

**Open Educational Practices: A literature review**

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## **Introduction**

Dr. David Wiley, one of the co-founders of Lumen Learning, a professor at Brigham Young University, and staunch advocate for open education uses two common points in his talks about open textbooks and other forms of open. Wiley makes the point that “without sharing, there is no education” (Wiley, 2010). If we learn some bit of knowledge or a new skill and never pass on what we have learned to others, that knowledge or those skills may die with us.

As costs to post-secondary students and institutions continue to rise, the idea of sharing knowledge and educational resources in an open form becomes a more attractive option. Textbook prices, journal subscription rates, and the cost of other education resources are creating budgetary problems for learners and institutions. For both of these groups of stakeholders, the adoption of open textbooks and other open educational resources (OER) would reduce some of these costs. The adoption and integration of open textbook and other types of OER, including greater use of open access journals, could save students and institutions money. This shift may also help to change the way instructors teach and students learn through open educational practices (OEP), defined by Conole and Ehlers (2010) as “the use of open educational resources with the aim to improve quality of educational processes and innovate educational environments” (p. 3-4).

Despite the benefits to the adoption of open textbooks, other OER, and open educational practices, there has not yet been widespread uptake of these materials and methods. (Paradis, 2014) This paper will serve as a review of existing literature, exploring:

- what open education means in current contexts
- what problems the integration of open educational materials may help negate
- what barriers may be impeding the adoption of such materials
- who the stakeholders are and what their roles are in the integration of open materials and practices.

In addition, the author will propose a research study to examine faculty attitudes toward open materials and practices based on the diffusion of innovations framework.

### **The Problem**

As noted in the Introduction, educational material costs continue to rise for students and institutions. Textbook prices in the United States have risen, on average, six percent per year in the past decade (Mitchell, 2014) and in a 2012 study, 65% of Florida post-secondary students reported that they had forgone buying a textbook for a course because of the cost. (Donaldson, Nelson & Thomas, 2012). In the Donaldson, et al. study, 34 percent of students indicated that at some point in their post-secondary experience, they had earned “a poor grade because I could not afford to buy the textbook” and 17 percent had failed a course for that same reason (Donaldson, et al, 2012, p. 28).

While instructors may wish to reduce costs for students (Harley, Lawrence, Acord, & Dixson, 2010; Petrides, James, Middleton-Detzner, Walling & Weiss, 2011) the current model has “the professor, not the student / consumer [select] the product, and the student / consumer actually expends the money,” (Senack, 2015, p. 3) while the instructor frequently receives a free “review” copy from the publisher. Some publishers have been

offering the options of e-textbooks as a way to reduce costs for students, but there are often limits on the ability for students to print the materials and they frequently lose access to the materials after the end of term or academic year (Snack, 2015).

Copyright restrictions on textbooks, journals, and other educational artifacts prevent educators from combining materials in a way that best meets the needs of their students. For example, one textbook may have four chapters that would be good resources for a given course, while another textbook has two more useful chapters and a third may have another pedagogically appropriate section, but an instructor may be hesitant to require three textbooks for one course. Even under educational “fair dealing” provisions in copyright legislation in Canada and the United States, copying this number of chapters from a commercial textbook for inclusion in a course pack for students would likely be considered an infringement on copyright.

Academic journal subscriptions can cost an individual institution millions of dollars per year, while the major publishers of such journals reap large profits (Bonohannon, 2014). For example, in 2012-2013, profits for Reed-Elsevier was more than \$2 billion USD (Larivière, Haustein, & Monegeon, 2015). That same study also noted that a smaller number of publishers control a larger number of these journals than in the past, with roughly half of all academic journal articles in the social sciences, natural and medical sciences being published by one of five academic publishers - Reed-Elsevier, Wiley-Blackwell, Springer, Taylor & Francis, and Wolters Kluwer.

In 2015, the Canadian granting agencies the National Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council

(SSHRC) came into alignment with the third Tri-Council agency, the Canadian Institutes of Health Research (CIHR) with their implementation of open access policies. The policies require researchers receiving funding from any of the three agencies to publish their manuscripts openly within twelve months of initial publication. This can be in an open access journal, on an authors own web site, or in an institutional repository. (Government of Canada, 2014) While the policies are intended to open access to research that has been funded through tax dollars, many of the journals that currently offer the ability of authors to publish openly charge large article processing charges (APCs) to these authors (and indirectly institutions, funding agencies, and tax payers who help financially support both). (Solomon & Bjork, 2012) According to the web site of journal publisher Elsevier, a subsidiary of Reed-Elsevier, their APCs range in cost for authors from \$500 - \$5,000 per article (Elsevier, n.d), while publisher Taylor & Francis have a standard fee of \$2,950 plus tax or articles remain behind a paywall (Taylor & Francis, n.d). Since not all articles in such journals will be open, subscribers must continue to pay to access the full contents of any particular issue, thus, the policies designed to improve access may not solve the aforementioned problems related to costs.

The use of open educational resources, truly open access journals and the adoption of open educational practices may help relieve the above stated problems, but while there are many benefits to the integration of these resources and practices, barriers certainly exist. The benefits and barriers will be explored later in this paper.

### **What is Open in Education?**

There is no shortage of definitions for the term “open education.” In 1975, Nyberg noted this in the Introduction to *The Philosophy of Open Education* (Nyberg, 1975). Within the book Hill also noted the variety of definitions and how vague they often are in writing, “An excellent candidate for sloganeering is the word ‘open’. Immediately one uses it, the options polarize. To be open (depending on context) is to be not closed, restricted, prejudiced or clogged; but free, candid, generous, above board, mentally flexible, future-oriented, etc” (Hill, 1975, p. 3-4). Other authors within the same book noted the ongoing problems with trying to define “open education”, but in 1975 open in education was overall about removing a variety of barriers within classrooms through a change in teaching practice.

The concept of “open education” has continued to evolve since then, but a definitive definition is really no closer to reality. Iiyoshi and Kumar (2008) noted this in the introduction to their book on the topic, in which they stated:

“Rather than propose one more definition, our reference to open education embraces the many dimensions of this movement as well the many interpretations of the term ‘open’ as it has been applied to education over time, such as increased access, greater choice and flexibility. What we offer instead is an extension to those definitions that emphasizes the value of collectively leading to an assertion (more in the nature of aspiration) that a key tenet of open education is that *education can be improved by making educational assets visible and accessible and by harnessing the collective wisdom of a community of practice and reflection.*” (Iiyoshi & Kumar, 2008, p. 2)

Those “assets” that Iiyoshi and Kumar mention include open educational materials, which are generally free to use and share. They are often released into the public domain or carry a Creative Commons license. Creative Commons licenses allow creators of work to retain their right to use, share, and modify their own work while granting others the right to do the same depending on the particular license that the creator chooses. At one end of the Creative Commons spectrum of licenses are those that require only attribution and allow the work to be freely shared, modified, and even used for commercial purposes as long as the original creator is credited. At the other end of this spectrum, the creator of the work may restrict the work under a license that not only requires attribution, but also prohibits changes to the work and any use of it for commercial purposes. There are several licenses that fall between these ends as well (Creative Commons, 2015.).

Open educational resources or 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 or repurposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge” (Atkins, Brown, & Hammond, 2007, p. 4). These resources may carry any of the Creative Commons licenses allowing or restricting changes and / or selling of the materials.

Open textbooks are a subset of open educational. Open textbooks meet the criteria for open educational resources in terms of licensing, are often written by educators who teach in the subject areas covered by the open textbook, and many are peer reviewed. Open

textbooks available through OpenStax College (<http://openstaxcollege.org/>) carry Creative Commons licenses that only require attribution, often referred to as a CC-BY license (OpenStax College, 2015). Many of the books available through the BCcampus Open Textbook Project (<http://open.bccampus.ca/>) from British Columbia and The Open Textbook Library (<http://open.umn.edu/opentextbooks/>) through the University of Minnesota carry the same license, while others restrict the ability to use the materials for commercial purposes and require any adaptations to carry the same Creative Commons license. Unlike traditional commercial textbooks, open textbooks allow instructors to modify the text to fit a specific course. Adaptations may include removing unwanted materials, adding new chapters, or simply modifying an existing section to fit regional contexts.

One area of open education that has received extensive main-stream media, as well as academic publications and institutional attention in recent years is that of massive open online courses (MOOCs)(Conole, 2013; Kernohan, 2013; Meister, 2013; Haynie, 2014; Thompson, 2015). MOOCs allow individuals to register for a free, non-credit course on a given topic, usually without receiving credit. Some MOOCs offer certificates for a fee. MOOCs may have a small number of registrants (less than one hundred) or several hundred thousand.

Open access publishing allows for articles to be freely available to anyone interested in reading the materials. There are different types of open access publishing, including “green” where authors self-publish on their own web site or in an institutional repository, “gold” where authors pay for their articles to be made open to the public (generally this

happens in journals that still charge for subscriptions for non-open articles), and “platinum” where journals publish articles openly without charging authors (usually these are financially supported by an institution or professional organization) (Weller, 2014).

As noted at the beginning of this section, what “open” means in education continues to evolve. For almost a decade Wiley’s (2007) “Four Rs” - Reuse, Revise, Remix, and Redistribute - have served as a foundation for open. In 2014, Wiley added a fifth attribute to his list with “Retain”. Reuse allows for a user to read, print and share with others an original work created by someone else. Revise, allows for the user to make changes to the previously mentioned work and then reuse it, while Remix allows the original work to be modified and included in a completely new work. Redistribute allows for that brand new work to be shared with others and “retain” allows the creator of the new work to retain the rights to it, but does not diminish the rights of the creator of the first piece.

Wiley’s attributes of “Reuse” and “Redistribute” are at issue, however, because there is a great deal of disagreement about what “open” means (Watters, 2014). Most of the controversy surrounds licenses that prohibit the reuse of materials for commercial purposes, with some arguing a license is not open with such a prohibition (Fitzgerald, 2013; Pollock, 2010), while others argue that materials with open licenses should not be allowed to be “closed” through requiring users to pay for it (Downes, 2014). An example of this may be a textbook publisher using materials from an open textbook in a textbook that students need to pay for. This would fall under “redistribute” from Wiley’s Four Rs because the original work would be placed in a new piece of work and then shared.

Further issues arise around the definition of “open” because of a lack of knowledge by users about what that means. Some believe that anything that they can access for free or even commercial digital books (e-books) are automatically open (Paradis, 2014). Many, if not most, works on the World Wide Web are freely accessible, yet carry “all rights reserved” copyright licenses, while users usually have to pay for e-books, which cannot be remixed or redistributed (some can be revised through annotations).

Wiley (2013) adds to the discussion around what “open” in education means with his explanation of “open pedagogy”, which involves the use of OER for learning opportunities that involve real-world experiences, as opposed to “disposable assignments”. For a learning experience to truly meet Wiley’s definition, however, all of the involved resources must meet the his five Rs and must not be otherwise possible *without* the use of OER resources.

Finally, OEP not only include the adoption of open educational materials, but also include the departmental and institutional support for making those adoptions, as well as to create new or adapt existing open educational materials. Open educational practices also include the changes to pedagogy that can come from shifting from standard commercial resources to open, adaptable materials that meet the specific needs of the learners in a given context. Ehlers (2011) describes open educational practices as those that “comprise a combination of open resource use and open learning architectures that could transform learning into 21st century learning environments in which universities, adult learners, and citizens are provided with opportunities to shape their lifelong learning pathways in an autonomous and self-guided way” (p. 4).

## **The Benefits of Open**

BCcampus reported that as of February 2015, students in British Columbia have saved approximately \$470,000 to \$760,221 (depending on the method of calculation) through the adoption of open textbooks (Lalonde, 2015). The adoption of open materials in general, not just open textbooks, in university courses can help alleviate the problem of textbooks being too expensive for students to purchase (Lalonde, 2015). The financial savings that come with the adoption of open textbooks over traditional commercial textbooks are highly important given the negative impact on students of rising textbook costs. The benefits to the integration of open textbooks and other OER are not limited to financial savings for students, however, and may also bring broader change to the learning experience.

Students and instructors have fewer concerns as to what they are allowed to do with open learning materials compared to copyrighted commercial materials. As Masterman, Wile, White and Manton (2011) note, the use of open resources frees users from concerns about copyright. While some Creative Commons licenses may limit the ability to receive monetary gain from open resources (i.e. selling a calendar that you have created using images carrying a Creative Commons non-commercial license), there are never restrictions on the ability to share freely with others, whether students in a class or readers of a blog. Ehlers (2011) suggests that due to this ability to share and adapt materials, the creation and use of open materials allows for greater collaboration between instructors and colleagues as well as between instructors and learners, and learners and

learners. The use of an open textbook or other OER allows for editing and customization by educators in the classrooms, and even for learners to adapt and / or create personal learning materials by using open resources. Overall, what Ehlers describes is an increase in the potential for instructors and learners, possibly at different institutions, to work together to create the learning experience. Masterman, et al. (2011) note that such collaborations allow instructors to contribute materials when they see a “gap” in existing open resources, as well as obtain “feedback on the quality of those materials” (p. 138). In Petrides, et al (2010), instructors indicated that using open educational resources (OER) led to more opportunities for collaboration with colleagues, including “curriculum development activities as well as information sharing about resources, practices and teaching challenges.” (p. 5) In addition, some participants in that same study noted that the use of (OER) also created opportunities for instructors and learners to “[work] together to create content that enables students to take more responsibility for their own learning.” (Petridies, et al., 2010, p. 4)

The use of open educational resources in teaching and learning allows for materials to be adapted to meet the needs of learners in a specific course. Petrides, et al., (2010) and Wiley and Green (2012) noted that the integration of resources that allow for not only using and sharing, but also remixing, allows educators to make changes to textbooks and other OER such as reordering, revising, removing, and / or replacing chapters to fit their current context. Perryman, Hemmings-Buckler, and Seal (2014) and Wolfenden, Buckler, and Keraro (2012) noted that the ability to adapt OER allows for not only adding or removing chapters based on the wishes of the instructor, but to make changes to the text to

better fit local culture and language. This ability creates the “potential to celebrate diversity and the embrace the voice of the “local” in resources to support learning without the creation of new original materials in each learning situation, giving access to high quality materials to those working in poorly resourced environments” (OCLOS, 2007 in Wolfenden, et al., 2012, p. 2). Baker, Thierstein, Fletcher, Kaur, and Emmons (2009) also noted the benefits for students and instructors due to this ability for instructors to customize open materials instead of assigning readings that are different than the order in the textbook. As licenses generally allow for others to build on the original material, each adaptation may build on the original — and subsequent iterations — benefiting the original creator and others who have contributed along the way.

Like the use of open textbooks and other OER, access to learning materials is increased through the integration of open access journal articles. Students, researchers, libraries and the general public do not need to subscribe to and pay for journals to read and learn from the research of others if the research is published in an open access journal. Researchers can additionally benefit by publishing through open journals. While there are clearly still issues with the existing prevailing model that requires many researchers to pay for publication, as noted previously in this paper, several studies have shown that the number of reads (or downloads) and citations is often higher for articles published openly because more readers can access them without concern of subscription costs (Frish, Nathan, Ahmed, & Shidham, 2014; Harnad, et al., 2008; Koler-Povh, Juznic, & Turk, 2013; McCabe & Snyder, 2014).

The integration of OER, the adaptations of these materials, and the collaborations and growth experienced by both teachers and learners through this integration, fit under the umbrella of open educational practices described previously by Ehlers. Ehlers (2011) sees opportunities to empower both instructors and learners through these practices because of the freedom to use and share materials, an increased ability to collaborate with others, and to build on what has already been created as they move along “on their lifelong learning path” (p. 4). The adoption of open practices also allows educators to share their materials, whether original or adapted from open materials created by others with similar practices, with a larger swath of potential learners by sharing them on an open web site, in an open textbook or through other open means (Beetham, Falconer, McGill, & Littlejohn, 2012). That same report noted that instructors found open practices provided opportunities to work “across institutional or departmental boundaries in new ways” (p. 4). This benefit may help to break down walls that often create silos within or between institutions.

While there are many benefits to the adoption of open educational practices and the sub-areas within, there are also a number of barriers faced by instructors that may prevent, or at least discourage them from integrating such resources and practices into their teaching and learning. These barriers will be explored in the next section.

### **The Barriers to Open**

While there are potential benefits to the integration of OER, there are also many barriers, including instructor values related to teaching and learning (Masterman, et al.,

2011); a lack of knowledge of OER in general as well as how to find and effectively make use of these materials, (Harley, 2008; Panke, 2011); a lack of knowledge of, and comfort with, the necessary technologies (Petrides et al., 2011; Armellini & Nie, 2013), a lack of the time needed to make changes to an educator's course or teaching practice (Harley, et al., 2010; Chae & Jenkins, 2015; Armellini & Nie, 2013); and existing academic culture (Harley, 2008). In addition, while there are clear benefits to being able to adapt open resources, the intricacies of localizing OER can be quite complicated (Perryman, et al., 2014).

It is important to remember that while the integration of open educational practices may benefit students, instructors and others, these practices must align with individual instructor's values and philosophies related to teaching (Masterman, et al, 2011). If an instructor firmly believes that their current practices, which may include, for example, using a commercial textbook or keeping all instructor-created materials in a password protected learning management system, are what is best, the potential benefits of using OER can not be realized.

It is difficult to adopt a new resource, method of teaching, or technology if you either cannot find it or have not learned how you can integrate it into your current teaching practice. In research done by Harley (2008) respondents indicated that the ability to find quality open resources, adapt and then integrate them into the instructors existing practices was an impediment to adopting OER. Panke (2011) found, in a study of instructors who had already adopted OER, that these instructors saw a lack of knowledge of OER on the part of instructors as a barrier. Participants in that same study also noted

that it is difficult to find “relevant resources” due to both there not being enough OER or there being too much (and it being too difficult to filter).

Finding, adapting, and adopting such resources can be complicated by the fact that instructors may lack the knowledge of and / or comfort with using the technologies necessary to make needed or desired adaptations. Even if instructors have the technological knowledge and comfort level to find the resources, a lack of such skills and comfort for editing such materials can get in the way of OER being utilized to its fullest potential. (Armellini and Nie, 2013; Petrides, et al, 2011). Petrides, et al. (2011) noted that “faculty with lower comfort levels with using online technology made use of open textbooks in ways that exemplified more traditional ways of working with materials, there exists a need to build on the technology, practices and tools made possible by open textbooks to enhance teaching and learning practices” (p. 47). Instructor attitudes toward technology in general can prove to be a barrier in this area. As Harley (2008) noted, some instructors view technology as a “distraction” for students so they do not want to utilize it within their courses. Open resources rely heavily on the use of technology whether for reading an open textbook on a tablet, accessing open journals online, or collaborating with others on adapting or creating open materials using synchronous or nonsynchronous communication tools.

When a new textbook, whether commercial or open is adopted for a course, an instructor may need to change lecture notes, develop new exam questions, or create or revise ancillary resources such as PowerPoint slides. Often, commercial publishers now include such materials when an instructor adopts a new textbook. Open textbooks and

other OER frequently do not include such materials and if they do, they may not be as robust as those from commercial publishers. In addition, while commercial publishers send textbook representatives to institutions to promote their materials, instructors often need to seek out OER materials. Finding or creating needed ancillary resources takes time that may prove to be a barrier to some instructors adopting OER.

In research by Chae and Jenkins (2015), the authors noted that participants in their study showed that a “lack of time to find and modify materials” (p. 22) as the top barrier to integrating OER. In Armellini and Nie (2013), participants noted that it takes a great deal of time to find resources across multiple repositories, and that, adapting the resources they do find to meet their specific needs may add significant time to this. Harley, et al, (2010) found that this time commitment was a key reason given by some faculty for not adopting an open textbook.

A change in teaching practice, even the adoption of a new textbook, can be complicated by a lack of support by colleagues or the institution for the integration of OER. Chae and Jenkins (2015) noted that textbooks are often chosen by a group of faculty teaching different sections of a course for the same department. Switching from a commercial textbook to an open textbook or other OER would therefore require the interest of more than a single instructor. Harley (2008) found that institutional culture can be a barrier to the adoption of OER. Harley noted that “very few [respondents] indicated that [using OER] would help their promotion and tenure prospects; indeed, in research university environments, too much time spent on integrating technology into teaching can have negative consequences on career advancement” (p. 202). Lane and McAndrew (2010)

noted similar issues in that “there are often not the policies and practices in place within higher education institutes to support and reward innovative teaching practices” (p. 954).

Finally, while the ability to adapt OER to meet local contexts is a major benefit of adopting OER, such customization may not be an easy task. A lack of knowledge and comfort with technology, as well as the lack of time needed to make such adaptations are only two of the challenges to localised adaptations. Research findings from Perryman, Hemmings and Seal (2014) showed that additional barriers exist due to the “complexities of managing translation, the need to navigate localizers’ perception, preferences and professional experience as educators and localisers’ unfamiliarity with OER and online learning.” (p. 1)

While there are clearly a number of barriers to the adoption of OER for instructors, they are not insurmountable. The next section of this paper will explore the roles of the various stakeholder in alleviating these challenges to help instructors, institutions, and institutions reap the benefits of OER.

### **Support and Training**

As noted earlier, a lack of knowledge of, or how to use open resources are barriers to the adoption of open practices. Existing literature shows the importance of support and professional development for educators if they are to adopt open practices (Armellini & Nie, 2013; Harley, 2008; Lynch & Rather, 2015; Rolfe, 2012; and Lane & McAndrew, 2010 ).

In their paper on open educational practices, Armellini & Nie (2013) state the importance of “systematic support and training for academics, focusing on evidence and

added value for students and themselves” (p. 18). They further listed five areas of support directly related to training for instructors on:

- how to find appropriate locations for OER
- how to conduct research around the use of OER;
- how to use the technology needed to find, adapt and adopt OER;
- how copyright works including the types and role of open licences;
- how to create OER using appropriate formats and licenses.

Institutions must also work to include these supports throughout university programs and “enabling a community of OER practitioners to operate and share their work across the institution” (Armellini & Nie, 2013, p. 18).

Participants in the study done by Chae & Jenkins (2015) noted the need for local support and expressed their preference “to have a local OER service unit on campus and a go-to person who can help in finding, using, and designing a course with OER” (p. 31). They also noted a need for “experts” throughout the campus community, such as those in an OER unit, early adopters who have already had a chance to try out the use of OER in teaching and learning, as well as instructional designers and librarians that are well versed in finding, creating, and / or integrating open materials.

Participants in research by Harley (2008), Lynch and Rather (2015) and Rolfe (2012) listed a lack of support in terms of training in how to find and use OER as a barrier to the integration of open materials, while Lane and McAndrew (2010) noted the problem of a lack of institutional support for “innovative teaching practices” (p. 954).

## **Stakeholders and Their Roles**

Thus far, this paper has noted the benefits to students and instructors, as well as the barriers, mostly for instructors, but there are a number of stakeholders who may benefit from, and can play a role in assisting in the successful integration of open educational practices. These other stakeholders may include librarians, educational developers, campus bookstores, and administrators.

There is a great deal of literature showing the role of librarians in supporting the adoption and integration of OER. Marshall (2012) aptly stated that public libraries, where anyone can access books and other materials for free could be considered long-time providers of open education. In Jensen and West (2015) the authors argue that librarians can take a leading role in fostering the adoption of OER through working with faculty on digital course packs potentially containing open materials, as opposed to print course packs which require the cost of printing to be born by the students. Chae and Jenkins (2015) also touched on the potential for instructors partnering with libraries for assistance, listing librarians among other “experts” on campus who could “support and consultation” (p. 31-32).

As noted earlier, instructors needs training in how to find open educational materials, how to integrate them into their teaching and learning, how to adapt them, create new ones, and how to share them with others to adapt, use, and share. Specifically, research by Chae & Jenkins (2015) showed the desire among instructors to have a "go-to" person or unit on campus to assist with these various aspects. Educational developers, including instructional designers, as well as members of information technology units often

fill the role of trainers for integrating other types of learning technologies so likely play a similar role as instructors strive to integrate open educational practices.

Upper administrators, including deans, may play a role in supporting the adoption of open educational practices by addressing some of the barriers previously mentioned. The support from administrators could happen through providing instructors with needed time to adapt open materials or to create ancillary resources such as test-banks and slides, as well as reconsidering how adopting open educational practices may fit into tenure and promotion mechanisms. In addition, administrators can assist by providing needed financial and other resources to units such as libraries and teaching and learning centres who in-turn work with instructors to find, adapt and integrate open resources and practices.

Finally, campus bookstores and printing services can work with instructors to provide print versions of OER such as textbooks for students who may prefer to have a print version of their learning materials. One example of this is the Document Solutions unit at Simon Fraser University in British Columbia providing print-on-demand services for students throughout the province at a fraction of the cost of what it would cost students to purchase a commercial textbook. (Lalonde, 2013)

### **Gaps in Existing Literature**

While there are a number of peer-reviewed articles on OER and open educational practices, there is a sizeable gap in how those studies have explored the existing contexts. Most studies have been quantitative in nature, failing to go deeper into the views of faculty

and how those views may be shaping the integration of these materials and practices. For example, Algiers and Silva-Fletcher (2015) did a quantitative study of instructor motivations for using OER while Yang and Li (2015) conducted a quantitative study of faculty attitudes toward open access publishing and awareness of an institutional repository. Paradis (2014) in a qualitative study and Petrides, et al (2011) in a mixed-methods study, only looked at instructors who had adopted open textbooks, not other areas of open, or at those who had not made this change. Harley et al. (2010) did do a qualitative study of faculty attitudes, but only looked at open textbooks. Chase and Jenkins (2015) did a qualitative study looking at faculty usage of OER, but their participants were only instructors who had already adopted some type of OER in their teaching. Rolfe (2012) did a small mixed methods study that included 50 survey respondents and 6 interview participants looking at instructor attitudes, but that study only drew from instructors within a single faculty (Health and Life Sciences).

Rolfe (2012) notes that future research in this area “needs to incorporate appropriate methodologies for obtaining a richness of opinion.” (p. 11). Chae and Jenkins (2015) call for further research that will explore not only the attitudes toward OER and open practices in higher education, but also how faculty are using such materials and practices. They suggest that data may come from qualitative or quantitative means and may be compared across institutions (2015).

### **Possible Research Study**

Given the existing literature, the author proposes a qualitative study of the variables that influence the adoption of open educational practices. The study would take the form of an embedded single-case study of one Canadian university. Paradis (2014) noted that by speaking with faculty about their views on adoption we can gain not only insight into their thoughts on the materials themselves, but also a glimpse into how open resources fit into their pedagogy. The author has chosen this method because it will allow her to better understand why some instructors are adopting open educational practices while others are not at the university as the institution is facing pressure from student leaders and the provincial government to move forward on an OER initiative.

A case study “investigates a contemporary phenomenon in depth and in its real-world context,” (Yin, 2014 p. 237) while an embedded single-case study is a research design with one specific case that includes multiple units of analysis within the case as opposed to looking at the case overall for the analysis (Yin, 2014). Taking an embedded single-case study approach will provide the opportunity for a deeper analysis than if the case was looked at as a single unit because “the data can be analyzed *within* the subunits separately (within case analysis), *between* the different subunits (between case analysis), or *across* all of the subunits (cross-case analysis)” (Baxter & Jack, 2008, p. 550).

A case study includes multiple data sources, which “ensures that the issue is not explored through one lens, but rather a variety of lenses which allows for multiple facets of the phenomenon to be revealed and understood” (Baxter & Jack, 2008, p. 544). For this

case study, data will be generated from four sources - interviews, participant-observations, a review of relevant documents, and a review of existing literature.

Semi-structured interviews will be conducted with a convenience sampling of instructors who have or are in the process of adopting open educational practices and of those who have not, including some who have indicated an unwillingness to do so. Interview participants will be recruited amongst instructors in three ways. First, instructors who are known to have either already adopted or in the process of adopting open educational practices will receive participant invitations. Second, instructors who are known to have not adopted open educational practices will also receive participant invitations. Finally, instructors from the second and third groups will be asked if they could recommend additional potential interview participants that will then receive personal invitations. The final participants will be chosen at random from the total list of volunteers.

The second source of data will come from participant-observations. Yin (2014) defines this method of data collection as “the mode of data collection whereby a case study researcher becomes involved in the activities of the case being studied” (p. 240). The researcher’s role in the institution allows for regular participation in meetings and consultations around open textbooks and other open educational resources, as well as open educational practices. Sometimes these conversations are formal and may evolve out of meetings that started on other topics, while at other times they may happen over a casual cup of coffee or in passing an instructor in the hall or at an event. The author will maintain a research journal of notes and collected artefacts through the research process.

The third source of data will be a document review related to this specific case. The researcher has begun to collect artefacts such as news releases and other public documents from administrators and government officials related to open educational practices from on-campus and local media sources.

The fourth source of data will be current literature, conference presentations, and conversations with other researchers and practitioners working in the area of open educational resources. These ongoing additions to the research into OER and OEP will allow the researcher to remain current as to what developments are happening at other institutions. Search terms for reviewing the literature will include, but not be limited to: OER, open textbooks, open education, open pedagogy, and open educational practices.

## THEORETICAL FRAMEWORK

This research will be carried out using diffusion of innovations theory, which seeks to identify what factors play a role in the adoption of innovations, as well as who adopts these innovation, and why and when they adopt them (Rogers 2003). Rogers identified five perceived attributes of innovations:

- Relative advantage – “the degree to which a new innovation surpasses current practices”
- Compatibility – “the degree to which an innovation is perceived to be consistent with adopter’s existing value, past experiences and needs”
- Complexity – “the perceived difficulty of learning to use and understand a new system or technology”

- Trialability – “the ease of experimenting with an innovation”
- Observability – “the degree to which the results of the innovation are easily seen and understood” (Sonnenwald, Maglaughlin, & Whitton, 2001, pp. 114-115)

In addition, Rogers (2013) also identified stages of adoption and how these aspects together play a role in how quickly and broadly an innovation is adopted. Given the numerous areas that make up OEP, using Rogers’ theoretical framework will be appropriate to delve into the factors that lead to or discourage the adoption of educational practices. It may also be useful to help show which OEP have the most traction at the participating university as well as which may have the most promise in terms of longevity.

Another key aspect of this framework is communication. Rogers (1976) stated the importance of looking at how new innovations are communicated to potential adoptees. In the case of this proposed research, it will be important to look at how those who adopt OEP learn about the open resources and how to integrate them into their teaching and learning. For example, is there a difference between hearing about it from a colleague than from a librarian or educational developer?

Rogers (1976) noted some important biases to be aware of when conducting research through the lens of the diffusion framework. One bias is looking at developments in the adoption of an innovation through a single point in time or relying on “their respondents ability to recall their date of awareness or adoption of a new idea” (Rogers, 1976, p. 295). Official documents, news items, and the researcher’s journal with information from meetings with instructors and happenings at the university related to

OER and OEP will all contain information tracing the early days of the adoption of open practices at the institution being studied, allowing for the researcher to help overcome the first bias.

Another bias is the potential for a “pro-innovation” bias on the part of the researcher. In the case of the proposed study, the researcher does play a key role at her university in advancing the adoption of open educational practices so the potential for bias is at the forefront. Hays and Singh (2012) describe a reflexive journal as “a strategy of trustworthiness wherein the researcher records thoughts of how the research process is impacting him or her. Reflexivity may assist in addressing, or at least recognizing bias on the part of the researcher through the researcher keeping a journal throughout the research process. The researcher reflects in writing on how the participants, data collection, and data analysis are impacting him or her personally and professionally” (p. 430). Watt (2007) stated that, “an introspective record of a researcher's work potentially helps them to take stock of biases, feeling, and thoughts so they can understand how they may be influencing the research” (p. 84). Through the careful documentation of the research process and the use of reflexivity, the researcher may have a clearer view of potential bias, and be able to address, to readers, how these biases were dealt with through the research process.

### **Thematic Analysis**

Data from the interviews, participant observations, and the document reviews will be analyzed using thematic analysis, “a method for identifying, analyzing and reporting

patterns (themes) within data” (Braun & Clarke, 2008, p. 79). The analyses will be carried out using a hybrid approach employing codes drawn from theory as well as looking for emerging codes throughout the analysis. This approach to analysis will be a similar approach as Fereday and Muir-Cochrane (2006) took and follow their stages of data coding:

1. Develop the code manual
2. Test the reliability of the codes
3. Summarize the data and identify initial themes
4. Apply the template of codes and additional coding
5. Connect the codes and identify themes
6. Corroborate and legitimize codes themes (p. 84)

Roger’s attributes of innovation and categories of adopters and other key themes that come from existing literature related to open educational practices will be used for developing the initial code book, but emergent codes will be added throughout the research process. Most of the analysis will be completed using the qualitative research software NVivo, while some will happen throughout the research process and through initial readings of interview transcripts, the researcher’s journal, and other documents.

Questions that the proposed study may help answer include:

How have adopters come to adopt open practices? How were they introduced to this concept? What supports did they receive or wish they had receive? What benefits did they expect and which did they experience? What knowledge of open practices did they share with others?

Why do some instructors adopt OER and various open practices while others do not? What are common beliefs about the benefits and barriers to the adoption of open materials and various open practices at the institution?

What communication channels have been transmitting information about open practices through the institution (how have instructors heard about open practices)? Which seem to be effective in increase adoption of OER and open educational practices?

## **Conclusion**

The adoption of OEP in teaching and learning provides opportunities for financial savings for students, the ability for instructors to adapt learning resources to meet the specific needs of the courses they teach, and for students, instructors, and the general public to have increased access to learning materials from a variety of sources. While the benefits are clear and abundant, there are also many barriers to the integration of open educational resources and practices including the lack of knowledge about or ability for instructors to find appropriate resources, the time to adapt them or simply integrate the materials in their existing form into their current teaching practice, and a lack of recognition for such practices during review for tenure and promotion. The research study proposed within this paper seeks to learn how the benefits are realized and the barriers overcome at one Canadian university to provide potential examples for other institutions.

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