X^2(4, N = 135) = 17.760, p < .001$ . However, upon closer inspection, the expected frequency (EF) assumption was not satisfied (i.e., no more than 20% of the EF counts could be below 5.0) (Field, 2018), which radically reduced the power of any conclusion drawn from this model. This EF assumption failure also meant that the 3x3 model could not be used as a viable test of the research hypothesis and an alternative model may be necessary.

**Table 19***Perception \* Awareness Crosstabulation (5x5)*

|                   |               | <b>Awareness</b> |              |             |             |              |              |       |
|-------------------|---------------|------------------|--------------|-------------|-------------|--------------|--------------|-------|
|                   |               | <b>-2(VL)</b>    | <b>-1(L)</b> | <b>0(M)</b> | <b>1(H)</b> | <b>2(VH)</b> | <b>Total</b> |       |
| <b>Perception</b> | <b>-2(VL)</b> | <b>Count</b>     | 2            | 1           | 4           | 3            | 3            | 13    |
|                   |               | <b>Expected</b>  | .5           | 1.0         | 2.0         | 4.2          | 5.3          | 13.0  |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 1.5%         | 0.7%        | 3.0%        | 2.2%         | 2.2%         | 9.6%  |
|                   | <b>Total</b>  |                  |              |             |             |              |              |       |
| <b>-1(L)</b>      |               | <b>Count</b>     | 0            | 1           | 1           | 2            | 3            | 7     |
|                   |               | <b>Expected</b>  | .3           | .5          | 1.1         | 2.3          | 2.9          | 7.0   |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 0.0%         | 0.7%        | 0.7%        | 1.5%         | 2.2%         | 5.2%  |
|                   | <b>Total</b>  |                  |              |             |             |              |              |       |
| <b>0(M)</b>       |               | <b>Count</b>     | 2            | 5           | 11          | 30           | 19           | 67    |
|                   |               | <b>Expected</b>  | 2.5          | 5.0         | 10.4        | 21.8         | 27.3         | 67.0  |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 1.5%         | 3.7%        | 8.1%        | 22.2%        | 14.1%        | 49.6% |
|                   | <b>Total</b>  |                  |              |             |             |              |              |       |
| <b>1(H)</b>       |               | <b>Count</b>     | 0            | 0           | 1           | 0            | 6            | 7     |
|                   |               | <b>Expected</b>  | .3           | .5          | 1.1         | 2.3          | 2.9          | 7.0   |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 0.0%         | 0.0%        | 0.7%        | 0.0%         | 4.4%         | 5.2%  |
|                   | <b>Total</b>  |                  |              |             |             |              |              |       |
| <b>2(VH)</b>      |               | <b>Count</b>     | 1            | 3           | 4           | 9            | 24           | 41    |
|                   |               | <b>Expected</b>  | 1.5          | 3.0         | 6.4         | 13.4         | 16.7         | 41.0  |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 0.7%         | 2.2%        | 3.0%        | 6.7%         | 17.8%        | 30.4% |
|                   | <b>Total</b>  |                  |              |             |             |              |              |       |



**Table 19 (continued)**

|              |                 | <b>Awareness</b> |              |             |             |              |              |
|--------------|-----------------|------------------|--------------|-------------|-------------|--------------|--------------|
|              |                 | <b>-2(VL)</b>    | <b>-1(L)</b> | <b>0(M)</b> | <b>1(H)</b> | <b>2(VH)</b> | <b>Total</b> |
| <b>Total</b> | <b>Count</b>    | 5                | 10           | 21          | 44          | 55           | 135          |
|              | <b>Expected</b> | 5.0              | 10.0         | 21.0        | 44.0        | 55.0         | 135.0        |
|              | <b>Count</b>    |                  |              |             |             |              |              |
|              | <b>% of</b>     | 3.7%             | 7.4%         | 15.6%       | 32.6%       | 40.7%        | 100.0%       |
|              | <b>Total</b>    |                  |              |             |             |              |              |

**Table 20***Chi-Square Test Results for 5x5 Model*

|  | <b>Value</b>        | <b>df</b> | <b>Asymptotic<br/>Significance<br/>(2-sided)</b> | <b>Exact Sig.<br/>(2-sided)</b> | <b>Exact Sig.<br/>(1-sided)</b> |
|--|---------------------|-----------|--|---------------------------------|---------------------------------|
| <b>Pearson Chi-Square</b>                    | 26.754 <sup>a</sup> | 16        | .044   | . <sup>b</sup>                  |                                 |
| <b>Likelihood Ratio</b>                      | 26.748              | 16        | .044   | . <sup>b</sup>                  |                                 |
| <b>Fisher-Freeman-<br/>Halton Exact Test</b> | . <sup>b</sup>      |           |  | . <sup>b</sup>                  |                                 |
| <b>Linear-by-Linear<br/>Association</b>      | 8.302               | 1         | .004   | . <sup>b</sup>                  | . <sup>b</sup>                  |
| <b>N of Valid Cases</b>                      | 135                 |           |  |                                 |                                 |

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.33.

b. Cannot be computed because there is insufficient memory.

These more granular results provided additional context where the intersections of awareness and perception levels are concerned and also indicated that there could be significant relation between awareness of OER and perception toward OER,  $\chi^2(16, N = 135) = 26.754, p < .044$ . However, a closer inspection of the Chi-square results showed that the EF assumption, again, was not satisfied (Field, 2018), which all but eliminated the power of any conclusion drawn from this model. This EF assumption failure also meant that the 5x5 model could not be used as a viable test of the research hypothesis and an alternative model would be necessary to be able to either accept or reject the research hypothesis.

To this end, it was determined that a 2x2 model would provide a viable means by which to test the research hypothesis. The awareness and perception categories with the lowest number of respondents from the 3x3 model—L for awareness and NEG for perception—were eliminated since they were deemed to have the lowest impact on the overall ratings. All respondents with an individual awareness or perception score on the low end were removed, which resulted in the loss of 24 respondents from the new analysis. Individuals with only M/NEU and/or H/POS awareness and perception scores were incorporated into the new model, with each respondent still only contributing to one cell of the contingency table to ensure the meaningfulness of the chi-square testing. Results of this 2x2 model testing are depicted in Tables 21 and 22.

**Table 21***Perception \* Awareness Crosstabulation (2x2)*

|                   |               | <b>Awareness</b>  |             |              |        |
|-------------------|---------------|-------------------|-------------|--------------|--------|
|                   |               | <b>0(M)</b>       | <b>1(H)</b> | <b>Total</b> |        |
| <b>Perception</b> | <b>0(NEU)</b> | <b>Count</b>      | 20          | 50           | 70     |
|                   |               | <b>Expected</b>   | 16.4        | 53.6         | 70.0   |
|                   |               | <b>Count</b>      |             |              |        |
|                   |               | <b>% of Total</b> | 18.0%       | 45.0%        | 63.1%  |
|                   | <b>1(POS)</b> | <b>Count</b>      | 6           | 35           | 41     |
|                   |               | <b>Expected</b>   | 9.6         | 31.4         | 41.0   |
|                   |               | <b>Count</b>      |             |              |        |
|                   |               | <b>% of Total</b> | 5.4%        | 31.5%        | 36.9%  |
| <b>Total</b>      |               | <b>Count</b>      | 26          | 85           | 111    |
|                   |               | <b>Expected</b>   | 26.0        | 85.0         | 111.0  |
|                   |               | <b>Count</b>      |             |              |        |
|                   |               | <b>% of Total</b> | 23.4%       | 76.6%        | 100.0% |

**Table 22***Chi-Square Test Results for 2x2 Model*

|   | <b>Value</b>       | <b>df</b> | <b>Asymptotic<br/>Significance<br/>(2-sided)</b> | <b>Exact Sig.<br/>(2-sided)</b> | <b>Exact Sig.<br/>(1-sided)</b> |
|---|--------------------|-----------|--|---------------------------------|---------------------------------|
| <b>Pearson Chi-Square</b>                 | 2.800 <sup>a</sup> | 1         | .094   | .109                            | .073                            |
| <b>Continuity Correction <sup>b</sup></b> | 2.077              | 1         | .150   |                                 |                                 |
| <b>Likelihood Ratio</b>                   | 2.949              | 1         | .086   | .109                            | .073                            |
| <b>Fisher's Exact Test</b>                |                    |           |  | .109                            | .073                            |
| <b>N of Valid Cases</b>                   | 111                |           |  |                                 |                                 |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.60.

b. Computed only for a 2x2 table.

These more targeted results provided the requisite ability to properly test the research hypothesis, as the EF assumption was met, with all expected counts being over 5.

Unfortunately, the p-value for the 2x2 model came in at .094, nearly doubling the .05 reliability threshold. As such, the researcher was left no alternative but to reject the hypothesis.

### **Chapter Summary**

The chapter provided a detailed look at the data collection, coding, and analysis processes used during the research project. The researcher analyzed the data to identify the potential association between OER awareness and faculty perception toward OER and also attempted to determine if there were target levels of OER awareness that would

increase the likelihood of a more positive perception of OER among survey respondents.

Chapter V summarizes the study and discusses the results and recommendations for future research.

## CHAPTER V

### DISCUSSION

#### Introduction

Gaining a clearer understanding of faculty awareness of and perceptions toward OER is a logical first step for anyone hoping to support the growth and development of OER initiatives at HEIs. OER have the potential to greatly benefit the educational community by providing access to high-quality materials at a significantly lower cost than traditional educational resources. This can be especially beneficial for students who may struggle to afford the high cost of traditional textbooks and other educational materials. In addition to the financial benefits, OER can also promote pedagogical innovation by allowing educators to customize and adapt materials to fit the needs of their students. OER can also facilitate collaboration and sharing within the educational community, as educators can freely share and build upon each other's work. OER have the potential to greatly improve access to education and support for the development of innovative teaching and learning practices.

This nonexperimental, baseline study explored the relationship between faculty awareness of and perceptions toward OER. Though the selected survey instrument contained both open- and close-ended questions and a mixture of data analysis techniques were used to study the submitted responses, the results were viewed through a primarily quantitative lens to best align with the study's goal of maintaining a narrow focus on a few causal factors. This chapter summarizes the study's findings and discusses the contribution to the broader research literature. A discussion of the implications for

educational professionals and institutions and possible barriers and solutions to the incorporation of OER will be presented, followed thereafter by suggestions for future research inspired by this study.

### **Overview of Study**

The rising cost of textbooks is a significant concern for many students, particularly those who are low-income or from underrepresented groups. According to the College Board, the average student at a public four-year university in the U.S. spends approximately \$1,240 per year on textbooks and associated course materials; the average student at a public two-year college averages \$1,420, and the average student at a private four-year college spends approximately \$1,220 (Hanson, 2021). While this study did not directly address the issue of textbook cost, numerous respondents reported an openness to the general idea and/or a consideration of traditional textbook alternatives that would provide their students with some semblance of financial relief. Textbook cost can be a significant financial burden for many students and can also be a barrier to educational access and success. OER materials can address rising textbook costs by providing students with access to high-quality educational content that they can use for free. This can include textbooks, videos, simulations, and other types of resources that can be used to support learning. Because OER is openly licensed, it can be used, shared, and modified by anyone, which means that it can be tailored to the specific needs of different students and institutions.

OER's potential for reducing student costs and removing a potential barrier to student access and success is real. However, the ability to realize said potential does not



come without up-front costs and a fair amount of work on the front end for educators and institutions. This study sought to establish a baseline where faculty awareness of, and perceptions toward OER, were concerned to provide something against which future studies could be compared. A nonexperimental, survey approach was utilized to reach the broadest audience possible in an attempt to gain a random and representative sample of the population surveyed. In spite of the survey being distributed to over 1,000 individuals with assigned teaching responsibilities, the response rate was low. This significantly impacted the researcher's ability to draw any solid conclusions from the collected data.

It was determined that an association between faculty awareness of OER as an alternative to or supplement for traditional textbooks and their perception of OER as an educational medium could not be determined within the group of respondents based on the inability to satisfy the EF rules related to 3x3 and larger chi-square distribution tables. However, it must also be stated that additional research is advisable to determine the generalizability of the study's amassed descriptive data within its localized context. Nevertheless, the results provide a solid baseline against which these continued research efforts can be compared.

### **Conclusions**

OER can be used to address the rising textbook costs by encouraging the use of low-cost or no-cost alternatives to traditional textbooks. For example, many OER materials are available in digital formats, which can be accessed and used on a wide range of devices, including smartphones, tablets, and computers. Participants in this

study were provided with an open-ended question directly related to their justification for opting to incorporate OER materials into their course design; their justifications were based solely on their current perception of OER. Only 14 of the survey's 135 respondents provided an answer to this question; however, six of those 14 directly referenced pricing and the ability to save their students money as a justification for their decision. While OER can be more cost-effective than purchasing their more expensive traditional textbook counterparts (Todorinova & Wilkinson, 2020), no savings will be realized if faculty do not opt to incorporate them. For those students who still wish to have a hardcopy of the text, there are low-cost printing options available for OER as well. This shifting focus to low-cost or no-cost alternatives provides instructors with a more flexible approach to course design, providing them with the freedom to use a combination of OER, commercial resources, and even their own materials and assessments within the same course (Bliss, Hilton, et al., 2013; Hilton, 2016; Ozdemir & Hendricks, 2017; Zhadko & Ko, 2019).

The findings from the survey indicated a moderate to high level of OER awareness among the respondents (91.11%). However, as the response rate was low (13.34%), it is difficult to say with any degree of certainty that this level of awareness would remain consistent within a larger group of respondents. As far as overall awareness levels are concerned, it seems safe to assume a certain amount of regression toward the national awareness average (48%) derived from the findings of the Seaman and Seaman (2020) nationally distributed research study. They provided the following caveat as additional context for their findings: "While familiarity with the term OER has now reached a majority, many faculty remain unfamiliar with the licensing or how to use

these materials, and current rates of growth will not change this for many years” (Seaman & Seaman, 2020, p. 2). Although conceptual understanding of OER has likely increased within the population studied since the beginning of the university’s OER grant-funded initiative, continued efforts to address the unfamiliarity with licensing and how to use OER materials are needed to provide further insights and continued growth.

In addition to the cost savings for students, OER can also have other benefits for educators and institutions. They can be customized and adapted to fit the specific needs of a class or educational program. Instructors can use the resources that are most relevant to and appropriate for their students, and they can also add their own materials and assessments to supplement the other material (Todorinova & Wilkinson, 2020). This idea was mentioned by a small portion of survey respondents, and while only four of the 39 open-ended respondents (10.26%) for this specific question cited this as a reason, it is still worth noting as an existing component of the institution’s developing OER awareness. Open resources can also be designed to align with specific learning outcomes, which can help educators to create more effective and efficient learning experiences for their students (Ozdemir & Hendricks, 2017; Zhadko & Ko, 2019). Instructors can also use these resources to create assessments that are aligned with the learning outcomes, which can help to measure student progress and provide useful feedback (Jaggars, Rivera, & Akani, 2019; Seaman & Seaman, 2019). With over half of the subset of respondents who reported previous OER experience having tried their hand at adapting (30 of 83), creating (4 of 83), or a combination of adapting and creating (15 of 83), the ability to provide students with customized learning materials and useful feedback might well have been a motivator.

OER are no- or very low-cost, which can help instructors and institutions save money on textbook costs. This savings can be reallocated to support other educational initiatives, including professional development and technology upgrades. Open resources include a wide variety of high-quality materials that instructors can use to enhance the quality of their instruction and provide students with engaging and meaningful learning experiences (Jaggars, Rivera, & Akani, 2019). Because they are openly licensed and can be shared and modified by others, OER encourage educators to collaborate with other instructors and institutions to create new resources and share best practices, which can help to improve the quality of education across a wider segment of the educational landscape. Nearly a quarter of the subset of respondents who reported previous OER experience (83 of 135) also reported having previous experience collaborating with others (19 of 83), both at the same institution as well as at HEIs in other states. While this is far from a plurality, it is worth noting for descriptive purposes if nothing else. Educators and administrators can also benefit by being part of the OER community and developing new skills, both in creating and adapting more diverse materials and also in understanding the new pedagogical approaches enabled by OER (Spilovoy, Seaman, & Ralph, 2020). While 60.7% of the survey's respondents reported awareness of university OER efforts, this was still a small subset of the entire university population (8.1%) with designated teaching responsibilities. This provides a certain level of optimism; however, this optimism must be tempered with a bit of realism as well due to the stated low response rate.

A solid understanding of the participants' previous experience with OER and the available modes of institutional support for OER development have been and will

continue to be crucial to informing future OER endeavors and practice. By analyzing the data, a better understanding of the information contained within it was achieved, which can then be used to make more informed, effective, and optimized decisions. The chi-square analysis of the coded responses revealed a more thorough picture as a result of this enhanced breakdown of respondents' past experiences and the resources made available to them; however, as the survey's response rate was low, additional research is warranted to determine to what degree the study's findings are applicable to the greater university teaching community.

Because of the low response rate and additional warranted research necessary for determining the applicability of the study's findings to a broader audience, it will be difficult to say with any level of certainty that the results are or are not as generalizable to the population as a whole as they would be with a higher response rate until such issues have been addressed. As such, this study's results should only be viewed as a baseline for future studies and cannot be seen as a definitive answer to the research question with regard to the entire surveyed population. On the other hand, the results can be seen as a starting point and a means of opening up lines of communication where they did not previously exist.

### **Implications for Institutions Looking to Venture into OER**

Institutional support is vital for the successful adoption and use of OER. This can include providing financial resources for the development and maintenance of open resources, as well as supporting the training and professional development of faculty and staff in the use of these materials (Baas et al., 2019; Fischer et al., 2020). Through a

state-funded grant initiative, the participating institution was able to provide financial compensation to grantees for the adopting, adapting, and/or creating of OER content that was Americans with Disabilities Act (ADA) compliant and could be available for the print-on-demand service available through the institution's bookstore. The initiative also funded monthly workshops and training sessions for interested faculty, graduate students, and others with assigned teaching responsibilities.

Institutions can also play a role in promoting the use of OER among faculty and students, and in creating policies and procedures to encourage their use on campus. Through this invaluable support, institutions can help to promote equity in education and increase access to high-quality learning materials for all students, regardless of their financial resources. Studies have shown that institutional support can have a significant impact on the use of open resources within HEIs. When a HEI provides financial resources, training, and professional development for faculty and staff, the institution can create a culture of OER use on campus, which, in turn, can encourage more faculty members to adopt and create open resources, and can also increase student awareness and use of these resources (Griffiths et al., 2020).

Institutional support for the development and use of OER can also help overcome some of the barriers that can prevent their use. Over half of the survey respondents who reported previous experience with OER (43 of 82) also stressed the importance that the support of their departments and/or university administrators, both emotionally and financially, was a reason for them continuing with their OER development and usage. For example, if an institution provides funding for OER development, it can help offset the upfront costs associated with creating these materials. Additionally, if an institution

has policies and procedures in place to encourage the use of OER, it can make it easier for faculty members to incorporate these materials into their courses (Zhadko & Ko, 2019; Griffiths et al., 2020).

### **Overcoming Barriers to OER Use**

The potential barriers to OER use provided by the respondents paralleled much of what has been included in the research literature previously: limited awareness (Parks et al., 2020), lack of (financial or otherwise) departmental/institutional support (Allen & Seaman, 2016), fear of change (Wang & Towey, 2017), sustainability of OER efforts (Marín et al., 2022), general quality concerns, and a general lack of time (Belikov & Bodily, 2016). Of the survey's 135 respondents, 107 provided responses on the open-ended questions relating to potential barriers to OER use. A general lack of time (47 of 107) to find and/or develop high-quality OER materials was the most common potential barrier mentioned, a justification that ranked 6<sup>th</sup> across national studies, with a lack of general awareness of open materials and/or of the supports available to assist with its development coming in a close second (44 of 107), justifications that ranked 1<sup>st</sup> and 2<sup>nd</sup> nationally. Respondents need more time to find and evaluate materials for use and want more institutional support to make that happen; whether they are aware that such support currently exists is a separate matter entirely. A lack of quality among the available resources (33 of 107), the 5<sup>th</sup> ranked concern nationally, and limited availability of open content for more specialized topics (26 of 107) were also mentioned by respondents. Several respondents (12 of 107) were also concerned about the intellectual property rights

of the developed learning materials and who, if anyone, stood to profit from their development.

Overcoming these barriers can require a combination of efforts, such as providing professional development and administrative support for faculty, both of which are occurring at the participating institution (albeit in a limited capacity), promoting the availability and benefits of OER, and addressing concerns about quality and intellectual property rights. Providing training and resources for educators on how to effectively integrate open resources into their curriculum can help increase their comfort and confidence in using these materials (Allen & Seaman, 2016; Belikov & Bodily, 2016; Wang & Towey, 2017). Faculty OER evangelists as well as a tenure-track faculty member assigned the role of OER coordinator have taken the helm where professional development and best-practices training with respect to OER are concerned at the participating institution. Administrators can play an equally crucial role in promoting the use of OER by providing faculty with financial and technical support, as well as creating policies that encourage and promote their use. These are just a few examples of ways that HEIs can overcome barriers to increasing OER usage on their campuses; however, it is important to keep in mind that there is no one size fits all method for overcoming any of the mentioned barriers. Different institutions may face different barriers or may experience the same barriers differently. As such, differing combinations of strategies and interventions will be needed to effectively promote the use of open resources across different institutional settings.



## **Research Limitations**

While the researcher took every means possible to avoid influencing the data collection in any way, it must be noted that several of the individuals who completed the survey also have a vested interest in OER development and increasing awareness across the campus community. Several of these OER evangelists relayed to the researcher that they had been encouraging their colleagues to complete the survey as well. It is impossible to say whether this participant advocacy had any impact on the actual survey responses; however, it is hard to imagine that it did not impact them in one way or another. It must also be noted that a significant number of individuals who were eligible to complete the survey informed the researcher that they were not going to complete it because they were not well versed on the topic and did not want to adversely impact the data and results drawn from it. Unfortunately, these attempts to keep from potentially skewing the data in one direction may have directly resulted in it being skewed in the other.

## **Suggestions for Future Research**

### **Primary Recommendation**

It could provide valuable insight to replicate the current research study with a different cohort of individuals with designated teaching responsibilities while also extending the collection window to obtain a higher response rate to ensure the results are more generalizable to the individuals with designated teaching responsibilities population as a whole. Instead of utilizing the awareness categories used in this study, it would also benefit the future research to include the awareness categories used by researchers with

Bay View Analytics (i.e., Allen, J. Seaman, Spilovoy, J. E. Seaman, and Ralph) since their first OER impact study in 2012, as this would also provide a better chance for generalizability of results. A future study could also benefit from a modification to the awareness score ranges, as it was determined that they could have been too broad in the current study. These awareness breakdowns and the proposed score ranges are provided in Table 23.

**Table 23**

*Awareness Categories Used by Bay View Analytics and Proposed Score Ranges for Individual Awareness Scoring*

| <b>Awareness Category</b> | <b>Proposed Score Range</b> |
|---------------------------|-----------------------------|
| Not Aware                 | (-100) – (-51)              |
| Somewhat Aware            | (-50) – 0                   |
| Aware                     | 1 – 50                      |
| Very Aware                | 51 – 100                    |

These breakdowns would directly address the oversized score ranges that were likely responsible for some of the expected frequency issues that plagued this study.

A related recommendation would be to expand upon the research study as described above to include additional institutions — either state or regional — to determine if the results are a localized phenomenon or evidence of something larger. The expanded study could also determine if more significant results are being achieved elsewhere and if so, would provide additional ideas for improving conditions locally. Researchers could study best practices for creating high-quality OER and ways to make them more widely available to educators and learners.

As this would be an expanded project, significant collaboration would be necessary from other entities, such as additional HEIs, the state higher education commission, and/or the regional education board. Through collaboration with these outside entities, access to a broader range of expertise and resources would be accomplished and could provide researchers with access to resources or subject matter expertise that they would not have had access to if working alone. This collaboration could also provide increased validity and reliability in the research findings. By pooling resources and expertise, collaborators could develop more rigorous and well-designed research studies that would have the potential to produce more robust and generalizable findings. Collaborating with others could also increase the potential for the research to have a greater impact and could also provide more opportunities for interdisciplinary work, which is particularly useful for OER research because it often involves collaboration between researchers from fields such as education, technology, and library science (Zhadko & Ko, 2019; Fischer et al., 2020).

The incorporation of outside entities could also increase the efficiency of the research by sharing the workload and avoiding duplication of effort, which can save time, money, and resources, thereby providing the institutions with higher chances of making the most of their research investment (Cummings-Sauls et al., 2018). Collaboration with other institutions and educational entities can also provide an opportunity to build networks and share knowledge and experience. Building a community of practice around OER could also support the continued use, improvement, and sustainability of the resources.

## Secondary Recommendation

It could also be valuable to incorporate the COUP (Cost, Outcomes, Usage, and Perceptions) framework, originally developed by the Open Education Group, into a more in-depth study to measure the full impact of OER, which could also include a look at the impact of open resources and materials on student learning outcomes. Lumen Learning (n.d.) and the Open Education Group (n.d.) provide the following breakdown of the COUP framework:

- Cost (C) relates to the financial and economic considerations associated with the use of OER and examines the cost of producing, distributing, and using OER, as well as any cost savings associated with their use.
- Outcomes (O) relates to the effects of open resources on student learning outcomes (SLOs) and examines the effectiveness of these materials in improving student learning and achievement, as well as any other outcomes that are important within a specific context.
- Usage (U) relates to the extent to which OER are being used and adopted by educators and students and examines the factors that influence the uptake and use of open content and the barriers that may be hindering their adoption.
- Perceptions (P) relates to the attitudes, beliefs, and views of stakeholders toward OER and examines how educators, students, and other stakeholders view these resources, including their perceived benefits and limitations.

Studying the four separate areas would provide a more solid understanding of the relationships, if any, that exist between the areas and could provide a better idea of potential next steps.

All of this would ideally involve a comparison of OER and commercial educational materials (CEM), including but not limited to comparing the quality and effectiveness of OER with CEM. Researchers could also investigate whether students who use OER perform better on exams or have better retention rates compared to those who use more traditional educational materials. This can help educators, administrators, and policy makers make informed decisions about the use of OER in education. Additionally, research in this area could help to identify best practices for the use of OER and could inform the development of OER materials to better support student learning. Furthermore, it could also help to understand the effectiveness and impact of OER on student in a broader sense and make it possible to promote OER more widely if proven to be effective.

### **Tertiary Recommendation**

The final recommendation would require more of a longitudinal study, evaluating the long-term sustainability of OER. Ensuring continued access to resources is crucial. OER can be freely accessed by anyone with an internet connection, but if the resources are not sustainably maintained, they may become outdated or disappear from the internet altogether (Cummings-Sauls et al., 2018; Fischer et al., 2020). By evaluating the sustainability of open content, researchers can ensure that these resources continue to be available for use in the future. Open education initiatives are often funded by grants or

other one-time sources of funding, which also includes Higher Education Emergency Relief Fund (HEERF) monies as a result of the passage of American Rescue Plan legislation (Williamson, 2022). Evaluating the long-term sustainability of OER can help researchers understand which funding models are most effective in ensuring that the resources are maintained and updated over time.

Evaluating the sustainability can also provide insights into how resources can be improved to better meet the needs of learners. For example, research could show that certain types of resources (e.g., multimedia content or interactive activities) are more impactful and more sustainable than others. Because OER initiatives are often driven by policy decisions, understanding their long-term sustainability can help educators and decision-makers make more informed decisions about the potential of open resources within their own unique context. Lastly, OER initiatives can be a vehicle for innovation in education, and an evaluation of the long-term sustainability of these resources can reveal new opportunities for innovation and improvement. Overall, this recommendation could help ensure that these open resources continue to be widely available and are of the highest possible quality.

### **Concluding Remarks**

There was a significant amount of descriptive data collected during this study that could point to areas within the institution that are already well on their way where OER and open educational practices (OEP) are concerned as well as highlight specific educational modalities that have been more accepting of OER (e.g., face-to-face vs. hybrid/hyflex vs. online course offerings). It could also prove useful to look at the results

of this study in conjunction with and/or in comparison to data collected prior to the beginning of the university's OER grant initiative, as this could provide a means of verifying or refuting the initiative's efficacy and to assist with a more targeted approach during subsequent phases of OER and OEP implementation. Although the results of this study were based on a relatively small subset of the entire population at southeastern four-year public university, there may be enough compelling evidence to encourage HEIs to, at the very least, consider investing more time and money into lower and no-cost textbook alternatives for students, which can dovetail with and provide a supplement for many other HEI diversity, equity, and inclusion and student success efforts and initiatives.

As the Tennessee Higher Education Commission's Tennessee Open Education program continues to make strides in promoting "college student access and success in Tennessee by increasing the adoption, adaptation, curation, and creation of inclusive, accessible, and high-quality open and low-cost instructional materials" across the state (THEC, 2022), increasing numbers of individuals with assigned teaching responsibilities are becoming more aware of the potential inherent in OER and OEP. As illustrated in this study, establishing a solid baseline where awareness of OER is concerned is a necessary first step in the process and should be addressed before the implementation of any initiative aimed at increasing their usage. Otherwise, the effectiveness of these subsequent initiatives cannot be measured with as high of a degree of accuracy. Therefore, it is the primary recommendation of the investigator that HEI administrators and other key stakeholders strongly consider such studies well before implementing any

initiatives or policy changes aimed at increasing the awareness and use of OER and OEP at their institution.



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**APPENDICES**

**Appendix A**  
**IRB Approval Letter**

# IRB

## INSTITUTIONAL REVIEW BOARD

Office of Research Compliance,  
010A Sam Ingram Building,  
2269 Middle Tennessee Blvd  
Murfreesboro, TN 37129



### HUMAN PARTICIPANT RESEARCH IRBF004IC INFORMED CONSENT - EXEMPT

Dear Researcher,

The IRB and MTSU reminds you that the two essential components of research involving human subjects are adequate informed consent and the protection of participant's rights, such as autonomy and confidentiality). Therefore, MTSU requests its faculty, staff and students to take the consent process of the human subject research very seriously – it is a conversation and not a mere document. If you cannot disclose a certain activity or an intervention to the participants, then you must not include such processes in your study. Moreover, the law requires the administration of the informed consent, but it does not clearly state how many times. Researchers are encouraged to remind the participants of their rights as many times as it is needed. In order to qualify for exemption, the informed consent document or a process must satisfy the following minimum requirements:

- a) Summative descriptions of the purpose of the study and the specifics on what is expected from the subjects in order for them to be research participants
- b) Participation is fully voluntary and they can withdraw at any time without penalty or prejudice
- c) An overview on what will be required from the participants
- d) Clear disclosures of possible discomforts and/or potential risks as a result of the participation
- e) Total time to be taken in the study and other factors that would influence the participants
- f) Contact information for the principal investigator and the faculty sponsor if the PI is a student.

We also would like to remind our researchers that working with human participants is not an academic right; it is a true privilege.

MTSU IRB

#### Instructions:

This template is meant for obtaining informed consent from a human participant by providing a paper copy to disclose the research-related activities. The same text and structure must be used for online surveys, verbal interviews through telephone or in person, and other means of collecting data.

- A. **Participant Copy** – *Give this copy to the participant once it is signed by the PI:*
  - a. Fill in all of the unprotected spaces – Do not leave any of the fields empty
  - b. The research team must give disclosure of what is expected from the participant and provide a description of the study – Please note that “N/A” is not an accepted response.
  - c. Once the form receives IRB approval, the PI must sign the document and hand it to the participant to read – the faculty advisor must also sign if the PI is a student
  - d. In addition to allowing the participant to read this form, the investigators must also explain the procedures verbally. The investigators must encourage the participants to ask questions.
- B. **Researcher Copy** – *Retain this copy for your records:*
  - a. Fill in all of the unprotected spaces
  - b. The participant will accept his/her participation by entering his/her initials.

# IRB

## INSTITUTIONAL REVIEW BOARD

Office of Research Compliance,  
010A Sam Ingram Building,  
2269 Middle Tennessee Blvd, Murfreesboro, TN 37129



## INFORMED CONSENT – RESEARCHERS’ DISCLOSURES

(Part A – Participant’s Copy)

|                        |   |                           |
|------------------------|---|---------------------------|
| Study Title            | <i>The Impact of Faculty Awareness of Open Educational Resources on Faculty Perceptions Toward Open Educational Resources</i> | Office Use                |
| Principal Investigator | <b>Scott B. Haupt</b>   | IRB ID:23-2020            |
| Faculty Advisor        | Jim Rost  | APPROVED                  |
| Contact Information    | scott.haupt@mtsu.edu - (615) 898-2061   | Approval Date: 10/7/22    |
|                        |   | Expiration Date: 10/31/23 |

Dear Participant,

On behalf of the research team, the Middle Tennessee State University (MTSU) would like to thank you for considering to take part in this research study. You have been contacted by the above identified researcher(s) to enroll as a participant in this study because you met its eligibility criteria.

This consent document describes the research study for the purpose of helping you to make an informed decision on whether to participate in this study or not. It provides important information related to this study, possible interventions by the researchers, and proposed activities by you. This research has been reviewed by MTSU’s internal oversight entity - Institutional Review Board (IRB), for ethical practices in research (visit [www.mtsu.edu/irb](http://www.mtsu.edu/irb) for more information).

Approved 10/7/22

As a participant, you have the following rights:

- You should read and understand the information in this document before agreeing to enroll
- Your participation is absolutely voluntary and the researchers cannot force you to participate
- If you refuse to participate or to withdraw midway during this study, no penalty or loss of benefits will happen
- The investigator **MUST NOT** collect identifiable information from you, such as, name, SSN, and phone number
- The researcher(s) can only ask you to complete an interview or a survey or similar activities and you must not be asked to perform physical activities or offer medical/psychological intervention
- Any potential risk or discomforts from this study would be lower than what you would face in your daily life

After you read the following disclosures, you can agree to participate in this study by completing “Part B” of this informed consent document. You do not have to do anything further if you decide not to participate.

### 1. What is the purpose of this study?

The purpose of this study is to investigate the relationship between faculty awareness of OER and their perception toward OER as a potential required or supplemental course material.

### 2. What will I be asked to do in this study?

Participants will be asked to complete a 32-question survey consisting of five sections: Demographics (five questions); Current Knowledge and Awareness of OER (twelve questions, eight of which are contingency-based); Institutional Support of OER Use (seven questions, four of which are contingency-based); Interest in Open Educational Resources (five questions, one of which is contingency-based); and Open Licensing and Discipline-Specific Considerations (three questions).

**3. How many times should I participate or for how long?**

Participants are asked to complete the survey one time. The survey should take approximately 15-20 minutes to complete.

**4. What are the risks and benefits if I participate?**

There are no known risks or discomforts expected to result from participation in this study. The data gained in this study is expected to benefit society by describing the needs and interests of instructors regarding OER. This may result in creating more resources to meet the needs of instructors in specific disciplines, such as targeted support and workshops on topics for which the study has identified low awareness.

**5. What will happen to the information I provide in this study?**

All participant response data will be gathered and scores calculated via Qualtrics and then imported into NVivo for coding (where necessary) and SPSS for analysis. There will be no personally identifiable information collected during the survey process; as such, participants will be grouped according to the first three questions in the Demographics section (faculty status, years of teaching, and discipline and subdiscipline).

**6. What will happen if I refuse to participate and can I withdraw if I change my mind in the middle?**

Participating in this study is completely voluntary. You may choose not to take part in the study or stop participating at any time, for any reason, without penalty or negative consequences. You can skip any questions that you do not wish to answer.

**7. Whom can I contact to report issues and share my concerns?**

You can contact the researcher(s) by email or telephone ([scott.haupt@mtsu.edu](mailto:scott.haupt@mtsu.edu) - (615) 898-2061 and [jim.rost@mtsu.edu](mailto:jim.rost@mtsu.edu) - (615) 898-5481). You can also contact the MTSU's Office of Research Compliance by email – [irb\\_information@mtsu.edu](mailto:irb_information@mtsu.edu). Report compliance breaches and adverse events by dialing 615 898 2400 or by emailing [compliance@mtsu.edu](mailto:compliance@mtsu.edu).

Approved 10/7/22

|  |                             |      |
|--|-----------------------------|------|
| INVESTIGATOR's SIGNATURE               | FACULTY ADVISOR's SIGNATURE | DATE |
| NON-IDENTIFIABLE PARTICIPANT ID# _____ |                             |      |

**Confidentiality Statement:**

All efforts, within reason, will be made to keep the personal information in your research record private but total privacy cannot be promised, for example, your information may be shared with the MTSU IRB. In the event of questions or difficulties of any kind during or following participation, you may contact the Principal Investigator as indicated above. For additional information about giving consent or your rights as a participant in this study, please feel free to contact our Office of Compliance at (615) 898 2400.

**Compensation:**

Unless otherwise informed to you by the researcher(s), there is no compensation for participating in this study. The investigator must disclose if the participant would be compensated in the benefits section.

**Study-related Injuries:**

MTSU will not compensate for study-related injuries.

**Exemption Criteria:**

This study was submitted to the MTSU IRB – an internal oversight entity to oversee research involving human subjects. The IRB has determined that this investigation consists of lower than minimal risk and it is exempt from further IRB processes based on the criteria: “*Category 2 - Educational Tests.*”

**Note to the Participant**

You do not have to do anything if you decide not to participate in this study. But if you wish to enroll as a participant, please complete “Part B” of this informed consent form and return it to the researcher. Please retain the signed copy of “Part A” for your future reference.

# Approved 10/7/22



# IRB

## INSTITUTIONAL REVIEW BOARD

Office of Research Compliance,  
010A Sam Ingram Building,  
2269 Middle Tennessee Blvd, Murfreesboro, TN 37129

### INFORMED CONSENT

(Part B – Researcher’s Copy)

|                        |   |                             |
|------------------------|---|-----------------------------|
| Study Title            | <i>The Impact of Faculty Awareness of Open Educational Resources on Faculty Perceptions Toward Open Educational Resources</i> | Approval Information        |
| Principal Investigator | <b>Scott B. Haupt</b>   | IRB ID: <i>NOT APPROVED</i> |
| Faculty Advisor        | Jim Rost  | Approval Date: mm/dd/yyyy   |
| Contact Information    | scott.haupt@mtsu.edu - (615) 898-2061   | Expiration Date: N/A        |

You have been contacted by the investigator(s) because the researchers believe you meet the eligibility criteria to participate in the above referenced research study. Be aware that you must NOT be asked by the investigator(s) to do anything that would pose risk to your health or welfare, such as:

- Identifiable information – name, phone number, SSN, address, College ID, social media credentials (FaceBook page, twitter, etc.), email, identifiable information of closest relatives and etc.
- Physical activities – like exercise studies
- Medical intervention – testing drugs, collection of blood/tissue samples or psychological questions
- Nothing risky – any proposed activity that would expose you to more risk than what you would face on a day to day basis is not approved by the IRB

# Approved 10/7/22

However, you can do the following:

- Withdraw from the study at any time without consequences
- Withdraw the information you have provided to the investigators before the study is complete
- Ask questions so the researcher must explain the procedures used in the research verbally.

The investigators must give you enough time to ask any questions. Once you have had a chance to read “Part A” (Participant’s Copy), indicate your acceptance by checking the appropriate boxes:

|  | NO                       | YES                      |
|--|--------------------------|--------------------------|
| ➤ I have read investigator(s)’ disclosure (Part A) for the above identified research | <input type="checkbox"/> | <input type="checkbox"/> |
| ➤ The researcher(s) explained the procedures to be conducted verbally                | <input type="checkbox"/> | <input type="checkbox"/> |
| ➤ I understand each part of the interventions and all my questions are answered      | <input type="checkbox"/> | <input type="checkbox"/> |
| ➤ The researcher(s) gave me a signed copy of the disclosure page (Part A)            | <input type="checkbox"/> | <input type="checkbox"/> |

By initialing below, I give my consent to participate in this study. I understand that I can withdraw from the study at any time without facing any consequences.

X

----- NON-IDENTIFIABLE PARTICIPANT ID# -----

Participant initial                      Date

*Initial this copy and return it to the researcher and retain Part A for your reference in case you have questions or you wish to get in touch with the researcher or with the MTSU IRB*

## **Appendix B**

### **Survey Instrument**

#### **Informed Consent**

Investigator: Scott B. Haupt, *Middle Tennessee State University (MTSU)*

This document contains information to help you decide whether you wish to participate in this research study or not. Your participation in this study is completely voluntary. Please discuss any questions you have about the study or about this form with the investigator before deciding to participate.

#### **Introduction**

You are invited to participate in a research study to explore:

- Instructors' current knowledge and awareness of Open Educational Resources (OER)
- Instructors' awareness of and interest in open pedagogy
- What material formats and types of educational resources instructors in specific disciplines are most likely to utilize; and
- Incentives and deterrents to instructors' use of OER.

You are being invited to participate in this study because you are an instructor at a college or other higher education institution.

#### **Description of Procedures**

If you agree to participate, you will be asked to complete an online survey. The survey will contain both open-ended and closed-ended questions on the following five topics:

- I. Demographics
- II. Knowledge and Awareness of OER
- III. Institutional Support for OER Use
- IV. Interest in OER
- V. Open Licensing and Other Considerations for Use

Your participation in this survey will last for approximately 15-20 minutes. No participant should spend more than 30 minutes of their time completing this survey.

Data analysis for the survey will be completed through Qualtrics and SPSS, with open coding of the qualitative data accomplished by the researcher. The results will be reported in a discussion format utilizing quotations from the open-ended questions of the survey and presenting trends found within the closed-ended questions.

### **Risks or Discomforts**

There are no known risks or discomforts expected to result from this study.

### **Benefits**

The data gained in this study is expected to benefit society by describing the needs and interests of instructors regarding OER. This may result in the creation of more resources to meet the needs of instructors in specific disciplines, such as targeted support and workshops on topics for which the study has identified low awareness.

### **Costs and Compensation**

There will be no monetary costs for any of the participants associated with this survey. Furthermore, you will not be compensated for participating in this study.

### **Participant Rights**

Participating in this study is completely voluntary. You may choose not to take part in the study or stop participating at any time, for any reason, without penalty or negative consequences. You can skip any questions that you do not wish to answer. If you have any question about the rights of research subjects or research-related injury, please contact the MTSU Institutional Review Board (IRB) at (615) 898-2400 or [irb\\_information@mtsu.edu](mailto:irb_information@mtsu.edu).

### **Confidentiality**

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies, auditing departments of MTSU, and the IRB (a committee that reviews and approves human subject research studies) may inspect and/or

copy study records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken:

- No personally identifiable information is required to complete the survey.
- All data will be kept in secure locations.
- The results of the Qualtrics survey will only be available to the researcher, and all data that is downloaded will be kept in a locked folder within a secure laptop computer.
- The participants' identities will be unknown to the investigator throughout the data collection, analysis, and reporting processes.
- The only identifying information that will be reported will be the demographic information collected in the survey.

### **Questions**

If you have any questions at any time during this study, you are encouraged to contact Scott Haupt, [scott.haupt@mtsu.edu](mailto:scott.haupt@mtsu.edu), for further information about the study.

### **Consent and Authorization Provisions**

By clicking through to participate in the survey below, you are indicating that you meet the criteria for participation in this survey, that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document, and that your questions have been satisfactorily answered. Please print a copy of this form for your records.

After reading the above information, do you consent to participate in this survey?

- Yes
- No (Selecting this option will immediately end the survey)

**Part I: Demographics**

1. Which of the following best describes your current position?

- Professor
- Associate Professor
- Assistant Professor
- Full-time non-tenure track faculty
- Part-time non-tenure track faculty
- Clinical Professor
- Postdoc or Teaching Assistant
- Professional staff with teaching responsibilities
- Other (Please specify)

2. How long have you been teaching?

- Less than 1 year
- 1-2 years
- 3-5 years
- 6-10 years
- 11-15 years
- 16-20 years
- More than 20 years

3. Please select the discipline in which you teach the most often:

Discipline (dropdown list)

- Agriculture, Forestry, Fisheries & Veterinary Studies
- Arts & Humanities
- Business, Administration, & Law
- Education
- Engineering, Manufacturing, & Construction
- Health & Welfare
- Information & Communication Technologies
- Natural Sciences, Mathematics, & Statistics
- Services
- Social Sciences

Subdiscipline (dropdown list)

- Corresponds to Agriculture, Forestry, Fisheries, & Veterinary Studies
  - Crop & Livestock Production
  - Fisheries
  - Forestry, Parks, & Wildlife
  - Horticulture
  - Veterinary Science
- Corresponds to Arts & Humanities
  - Arts
  - Fashion, Interior & Industrial Design
  - Fine Arts
  - Handicrafts
  - History & Archaeology
  - Languages
  - Literature & Linguistics
  - Music & Performing Arts
  - Philosophy & Ethics
  - Religion & Theology
- Corresponds to Business, Administration, & Law
  - Accounting
  - Finance, Banking, & Insurance
  - Law
  - Management & Administration
  - Marketing & Advertising
- Corresponds to Education
  - Education Science
  - Teacher Training
  - Interdisciplinary Programs
- Corresponds to Engineering, Manufacturing, & Construction
  - Architecture & Construction
  - Building & Civil Engineering
  - Chemical Engineering & Processes
  - Electricity & Energy
  - Electronics & Automation
  - Environmental Protection Technology
  - Food Processing
  - Materials

- Mechanics & Metal Trades
- Mining & Extraction
- Motor Vehicles, Ships, & Aircraft
- Textiles
- Corresponds to Health & Welfare
  - Child Care & Youth Services
  - Dental Studies
  - Medical Diagnostic & Treatment Technology
  - Medicine
  - Nursing & Midwifery
  - Nutrition & Dietetics
  - Pharmacy
  - Social Work & Counselling
  - Therapy & Rehabilitation
- Corresponds to Information & Communication Technologies
  - Artificial Intelligence
  - Database Design & Management
  - Networks & Communications
  - Security Science
  - Software & Applications Development & Analysis
- Corresponds to Natural Sciences, Mathematics, & Statistics
  - Biochemistry
  - Biology
  - Chemistry
  - Earth Sciences
  - Environmental Sciences
  - Natural Environments & Wildlife
  - Mathematics & Statistics
  - Physics
- Corresponds to Services
  - Domestic Services
  - Hair & Beauty Services
  - Hotel, Restaurants, & Catering
  - Travel, Tourism, & Leisure

- Corresponds to Social Sciences
    - Anthropology
    - Communication Studies
    - Economics
    - Journalism & Reporting
    - Library, Information, & Archival Studies
    - Political Sciences & Civics
    - Psychology
    - Sociology
4. What method(s) of instruction do you use in your teaching? (Select all that apply)
- In Person
  - Online (Asynchronous, i.e., students learn in their own time)
  - Online (Synchronous, i.e., class occurs on a set schedule)
  - Hybrid
  - Other (Please specify)
5. What course materials do you regularly use in your teaching? (Select all that apply)
- Images or infographics
  - Interactive games or simulations
  - Videos
  - Lesson plans
  - Assignments
  - Tests and quizzes
  - Textbooks
  - Textbook chapters
  - Articles
  - Slides and presentations
  - Video lectures/tutorials
  - Modules from an existing course
  - Other (Please specify)



## Part II: Current Knowledge and Awareness of OER

### Definition

**Open Educational Resources (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 repurposing by others” (Hewlett Foundation, 2020). These free, online resources can come in a variety of formats, and include full textbooks, test banks, lecture slides, lecture recordings, lesson plans, videos, animations, interactive course modules, software, and more. The **open licenses** under which these resources are released allow the OER to be adapted and edited by users who can update the material, add or remove content for their own course, or release updated versions online.

6. How confident do you feel about your overall understanding of OER?
  - Extremely unconfident
  - Somewhat unconfident
  - Neither confident nor unconfident
  - Somewhat confident
  - Extremely confident
  
7. Have you ever used an OER in any of your courses? (Optional: Why or why not?)
  - Yes
  - No

8. (If 7 = Yes) What types of OER have you utilized in your course(s)? (Select all that apply)

- Images or infographics
- Interactive games or simulations
- Videos
- Lesson plans
- Assignments
- Tests and quizzes
- Textbooks
- Textbook chapters
- Articles
- Slides and presentations
- Video lectures/tutorials
- Modules from an existing course
- Other (Please specify)

9. (If 7 = Yes) How difficult was it for you to find OER in your subject area?

- Extremely difficult
- Somewhat difficult
- Neither easy nor difficult
- Somewhat easy
- Extremely easy

10. (If 7 = Yes) Did you experience any difficulty with identifying OER in your subject area and/or the perceived quality of the OER identified? Please elaborate on your experience and/or perception if you wish.

- Yes
- No

11. (If 7 = Yes) How satisfied are you with the perceived quality of the OER that you have used in your course(s)?
- Extremely dissatisfied
  - Somewhat dissatisfied
  - Neither satisfied nor dissatisfied
  - Somewhat satisfied
  - Extremely satisfied
12. (If 7 = Yes) If you would like to provide additional context on your level of satisfaction with the OER used and/or its perceived quality, you may do so here:
13. (If 7 = Yes) Have you ever created or adapted any of the OER that you have used in your course(s)?
- Created
  - Adapted
  - Both created and adapted
  - Neither created nor adapted
14. (If 7 = No) Based on your current perception, would you be interested in utilizing OER in any of your courses? (Optional: Why or why not?)
- Yes
  - No
15. (If 7 = No) What factors are currently preventing you from utilizing OER in your course(s)?

16. How important do you believe it is to develop the following skills to use OER effectively?

|  | Not at all important  | Somewhat important    | Moderately important  | Very important        | Extremely important   |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Awareness of available OER repositories and how to navigate them                                   | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Awareness of OER evaluation rubrics  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Awareness of accessibility requirements for online learning content                                | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Understanding how to integrate OER into D2L  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Understanding how to open and edit existing OER in various formats                                 | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Understanding of open licensing standards and copyright and intellectual property rights (IPR) law | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Understanding of pedagogical uses for OER  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

17. How important do you believe it is to develop the following skills to become an effective OER creator?

|   | Not at all important  | Somewhat important    | Moderately important  | Very important        | Extremely important   |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Ability to develop meaningful metadata for OER  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ability to deposit created materials into an existing OER repository                      | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Ability to utilize OER-specific creation and editing tools (e.g., OpenAuthor, Pressbooks) | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Awareness of OER assessment strategies  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Awareness of accessibility requirements for online learning content                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Understanding of website design and management  | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| Understanding of open licensing standards and copyright and IPR law                       | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

**Part III: Institutional Support for OER Use**

18. Does your institution provide any workshops to instructors who might be interested in using OER in their courses?

- Yes
- No
- Unsure

19. (If 18 = Yes) Have you ever participated in one of these workshops?

- Yes
- No

20. Has your institution implemented an initiative or grants program focused on encouraging instructors to adopt or create Open Educational Resources?

- Yes
- No
- Unsure

21. (If 20 = Yes) Have you utilized any of the resources or support available at your institution?

- Yes
- No

22. (If 21 = No) What has deterred you from utilizing the OER support available from your institution? (Select all that apply)

- A lack of assistance with locating and evaluating OER
- A lack of assistance with instructional design
- A lack of support targeted at my discipline/subject area
- A lack of departmental support from peers & supervisors/managers
- A lack of financial incentives to adapt or create an OER (grants, stipends)
- A lack of professional or social acknowledgement of OER use
- Other (Please specify)

23. (If 20 = No or Unsure) What sort of OER support would you like to receive from your institution?

- Assistance with locating and evaluating OER
- Assistance with instructional design
- Support targeted at my discipline/subject area
- Support from peers & supervisors/managers
- Financial incentives to adapt or create an OER (grants, stipends)
- A letter of commendation or other acknowledgement for OER use
- Other (Please specify)

24. Do you feel that your institution provides sufficient support for instructors in your discipline who are interested in adopting OER? Why or why not?

- Yes
- No

#### Part IV: Interest in Open Educational Resources

25. For which of the following purposes would you be interested in using an Open Educational Resource in the context of your teaching/training? (Select all that apply)

- To get new ideas and inspiration
- To supplement my existing lessons and coursework
- To give to learners as self-study materials
- To provide digital materials to online learners
- To broaden the range of my teaching methods
- To broaden the range of resources available to my learners
- To make my teaching more culturally diverse or responsive
- To enhance my professional development
- To connect with teachers or learners who have similar interests
- To stay up to date in a subject or topic area
- To engage my students more fully in a topic
- To interest hard-to-engage learners
- I have no interest in using OER for my teaching/training
- Other (Please specify)

26. Which of the following do you perceive as barriers to your use of OER? (Select all that apply)

- Not knowing where to find a comprehensive list of resources
- Not having enough time to look for suitable resources
- Not finding suitable resources in my subject area
- Not finding resources that are current or up to date
- Not finding resources of sufficiently high quality
- Difficulty changing or editing OER
- Not knowing whether I have permission to modify resources
- Difficulty integrating OER into the technology I use
- Not finding resources that are relevant to my local context
- Not having connections with peers who use OER
- Lack of support from my institution
- Difficulty getting supervisors/managers to accept the use of OER
- Resources are not aligned with professional standards or regulations
- Other (Please specify)



27. Considering the needs of instructors in your discipline, how interested are you in utilizing OER in the following formats?

|                                  | Extremely disinterested | Somewhat disinterested | Neither interested nor disinterested | Somewhat interested   | Extremely interested  |
|----------------------------------|-------------------------|------------------------|--------------------------------------|-----------------------|-----------------------|
| Images or infographics           | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Interactive games or simulations | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Videos                           | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Lesson plans                     | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Assignments                      | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Tests and quizzes                | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Open textbooks                   | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Open textbook chapters           | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Articles                         | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Slides and presentations         | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Video lectures/tutorials         | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |
| Modules from an existing course  | <input type="radio"/>   | <input type="radio"/>  | <input type="radio"/>                | <input type="radio"/> | <input type="radio"/> |

28. Do you have any interest in creating an original Open Educational Resource?

(Optional: Why or why not?)

- Yes
- No

29. (If 28 = Yes) What types of OER would you be interested in creating? (Select all that apply)

- Images or infographics
- Interactive games or simulations
- Videos
- Lesson plans
- Assignments
- Tests and quizzes
- Open textbooks
- Open textbook chapters
- Articles
- Slides and presentations
- Video lectures/tutorials
- Modules from an existing course

## Part V: Open Licensing and Disciplinary Considerations

### Definition

“An [open] license is a document that specifies what can and cannot be done with a work (whether sound, text, image or multimedia). It grants permissions and states restrictions. Broadly speaking, an open license is one which grants permission to access, re-use and redistribute a work with few or no restrictions.” Open Definition  
(<http://opendefinition.org/guide/>)

30. Generally speaking, what aspect(s) of openly licensed resources do you believe could benefit pedagogy for instructors? (Select all that apply)

- The freedom to adapt materials
- The availability of materials online
- The availability of materials relevant to your local context
- Resources are immediately available to learners
- Materials can be updated at any time
- Materials are universally free to access
- Materials are available in multiple languages
- Materials can be integrated into a Learning Management System (e.g., Blackboard, Canvas, D2L)
- Supplementary materials are available (e.g., lesson plans, quizzes)
- None
- Other (Please specify)

31. What aspect(s) of openly licensed resources do you believe you would personally utilize in your teaching? (Select all that apply)

- The freedom to adapt materials
- The availability of materials online
- The availability of materials relevant to your local context
- Resources are immediately available to learners
- Materials can be updated at any time
- Materials are universally free to access
- Materials are available in multiple languages
- Materials can be integrated into a LMS (e.g., Blackboard, Canvas, D2L)
- Supplementary materials are available (e.g., lesson plans, quizzes)
- None
- Other (Please specify)

32. What teaching and learning resources are needed in the context of your discipline in particular? (e.g., instructional videos, hands-on exercises, text resources, etc.)

## Appendix C

### Tables

**Table 1**

*Perceptions of OER Quality and Usage*

| <b>Author(s)</b>               | <b>Focus of study</b>     | <b>Topic of research</b>                   | <b>Findings</b>  |
|--------------------------------|---------------------------|--|--|
| Bliss, Hilton, et al. (2013)   | HEI faculty & students    | OER perceptions & general user experiences | Students and faculty perceived OER quality to be high and liked the potential cost savings.  |
| Bliss, Robinson, et al. (2013) | HEI faculty & students    | OER perceptions                            | Faculty could see the value of OER but did not like the increased preparation time. Students' overall usage patterns and learning with OER were like with traditional textbooks. |
| Hilton (2016)                  | HEI faculty & students    | OER efficacy & perceptions                 | Both students and faculty perceived the OER quality to be high and felt they did not negatively impact learning.   |
| Ozdemir & Hendricks (2017)     | CA HEI faculty & students | General user experiences with OER          | Students and faculty perceived OER quality to be high and liked the potential cost savings.  |

**Table 2***Results of the Maturity of the OER Model Based on the Experts' Rating*

| <b>Model</b>                                       | <b>Mean</b> | <b>SD</b> | <b>Examples</b>                                   |
|--|-------------|-----------|---|
| Model 3. Public funding                            | 1.35        | 0.69      | BCcampus  |
| Model 1. Internal funding                          | 1.69        | 0.97      | UK Open University                                |
| Model 4. Endowments/donations                      | 2           | 1.02      | Wikipedia, OpenStax, Khan Academy                 |
| Model 2. OER network membership                    | 2.15        | 1.01      | OERu  |
| Model 6. Supplemental services                     | 2.31        | 1.01      | Khan Academy, Lumen Learning, OpenStax            |
| Model 9. OER authors                               | 2.36        | 1.22      | Jörn Loviscach                                    |
| Model 10. Community-based                          | 2.62        | 1.13      | Educred.ro, OER communities in OSGeo or Mastodon  |
| Model 8. OER on-demand                             | 2.85        | 0.78      | PNLD program (federal textbook program in Brazil) |
| Model 5. Sponsorship/advertisement                 | 3.16        | 0.94      | Global Text Project                               |
| Model 7. Selling learner-centric data to companies | 3.54        | 0.76      | Hootsuite Academy                                 |

*Note.* From “The evolution of sustainability models for Open Educational Resources: insights from the literature and experts,” by A. Tlili et al., 2020, p. 8 (<https://doi.org/10.1080/10494820.2020.1839507>).

**Table 3***Incentives and Barriers to OER Adoption*

| <b>Barriers</b>                      | <b>Incentives</b>              |
|--------------------------------------|--------------------------------|
| Lack of discoverability              | General positive perceptions   |
| Confusing OER with digital resources | Cost benefit                   |
| Not applicable for faculty           | Equal to traditional resources |
| Lack of time to evaluate resources   | Pedagogical benefit            |
| Lack of quality                      |                                |

*Note.* Adapted from “Incentives and barriers to OER adoption: A qualitative analysis of faculty perceptions,” by O. M. Belikov & R. Bodily, 2016, pp. 240-242 (<https://files.eric.ed.gov/fulltext/EJ1112527.pdf>).

**Table 4***KPIs and Benchmarks Commonly Used in Market Research Studies on Perception*

| <b>Perception Score Rankings</b> | <b>Net Promoter Score (NPS)</b>  |
|----------------------------------|----------------------------------|
| Negative (-1)                    | Detractors (0-6 on Likert scale) |
| Neutral (0)                      | Passives (7-8 on Likert scale)   |
| Positive (1)                     | Promoters (9-10 on Likert scale) |

*Note.* Adapted from information provided by Taylor (2021) and Kuhn (2023) of Drive Research, a market research company, and Canada (2020) of Tatvam Insights, a qualitative data analytics group.

**Table 5**

*A Priori Awareness and Perception Codes and Basis Used for Assignment to Each Category*

| <b>Awareness / Perception Codes</b> | <b>Basis for Assignment</b>   |
|-------------------------------------|---|
| Low (L) / Negative (NEG)            | Majority of scores on Perception (P) or Awareness (A) items at the L/NEG level and not more than 3 at the H/POS level |
| Moderate (M) / Neutral (NEU)        | Plurality of P/A scores at the M/NEU level and/or no real distinction between L/NEG and H/POS responses               |
| High (H) / Positive (POS)           | Majority of scores on P/A items at the H/POS level and not more than 3 at the L/NEG level                             |



**Table 6**

*Inductive Awareness and Perception Codes and Basis Used for Assignment to Each Category*

| <b>Awareness / Perception Codes</b> | <b>Basis for Assignment</b>   |
|-------------------------------------|---|
| Very Low (VL)                       | No scores on Perception (P) or Awareness (A) items above the VL level |
| Low (L)                             | 1 or more P/A scores above the VL level but none above the M level    |
| Moderate (M)                        | Majority of P/A scores at the M level but none at the VL or VH levels |
| High (H)                            | 1 or more P/A scores below the VH level but none below the M level    |
| Very High (VH)                      | No scores on P/A items below the VH level                             |

**Table 7**

*Barriers Mentioned as Potential Hindrances to Increased OER Use (n = 107)*

| <b>Barrier</b>  | <b>Frequency</b> |
|---|------------------|
| Lack of awareness and/or of the supports available to assist with OER development | 44               |
| Quality of available materials  | 33               |
| Time (lack of)  | 47               |
| Intellectual property rights  | 12               |
| Limited availability of resources   | 26               |

**Table 8***A Priori Perception and Awareness Categories and Score Ranges*

| <b>Category</b>                     | <b>Score Range</b> |
|-------------------------------------|--------------------|
| <b>Negative (NEG) / Low (L)</b>     | (-100) – (-34)     |
| <b>Neutral (NEU) / Moderate (M)</b> | (-33) – 33         |
| <b>Positive (POS) / High (H)</b>    | 34 – 100           |

**Table 9***Participants Assigned to A Priori Perception and Awareness Categories (N = 135)*

| <b>Category</b> | <b>Perception</b> | <b>Awareness</b> |
|-----------------|-------------------|------------------|
| <b>NEG / L</b>  | 15                | 12               |
| <b>NEU / M</b>  | 76                | 35               |
| <b>POS / H</b>  | 44                | 88               |
| <b>Total</b>    | <b>135</b>        | <b>135</b>       |

**Table 10***Three-by-Three Model Used with A Priori Categories to Evaluate the Relation Between Awareness of OER and Perception of OER (N = 135)*

| <b>Perception</b>   | <b>Awareness</b> |             |             | <b>Row Total</b> |
|---------------------|------------------|-------------|-------------|------------------|
|                     | <b>-1(L)</b>     | <b>0(M)</b> | <b>1(H)</b> |                  |
| <b>-1(NEG)</b>      | 3                | 9           | 3           | 15               |
| <b>0(NEU)</b>       | 6                | 20          | 50          | 76               |
| <b>1(POS)</b>       | 3                | 6           | 35          | 44               |
| <b>Column Total</b> | 12               | 35          | 88          | 135              |

**Table 11***Inductive Awareness and Perception Categories and Score Ranges*

| <b>Category</b> | <b>Score Range</b> |
|-----------------|--------------------|
| Very Low (VL)   | (-100) – (-61)     |
| Low (L)         | (-60) – (-21)      |
| Moderate (M)    | (-20) – 20         |
| High (H)        | 21 – 60            |
| Very High (VH)  | 61 – 100           |

**Table 12***Participants Assigned to Inductive Awareness and Perception Categories (N = 135)*

| <b>Category</b> | <b>Awareness</b> | <b>Perception</b> |
|-----------------|------------------|-------------------|
| VL              | 5                | 13                |
| L               | 10               | 7                 |
| M               | 21               | 67                |
| H               | 44               | 7                 |
| VH              | 55               | 41                |
| <b>Total</b>    | <b>135</b>       | <b>135</b>        |

**Table 13**

*Five-by-Five Model Used with Inductive Categories to Evaluate the Relation Between Awareness of OER and Perception of OER (N = 135)*

| N = 135      |    | Awareness |    |    |    |           |  |
|--------------|----|-----------|----|----|----|-----------|--|
| Perception   | VL | L         | M  | H  | VH | Row Total |  |
| VL           | 2  | 1         | 4  | 3  | 3  | 13        |  |
| L            | 0  | 1         | 1  | 2  | 3  | 7         |  |
| M            | 2  | 5         | 11 | 30 | 19 | 67        |  |
| H            | 0  | 0         | 1  | 0  | 6  | 7         |  |
| VH           | 1  | 3         | 4  | 9  | 24 | 41        |  |
| Column Total | 5  | 10        | 21 | 44 | 55 | 135       |  |

**Table 14**

*Modified Awareness and Perception Categories and Score Ranges*

| Category       | Score Range |
|----------------|-------------|
| <b>M / NEU</b> | (-33) – 33  |
| <b>H / POS</b> | 34 – 100    |

**Table 15***Participants Assigned to Modified Awareness and Perception Categories (N = 111)*

| <b>Category</b> | <b>Awareness</b> | <b>Perception</b> |
|-----------------|------------------|-------------------|
| <b>M / NEU</b>  | 26               | 70                |
| <b>H / POS</b>  | 85               | 41                |
| <b>Total</b>    | <b>111</b>       | <b>111</b>        |

**Table 16***Two-by-Two Model Used with Modified Categories to Evaluate the Relation Between Awareness of OER and Perception of OER (N = 111)*

| <b>Perception</b>   | <b>Awareness</b> |             | <b>Row Total</b> |
|---------------------|------------------|-------------|------------------|
|                     | <b>0(M)</b>      | <b>1(H)</b> |                  |
| <b>0(NEU)</b>       | 20               | 50          | 70               |
| <b>1(POS)</b>       | 6                | 35          | 41               |
| <b>Column Total</b> | 26               | 85          | 111              |

**Table 17***Perception \* Awareness Crosstabulation (3x3)*

|                   |                 | <b>Awareness</b> |              |             |             |              |  |
|-------------------|-----------------|------------------|--------------|-------------|-------------|--------------|--|
|                   |                 |                  | <b>-1(L)</b> | <b>0(M)</b> | <b>1(H)</b> | <b>Total</b> |  |
| <b>Perception</b> | <b>-1(NEG)</b>  | <b>Count</b>     | 3            | 9           | 3           | 15           |  |
|                   |                 | <b>Expected</b>  | 1.3          | 3.9         | 9.8         | 15.0         |  |
|                   |                 | <b>Count</b>     |              |             |             |              |  |
|                   |                 | <b>% of</b>      | 2.2%         | 6.7%        | 2.2%        | 11.1%        |  |
|                   |                 | <b>Total</b>     |              |             |             |              |  |
|                   | <b>0(NEU)</b>   | <b>Count</b>     | 6            | 20          | 50          | 76           |  |
|                   |                 | <b>Expected</b>  | 6.8          | 19.7        | 49.5        | 76.0         |  |
|                   |                 | <b>Count</b>     |              |             |             |              |  |
|                   |                 | <b>% of</b>      | 4.4%         | 14.8%       | 37.0%       | 56.3%        |  |
|                   |                 | <b>Total</b>     |              |             |             |              |  |
|                   | <b>1(POS)</b>   | <b>Count</b>     | 3            | 6           | 35          | 44           |  |
|                   |                 | <b>Expected</b>  | 3.9          | 11.4        | 28.7        | 44.0         |  |
| <b>Count</b>      |                 |                  |              |             |             |              |  |
| <b>% of</b>       |                 | 2.2%             | 4.4%         | 25.9%       | 32.6%       |              |  |
|                   | <b>Total</b>    |                  |              |             |             |              |  |
| <b>Total</b>      | <b>Count</b>    | 12               | 35           | 88          | 135         |              |  |
|                   | <b>Expected</b> | 12.0             | 35.0         | 88.0        | 135.0       |              |  |
|                   | <b>Count</b>    |                  |              |             |             |              |  |
|                   | <b>% of</b>     | 8.9%             | 25.9%        | 65.2%       | 100.0%      |              |  |
|                   | <b>Total</b>    |                  |              |             |             |              |  |

**Table 18***Chi-Square Test Results for 3x3 Model*

|   | <b>Value</b>        | <b>df</b> | <b>Asymptotic<br/>Significance<br/>(2-sided)</b> | <b>Exact Sig.<br/>(2-sided)</b> |
|---|---------------------|-----------|--|---------------------------------|
| <b>Pearson Chi-Square</b>               | 17.760 <sup>a</sup> | 4         | .001   | .002                            |
| <b>Likelihood Ratio</b>                 | 17.612              | 4         | .001   | .002                            |
| <b>Fisher-Freeman-Halton Exact Test</b> | 17.498              |           |  | <.001                           |
| <b>N of Valid Cases</b>                 | 135                 |           |  |                                 |

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.33.

**Table 19***Perception \* Awareness Crosstabulation (5x5)*

|                   |               | <b>Awareness</b> |              |             |             |              |              |       |
|-------------------|---------------|------------------|--------------|-------------|-------------|--------------|--------------|-------|
|                   |               | <b>-2(VL)</b>    | <b>-1(L)</b> | <b>0(M)</b> | <b>1(H)</b> | <b>2(VH)</b> | <b>Total</b> |       |
| <b>Perception</b> | <b>-2(VL)</b> | <b>Count</b>     | 2            | 1           | 4           | 3            | 3            | 13    |
|                   |               | <b>Expected</b>  | .5           | 1.0         | 2.0         | 4.2          | 5.3          | 13.0  |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 1.5%         | 0.7%        | 3.0%        | 2.2%         | 2.2%         | 9.6%  |
|                   |               | <b>Total</b>     |              |             |             |              |              |       |
|                   | <b>-1(L)</b>  | <b>Count</b>     | 0            | 1           | 1           | 2            | 3            | 7     |
|                   |               | <b>Expected</b>  | .3           | .5          | 1.1         | 2.3          | 2.9          | 7.0   |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 0.0%         | 0.7%        | 0.7%        | 1.5%         | 2.2%         | 5.2%  |
|                   |               | <b>Total</b>     |              |             |             |              |              |       |
|                   | <b>0(M)</b>   | <b>Count</b>     | 2            | 5           | 11          | 30           | 19           | 67    |
|                   |               | <b>Expected</b>  | 2.5          | 5.0         | 10.4        | 21.8         | 27.3         | 67.0  |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 1.5%         | 3.7%        | 8.1%        | 22.2%        | 14.1%        | 49.6% |
|                   |               | <b>Total</b>     |              |             |             |              |              |       |
|                   | <b>1(H)</b>   | <b>Count</b>     | 0            | 0           | 1           | 0            | 6            | 7     |
|                   |               | <b>Expected</b>  | .3           | .5          | 1.1         | 2.3          | 2.9          | 7.0   |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 0.0%         | 0.0%        | 0.7%        | 0.0%         | 4.4%         | 5.2%  |
|                   |               | <b>Total</b>     |              |             |             |              |              |       |
|                   | <b>2(VH)</b>  | <b>Count</b>     | 1            | 3           | 4           | 9            | 24           | 41    |
|                   |               | <b>Expected</b>  | 1.5          | 3.0         | 6.4         | 13.4         | 16.7         | 41.0  |
|                   |               | <b>Count</b>     |              |             |             |              |              |       |
|                   |               | <b>% of</b>      | 0.7%         | 2.2%        | 3.0%        | 6.7%         | 17.8%        | 30.4% |
|                   |               | <b>Total</b>     |              |             |             |              |              |       |



**Table 19 (continued)**

|              |                   | <b>Awareness</b> |              |             |             |              |              |
|--------------|-------------------|------------------|--------------|-------------|-------------|--------------|--------------|
|              |                   | <b>-2(VL)</b>    | <b>-1(L)</b> | <b>0(M)</b> | <b>1(H)</b> | <b>2(VH)</b> | <b>Total</b> |
| <b>Total</b> | <b>Count</b>      | 5                | 10           | 21          | 44          | 55           | 135          |
|              | <b>Expected</b>   | 5.0              | 10.0         | 21.0        | 44.0        | 55.0         | 135.0        |
|              | <b>Count</b>      |                  |              |             |             |              |              |
|              | <b>% of Total</b> | 3.7%             | 7.4%         | 15.6%       | 32.6%       | 40.7%        | 100.0%       |

**Table 20***Chi-Square Test Results for 5x5 Model*

|  | <b>Value</b>        | <b>df</b> | <b>Asymptotic<br/>Significance<br/>(2-sided)</b> | <b>Exact Sig.<br/>(2-sided)</b> | <b>Exact Sig.<br/>(1-sided)</b> |
|--|---------------------|-----------|--|---------------------------------|---------------------------------|
| <b>Pearson Chi-Square</b>                    | 26.754 <sup>a</sup> | 16        | .044   | . <sup>b</sup>                  |                                 |
| <b>Likelihood Ratio</b>                      | 26.748              | 16        | .044   | . <sup>b</sup>                  |                                 |
| <b>Fisher-Freeman-<br/>Halton Exact Test</b> | . <sup>b</sup>      |           |  | . <sup>b</sup>                  |                                 |
| <b>Linear-by-Linear<br/>Association</b>      | 8.302               | 1         | .004   | . <sup>b</sup>                  | . <sup>b</sup>                  |
| <b>N of Valid Cases</b>                      | 135                 |           |  |                                 |                                 |

a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is 1.33.

b. Cannot be computed because there is insufficient memory.

**Table 21***Perception \* Awareness Crosstabulation (2x2)*

|                   |               | <b>Awareness</b>  |             |              |        |
|-------------------|---------------|-------------------|-------------|--------------|--------|
|                   |               | <b>0(M)</b>       | <b>1(H)</b> | <b>Total</b> |        |
| <b>Perception</b> | <b>0(NEU)</b> | <b>Count</b>      | 20          | 50           | 70     |
|                   |               | <b>Expected</b>   | 16.4        | 53.6         | 70.0   |
|                   |               | <b>Count</b>      |             |              |        |
|                   |               | <b>% of Total</b> | 18.0%       | 45.0%        | 63.1%  |
|                   | <b>1(POS)</b> | <b>Count</b>      | 6           | 35           | 41     |
|                   |               | <b>Expected</b>   | 9.6         | 31.4         | 41.0   |
|                   |               | <b>Count</b>      |             |              |        |
|                   |               | <b>% of Total</b> | 5.4%        | 31.5%        | 36.9%  |
| <b>Total</b>      |               | <b>Count</b>      | 26          | 85           | 111    |
|                   |               | <b>Expected</b>   | 26.0        | 85.0         | 111.0  |
|                   |               | <b>Count</b>      |             |              |        |
|                   |               | <b>% of Total</b> | 23.4%       | 76.6%        | 100.0% |

**Table 22***Chi-Square Test Results for 2x2 Model*

|   | <b>Value</b>       | <b>df</b> | <b>Asymptotic<br/>Significance<br/>(2-sided)</b> | <b>Exact Sig.<br/>(2-sided)</b> | <b>Exact Sig.<br/>(1-sided)</b> |
|---|--------------------|-----------|--|---------------------------------|---------------------------------|
| <b>Pearson Chi-Square</b>                 | 2.800 <sup>a</sup> | 1         | .094   | .109                            | .073                            |
| <b>Continuity Correction <sup>b</sup></b> | 2.077              | 1         | .150   |                                 |                                 |
| <b>Likelihood Ratio</b>                   | 2.949              | 1         | .086   | .109                            | .073                            |
| <b>Fisher's Exact Test</b>                |                    |           |  | .109                            | .073                            |
| <b>N of Valid Cases</b>                   | 111                |           |  |                                 |                                 |

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.60.

b. Computed only for a 2x2 table.

**Table 23**

*Awareness Categories Used by Bay View Analytics and Proposed Score Ranges for  
Individual Awareness Scoring*

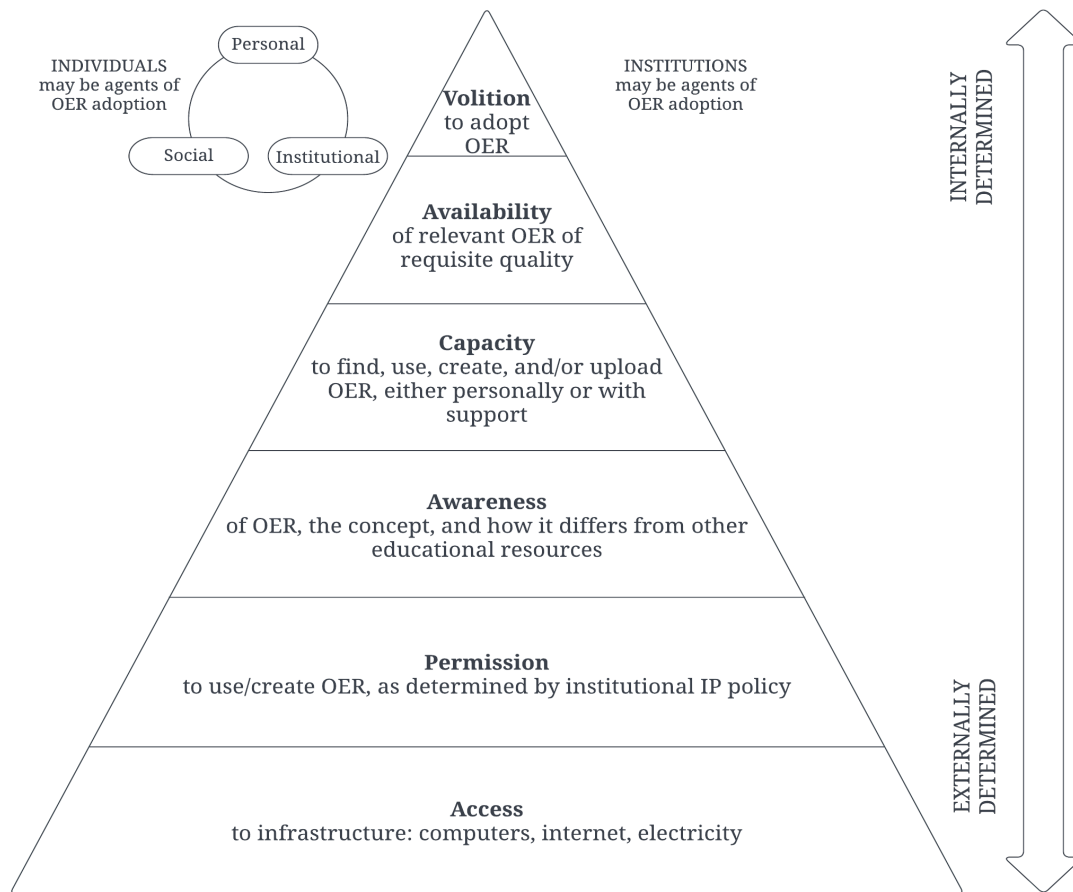
| <b>Awareness Category</b> | <b>Proposed Score Range</b> |
|---------------------------|-----------------------------|
| Not Aware                 | (-100) – (-51)              |
| Somewhat Aware            | (-50) – 0                   |
| Aware                     | 1 – 50                      |
| Very Aware                | 51 – 100                    |

## Appendix D

### Figures

**Figure 1**

*The OER Adoption Pyramid*



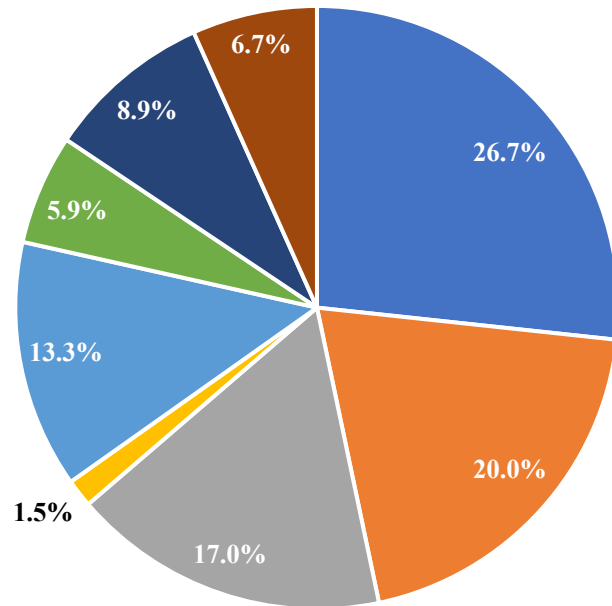
*Note.* From “An OER framework, heuristic and lens: Tools for understanding lecturers’ adoption of OER,” by G. Cox & H. Trotter, 2017, p. 155 (<https://doi.org/10.5944/openpraxis.9.2.571>).

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**Figure 2**

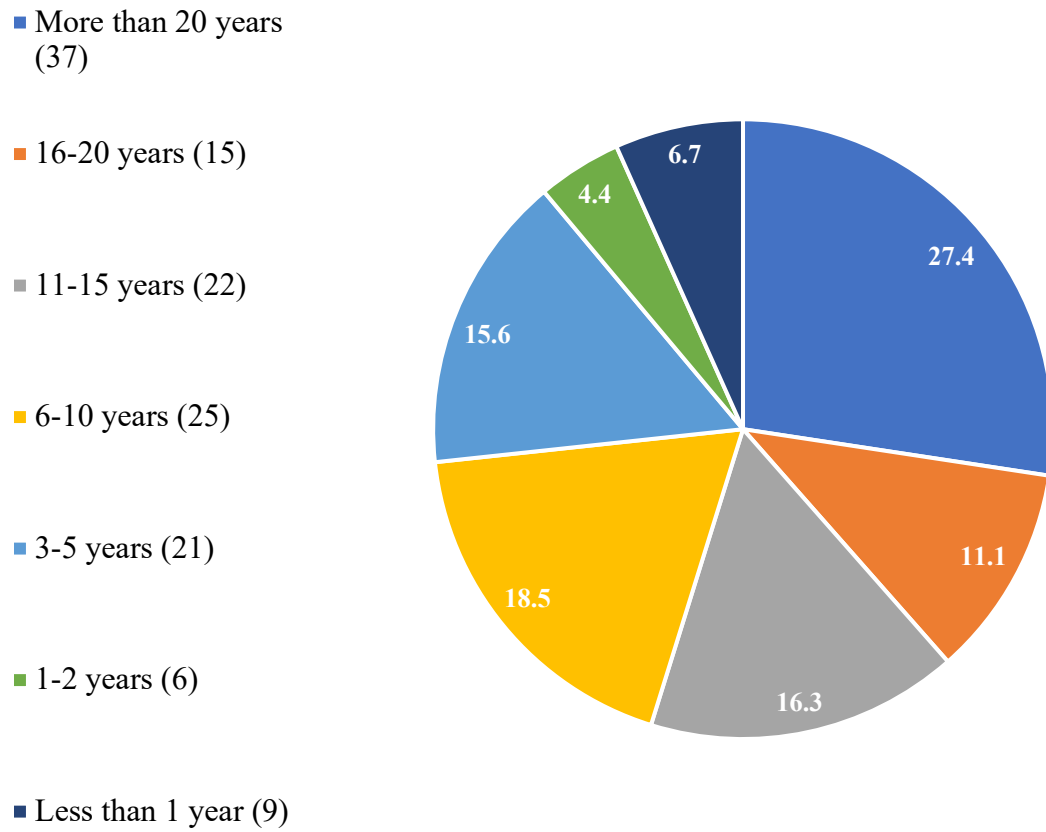
*Participant Demographics: Faculty Classification (N = 135)*

- Professor (36)
- Assistant Professor (27)
- Associate Professor (23)
- Clinical Professor (2)
- Full-time Non-tenure Track Faculty (18)
- Part-time Non-tenure Track Faculty (8)
- Postdoc or Graduate Teaching Assistant (12)
- Professional Staff with Teaching Responsibilities (9)



**Figure 3**

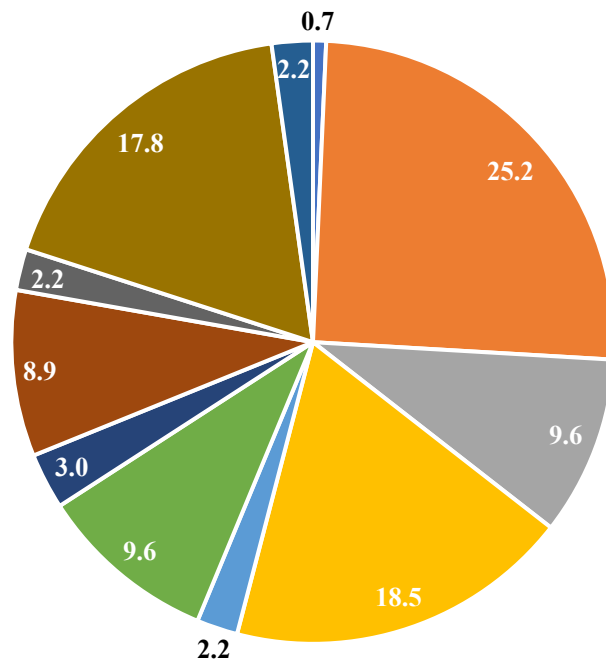
*Participant Demographics: Years of Teaching Experience (N = 135)*



**Figure 4**

*Participant Demographics: Teaching Discipline (N = 135)*

- Agriculture, Forestry, Fisheries & Veterinary Studies (1)
- Arts & Humanities (34)
- Business, Administration, & Law (13)
- Education (25)
- Engineering, Manufacturing, & Construction (3)
- Health & Welfare (13)
- Information & Communication Technologies (4)
- Natural Sciences, Mathematics, & Statistics (12)
- Services (3)
- Social Sciences (24)
- No Area Selected (3)

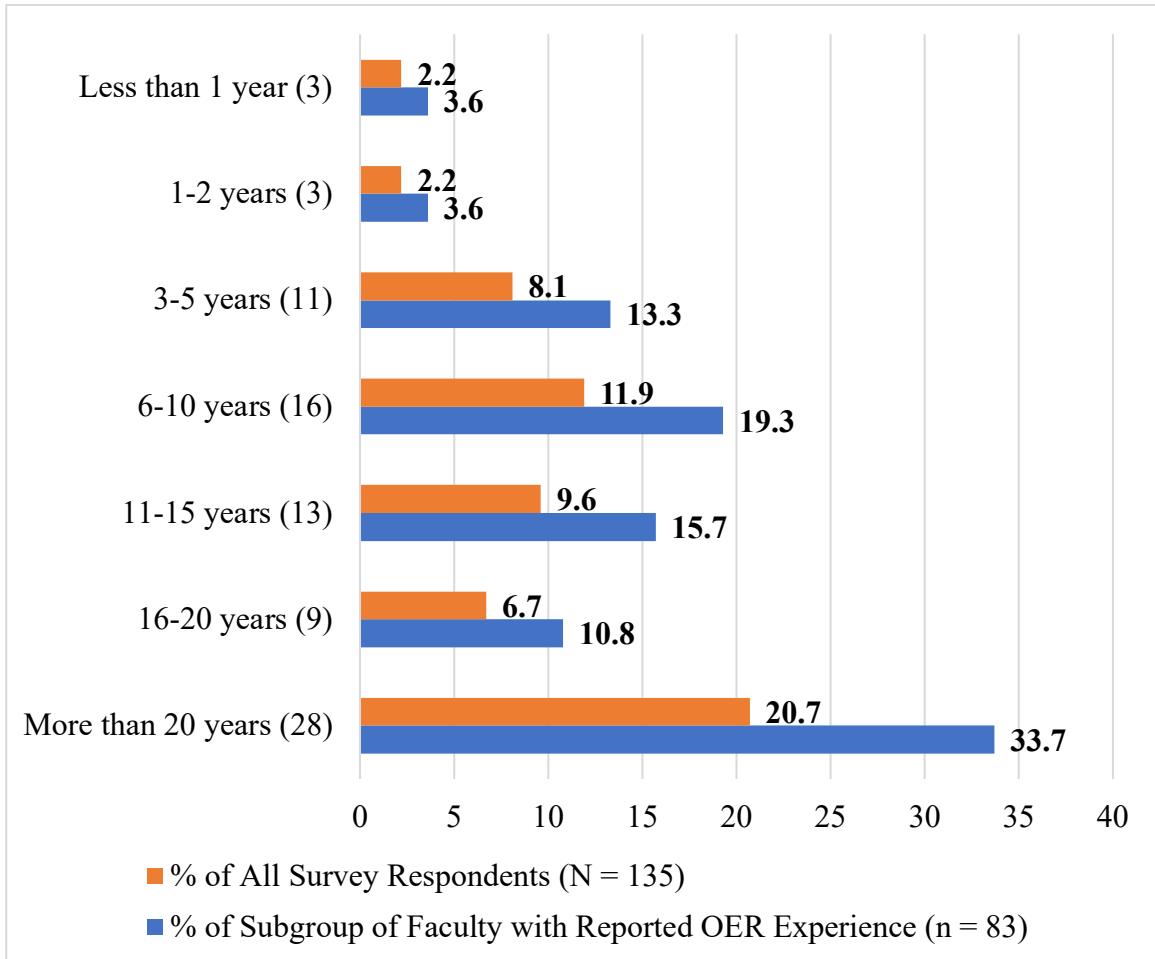


*Note.* The Services discipline includes Hotel, Restaurants, & Catering, and Travel, Tourism, & Leisure sub-disciplines.

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**Figure 5**

*Percentage of Respondents with Reported OER Experience Compared to Percentage of All Respondents (n = 83, N = 135)*





**Figure 6**

*Reported Awareness of University-Sponsored Workshops and Grant Initiative Supporting OER Development*

