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Community College Students' Deep Learning Approaches in OER Courses

Kim Ellen Grewe
Old Dominion University

COMMUNITY COLLEGE STUDENTS' DEEP LEARNING APPROACHES IN OER COURSES

by

Kim Ellen Grewe
B.A. May 1988, St. Vincent College
M.A. May 1996, Salisbury University
M.A. May 2012, San Diego State University

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Approved by:

Chris R. Glass (Director)

George Fowler (Member)

Mitchell R. Williams (Member)

W. Preston Davis (External Reader)

ABSTRACT

COMMUNITY COLLEGE STUDENTS' DEEP LEARNING APPROACHES IN OER COURSES

Kim Ellen Grewe
Old Dominion University, 2018
Director: Dr. Chris R. Glass

Open Educational Resources (OER) have the potential to bridge the gap for community college students not only because they are more affordable or provide access but also because they have the potential to make learning more meaningful for these same students. Although issues related to access and affordability have been extensively researched, less is known about the ways in which OER use may impact community college students' deep approaches to learning. More qualitative research around OER efficacy from the student perspective is needed. The purpose of this study was to describe the ways students use OER and how students' OER use may impact their deep approaches to learning.

This study employed qualitative research methods, collecting data from focus groups composed of community college students. The major findings indicated that students use OER to relieve some of the financial stress associated with being a community college student. Students often go outside of the class environment to find OER to help them address learning preferences, diagnose and accommodate learning disabilities, remediate weak skills areas, and learn more about topics of interest. These students benefit from and sometimes participate in Open Pedagogical practices and demonstrate deep approaches to learning when they access openly licensed and freely

shared OER and use OER to collaborate, peer validate, and publish work outside the class environment.

Students also benefit from strong OER design. OER are often well-sequenced, using techniques like scaffolding and chunking to move learners through material at a manageable pace for optimal learning. OER are often interactive and make use of adaptive technologies to personalize instruction and engage learners.

Presenting the students' perspective through qualitative research is a critical component to better understanding the efficacy of OER for student learning in community college. Faculty should continue to explore OER use in their courses and should widen their traditional circles of collaboration to design their courses using OER. Community college administrators should begin to explore OER as part of their strategic plans for decreasing the financial burden of attending college for students and for increasing student learning and success at their colleges.

DEDICATION

This work is dedicated to all the students who have inspired me over the years. In large part, it is you who have given me the courage and strength to complete what I consider to be a monumental academic task -- writing a dissertation. Your courage to learn, grow, and challenge yourselves in the face of many barriers and obstacles over the years has given me the courage to embark on this endeavor. At the scariest, most confusing times, so many of you were there with me encouraging me to keep going. I chose my topic because I am grateful to you, humbled by you, and inspired by you.

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CHAPTER I

INTRODUCTION

Statement of the Problem

Open Educational Resources (OER) have the potential to bridge the gap for community college students not only because they are more affordable or provide access but also because they have the potential to make learning more meaningful for these same students. Although issues related to access and affordability have been extensively researched, less is known about the ways in which OER use may impact community college students' deep approaches to learning in their classes. A new field of academic inquiry has emerged around OER, and the body of research around OER is still small, though growing. More research is needed about the efficacy of OER in terms of how student use of OER impacts student learning.

Background of the Problem

Open Educational Resources (OER). The term Open Educational Resources (OER) was first introduced at a Forum hosted by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2000 and was promoted in the context of providing free access to educational resources on a global scale. Participants of this conference coined the term "open educational resource" to describe the concept (Wiley, 2006). The most widely accepted definition of OER also emerged from this conference: "OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. 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" ("Open Educational Resources," n.d.).

After the landmark conference in 2000, the momentum behind OER in higher education continued to build. For example, in 2006, there were over 2,000 freely available open university courses offered online, and the number of OER initiatives at colleges and universities had grown significantly, not only in the United States but also all over the world. Universities and colleges in Australia, Brazil, Canada, Hungary, India, Iran, Ireland, the Netherlands, Portugal, Russia, South Africa, Spain, Thailand, the UK, and Vietnam had all been exploring OER through various projects and initiatives (Wiley, 2006). As the momentum around OER adoption has increased, so has the idea that OER can be a great equalizer in terms of student access to information. Some see OER as having potential to be a key component to student access and success in American community colleges, providing free or low-cost textbook alternatives to financially-strapped students (Bradley, 2013); thus, more community colleges in the United States are increasing OER adoption (Ashford, 2017).

Student socioeconomic status (SES) and OER. Traditionally, community colleges have been accessible and inclusive in part by keeping their cost of tuition down. Thus, students from low and middle socioeconomic status (SES) who might not be able to afford tuition at a more expensive four-year institution may be able to afford tuition at community college. Indeed, it is these students who make up the bulk of enrollments at many community colleges.

One study found that over half of community college students (55%), as compared to their four-year university counterparts (38%) are from the two lowest income quartiles

(Bailey, Jenkins, & Leinbach, 2005). A large percentage of these enrolled students are Pell eligible. According to the National Clearinghouse of Education Statistics (NCES), for two-year degree-granting postsecondary institutions, the percentage of first-time, full-time degree/certificate-seeking undergraduate students receiving any financial aid increased from 71 percent in 2008–09 to 78 percent in 2013–14. During this time, the percentage of students receiving aid at two-year public institutions increased from 66 to 77 percent. ("Fast Facts," n.d.). These students often use their financial aid to pay for the increasingly expensive textbooks. In a recent survey, 50% of community college students reported that they use financial aid to pay for textbooks (Senack & Donoghue, 2016).

While tuition costs at community college may remain affordable for these students, textbook costs can account for a sizeable proportion of student expenditure and debt. In California during 2007-2008, for example, textbooks accounted for a whopping 59% of the total cost of attending community college (Goodwin, 2011). Sometimes students will forego the purchase of textbooks to save money, especially since textbooks are optional but tuition is not (Buczynski, 2007). Therefore, the rising cost of textbooks may disproportionately harm students in community colleges. In fact, textbook costs often determine whether faculty adopt OER in place of traditional commercial publisher materials. In one study around the use of an open textbook, researchers found that "[c]ost reduction for students was the most significant factor influencing faculty adoption of open textbooks" (Petrides, Jimes, Middleton-Detzner, Walling, & Weiss, 2011).

The extent of stress caused by financial need and the negative impact this has on learning in college students has been well-documented recently through the work of Sara Goldrick-Rab of Temple University. In *Paying the Price*, Goldrick-Rab presented

research focused on the impact of financial aid on low-income students. This initial research was conducted on a relatively small set of students in Wisconsin public colleges or universities in the years following the Great Recession. Homelessness and hunger were discovered to be far more prevalent on college campuses, especially community colleges, than previously imagined or understood.

More recent research conducted by Sara Goldrick-Rab and her team at Temple and at the Wisconsin HOPE Lab has brought to light the degree to which students from across the nation suffer from financial stress, what she calls basic needs insecurity, and what this does to their academic success. (The Wisconsin HOPE Lab is the nation's first laboratory for translational research, which means they have a specific research goal aimed at improving equitable outcomes in postsecondary education.) Their most recent report entitled "Still Hungry and Homeless in College" collected survey data from over 43,000 students across 66 community colleges and universities among 20 states. The report, published in April 2018, found that basic needs insecurity is a rampant problem in American colleges and universities. Of note, 43% of community college students reported being food insecure in the last 30 days. In the past year, 46% of community college students reported being housing insecure, while 12% of them reported being homeless. Goldrick-Rab's research is ground-breaking because it revealed the extent of basic needs insecurity at our colleges and universities is much greater than previously known.

Student learning outcomes and OER. To date, several studies have been conducted to explore the efficacy of OER use and adoption on student learning outcomes in higher education (Feldstein et al., 2012; Hilton III & Laman, 2012; Lovett, Meyer & Thille,

2008; Robinson, 2015). These studies use various metrics to measure student success such as exam results, grade point average, withdrawal rates, grade in course, and number of credits enrolled in subsequent semesters. The overarching conclusion from these studies is that students who use OER in place of traditional textbooks do as well or better than students who, under similar conditions, use the publisher textbook. These quantitative studies, however, do not explore the ways in which OER may change the way teachers teach and students learn.

OER, with their open permissions, have the potential to transform learning. Because OER are openly licensed, faculty and students who use OER have the freedom to not only re-use previously published materials, but they can also revise, remix, and redistribute the learning materials. Such permissions open the door to new possibilities for teaching and learning. For example, instead of just reading an encyclopedia entry, students can also edit and contribute content to already existing sources such as Wikipedia. Instead of writing what Wiley (2013) calls a "disposable assignment," students have the potential to create authentic learning objects that "actually add value to the world" (para. 5). Utilizing open permissions of OER, assignments have the potential to become real-world contributions instead of empty academic exercises.

OER, OEP, and the OE movement. Authenticity is part of the idea behind the Open Education (OE) movement, of which OER are just one small part. Advocates of Open Education contend that students who become not only consumers but creators of information, who use educational settings to solve real-world problems, and who open their existing networks to include more global connections will benefit and learn in valuable ways. Deemed Open Pedagogy (OP) or Open Educational Practices (OEP),

these strategies are part of the new learning paradigm which focuses on student-centered approaches. Within this paradigm, students co-construct their experience around the topic being studied though active learning techniques, and the instructors see themselves more as facilitators of learning than imparters of knowledge as in the older, teaching-centered paradigm (Campbell, Cabrera, Michel, & Patel, 2016; Cullen, Hill, and Reinhold, 2012; Emes & Cleveland-Innes, 2003).

When OER are used to their full potential through the permissions associated with open licensing, the ensuing teaching and learning may fall under the term Open Educational Practices or OEP. OEP are aligned with more current theories of learning, most notably, the constructivist approach. The constructivist approach contends that learning occurs within social contexts, that learners remix prior knowledge to understand new concepts, and that transfer occurs through socialization. This approach emphasizes the collaborative nature of learning and the importance of cultural and social context for learning to take place.

Drawing on this approach, some faculty are creating what are termed “authentic assignments.” Authentic assignments are ill-defined, calling on the learners to make sense and define the tasks and sub-tasks. Authentic assignments allow for competing solutions to real-world problems and diversity of outcome. Authentic assignments also encourage collaboration and reflection, allow students to examine issues from multiple perspectives, and create finished products that are valuable in their own right (Hogan, Carlson, & Kirk, 2015). Students contributing to Wikipedia or revising and improving an existing open text are examples of these kinds of authentic assignments which use OER to their full potential, and, thus, can be considered OEP.

Student approaches to deep learning and OER. Until 1976, researchers did not have a common theory explaining students' deep approaches to learning. Marton & Säljö (1976) at the University of Gothenburg conducted a pioneering study which examined students' thought processes while learning. From this study emerged the identification of two distinct approaches to learning: deep and surface. Marton & Säljö (1976) walked with students through their thinking processes while learning. The researchers did this by asking students a series of questions as they read and responded to a text.

From this study, others emerged (Biggs, 1993; Entwistle, 1981; and Ramsden, 1987) elaborating on the theory and substantiating the research. Several approaches to deep learning have been identified. Students who engage in deep learning approaches tend to make connections between prior knowledge/experiences and the topic they are studying, think critically about newly learned material, synthesize information gathered from various sources, aim to understand the meaning behind the material, and create new arguments around the topic they are studying. Students who engage in deep learning approaches recognize a structure in the content, understand logic based on new information provided, and generally are intrinsically motivated to learn for learning's sake (Marton & Säljö, 1976). In most cases, deep approaches to learning lead to more meaningful and lifelong learning experiences.

Purpose of the Study

The purpose of this study was to describe the experiences of students in community college courses which use OER and to investigate the ways in which use of OER fosters approaches to deep learning in these same students. The qualitative research

is intended to enhance, support, and assign deeper meaning to the already existing body of quantitative research around the efficacy of OER.

Research Questions

This study addresses the following research questions:

- How do community college students enrolled in OER courses describe their use of OER materials?
- How do community college students' descriptions of their *use* of OER materials reflect deep approaches to learning?

Conceptual Framework

Although OER as a research topic is relatively new, Bliss, Robinson, Hilton III, and Wiley (2013) developed a conceptual framework most widely used in OER research today called the COUP framework. The COUP framework examines four major areas related to OER: cost, outcomes, use and perceptions. Research around cost looks at a range of financial and cost metrics for students and institutions and provides empirical evidence about the magnitude and direction of the financial impacts of OER. Research around outcomes looks at metrics around student learning outcomes and provides empirical evidence about the magnitude and direction of the learning impacts of OER adoption. Research around use examines the ways in which faculty and students interact with openly licensed materials, provides empirical evidence about the ways faculty and student use OER and the degree to which impacts on learning outcomes covary with these uses. Research around perceptions examines how students and faculty think about and feel toward OER as well as how other stakeholders such as parents of policy makers view them ("The COUP Framework," n.d.).

Since these distinct areas of the conceptual framework emerged organically while research around OER was in its nascent stages, it makes sense to frame the current study in this way. While *cost* is not one of the aspects of OER examined in this study, cost is an overarching factor which may impact students' choice to enroll in an OER course and faculty choice for adopting OER. In several studies (Bliss et al., 2013; Bowen, Chingos, Lack, & Nygren (2014); Hilton III, Gaudet, Clark, Robinson, & Wiley, 2013; Pitt, 2015), cost is often cited as the greatest factor driving student choice of OER courses and faculty adoption of OER in their courses. Therefore, cost was an overarching theme in discussions with students, especially since the low-cost or no-cost aspect of OER is the one aspect that students most often knew about and talked about in this study.

In considering the *outcomes* portion of the framework, the study employed a cognitively responsive view of student learning and student success. Learning theory which draws on research in human cognition and the learning sciences is termed cognitively responsive (Neumann & Campbell, 2016). The cognitively responsive perspective tends to focus more on individual student experiences than on aggregate student data. The cognitively responsive view looks at the process through which individual students build on prior knowledge to gain an understanding of new concepts. Most institutions and OER efficacy studies to date (Hilton III & Laman, 2012; Robinson, Fischer, Wiley, & Hilton III, 2014; Robinson, 2015; Fischer, Hilton III, Robinson & Wiley, 2015; Allen, Guzman-Alvarez, Molinaro, & Larsen, 2015) tend to examine aggregate data of student self-reports of engagement in learning and achievement of general competencies as indicators of student success. Both types of data are often termed outcomes (Neuman & Campbell, 2003, pp. 422-423). While aggregate outcome research

is of value, the focus of this study examined a cognitively responsive view of learning processes as an outcome of an OER course.

While students' *perceptions* of OER are part of the conversation, the focus of this study was on student *use* of OER. The study took a cognitively responsive view of learning and examined learning processes as indicators of student success. This study described students' experiences using OER in a community college learning environment, analyzed the ways in which students' OER use impacted their approaches to deep learning, and deepened the conversation around OER efficacy by including and detailing the students' perspective.

Methodology

To learn about community college students' approaches to deep learning in OER courses, this study used qualitative research methods. This study used focus group data to detail community college students' approaches to deep learning in OER courses. Previous OER efficacy studies have employed quantitative methods, examining metrics such as pass rates, grades, retention, future course enrollment, and time to completion. In contrast, this qualitative study used thick description, a detailed account of field experiences in which the researcher made explicit the patterns of cultural and social relationships and put them in context. The thick description developed from the data and context and included not only detailed portrayals of participants experiences, but also their "interpretations, uncovering feelings and meanings of their actions" (Holloway, 1997, p. 9). In this study, then, thick description detailed students' use of OER and approaches to learning. Thick description allowed for interpretation of students' learning

processes in community college courses to discover the ways in which OER use contributes to students' deep approaches to learning.

Rationale for Qualitative Methodology

This study used a qualitative approach to "discover and describe the meaning" of participants' lived experiences (Hays & Singh, 2012, p.50). This process allowed the researcher to view the phenomenon of using OER to learn in a community college class from the student perspective. As Grbich (2012) noted, the major outcomes sought in qualitative research are the depiction of everyday occurrences as experienced directly and personally by the participants. And indeed, by collecting data from the students, the researcher was able to develop a "…composite description of the essence of the experience for all the individuals" (Creswell, 2013, p. 76). In this study, then, these students' stories and contributions to the conversation around OER efficacy enriched our understanding of the lived experiences of community college students and their approaches to deep learning in OER courses.

The qualitative approach was also chosen for its potential transformative impact. Creswell (2013) stated his view of qualitative research as potentially transformative through its impact. The researcher views OER as one mechanism that has the power to break down barriers to information access and education. OER have the power to "transform the world" (Creswell, 2013, p. 44) by democratizing information and access to education. Similarly, the intention of this qualitative research study is to positively impact future OER research by encouraging the inclusion of more student stories, experiences, and perspectives.

Characteristics of Qualitative Research

Qualitative research is appropriate because it seeks to "…empower individuals to share their stories, hear their voices, and minimize the power relationships…" (Creswell, 2013, p. 48). A qualitative approach was selected as the most appropriate means of understanding the individual human experience to develop a "…composite description of the essence of the experience for all of the individuals" (Hays & Singh, 2012, p. 76). Because there is little research on the impact of OER on student learning that involves the perspectives of the participants, this study provided an opportunity for their voices to be heard. The deep exploration of the student experience via the qualitative approach has begun to fill in a gap by providing a thick description of the experiences of community college students and their approaches to deep learning in an OER course. This study opened the door to future studies which may allow researchers to examine OER efficacy from a new perspective.

Delimitations

Using the COUP framework, this study focused on students' use of OER. Through qualitative data analysis this study examined students' deep learning approaches as they relate to the open access and open permissions of OER. The study does not examine student perception of OER; rather, the focus was on student **use** of OER and student deep approaches to learning. Through a cognitively responsive lens, the study focused on individual student learning processes.

Also, this study did not examine student deep learning approaches in courses which used traditional textbook publisher materials. This study was not intended to provide a point of contrast or comparative analysis but rather to "discover and describe the

meaning" of the students' lived experiences (Hays & Singh, 2012, p.50) using OER to help them learn in community college courses.

Assumptions

The researcher used both deductive logic and inductive logic to analyze the data collected from the student focus groups. Many of the codes developed came from elements of deep and surface learning approaches as well as approaches to teaching and learning deemed Open Pedagogy (OP) or Open Pedagogical practices. Open Pedagogical practices are student centered, rooted in active learning practices, and encompass a wide range of strategies intended to make learning relevant to students' lived experiences. In these cases, where terms were already well defined, deductive logic was used to parse out codes.

Some of the codes, however, were developed using an inductive approach. The inductive approach allowed the researcher to build knowledge from the bottom up, based on conversations with participants. Therefore, the researcher assumed that students who participated in the focus groups answered questions honestly, providing a fair representation of the phenomena of being a student using OER in a college course. The researcher also recognized that how students approach learning in a course depends on other variables which are subtle and nuanced. The complex nature of these variables made it difficult to fully understand the ways in which they covary with each other and among themselves to impact student learning. OER make up one small part of the student learning experience at Northern Virginia Community College (NOVA).

Definition of Terms

OER. The term Open Educational Resources (OER) was first introduced at a Forum hosted by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2000. The most widely accepted definition of OER also emerged from this conference: "OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. 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" ("Open Educational Resources," n.d.).

Open licensing provides permissions known as the 5 R's, which allow users to not only reuse the material, but also to revise, remix, redistribute, and retain the material. The most popular open licensing platform is Creative Commons.

In the current study, students were not aware of open licensing or the resulting permissions granted by the 5 R's They may have benefited from the permissions associated with an openly licensed learning resource (like when their teachers reused material that had been openly licensed and redistributed the learning material to students in the class). Their teachers may have adopted and adapted OER, thus utilizing the "re-mix" and "revise" aspect of the open license. But it is important to note that students themselves had no knowledge of open licensing, nor did they discuss taking advantage of any of the permissions associated with open licensing.

Students' descriptions of their own individual OER use in the current study had little to do with permissions. Students were not concerned about revising or remixing

learning materials. They were not concerned about retaining the learning materials past the time needed. As a matter of fact, students spoke at length about trying to sell books back that they did not need any more.

David Wiley (2013) and others in the Open Community would argue that being open is about both access and permissions. Some content that may be free to students and provide access (such as Khan Academy or Wikipedia) are not technically open, according to the most recent iteration of the definition of OER which includes the 5 R's. The materials in Khan Academy do not allow some of the activities that open permissions allow such as revising the material and republishing it for another audience. Wikipedia is not a resource that can be "retained." This has lead others in the Open Community to argue that there are various degrees of open and that there are many open-access resources that do not cost individuals or institutions. Two good examples noted in this study are Khan Academy and YouTube. For students in the current study, access was key.

Since the current study provided a student perspective on OER and since access was key to students, this study defined OER as materials that are free or low cost to students (less than $40), thus providing access. While many of the OER in the current study are openly licensed, other significant open-access examples in the study, such as Khan Academy, are not.

OER course. For the purposes of this study, the term *OER course* will refer to a traditional, for-credit, community-college course in which enrolled students have paid tuition. Furthermore, an OER course is one in which the traditional publisher materials

have been replaced in part or fully by OER. The assumption is that these materials are either low cost (under $40) or no cost to students.

Open Education (OE). Open Education (OE) refers to a philosophy about the way to produce, share, and build on knowledge. Proponents of OE see high quality education and educational resources as a public good to which everyone in the world should have access. Proponents of OE seek to break down barriers which prevent people from accessing high quality educational materials. Collaboration is a key component; learners co-create information in collaboration with others and then seek to share this knowledge with a greater audience through open licensing.

Open Pedagogy (OP). Open Pedagogy (OP) is a high-impact student-centered practice, in which students become creators (not just consumers) of information. Open Pedagogical practices are rooted in active learning practices and encompass a wide range of strategies intended to make learning relevant to students' lived experiences. Within this paradigm, the instructor becomes a facilitator of student learning and acts as a subject matter expert, more a "guide on the side" than a "sage on the stage" as in the older teaching-centered paradigm.

Deep learning. Students who engage in deep learning approaches tend to make connections between prior knowledge/experiences and the topic they are studying, think critically about newly learned material, synthesize information gathered from various sources, aim to understand the meaning behind the material, and create new arguments around the topic they are studying. Students who engage in deep learning approaches recognize a structure in the content, understand logic based on new information provided, and generally are intrinsically motivated to learn for learning's sake (Marton & Säljö,

1976). In most cases, deep approaches to learning lead to more meaningful and lifelong learning experiences.

Chapter Summary

Chapter I provided historical background about OER, clarified key concepts related to the study, and defined key terms related to the study. Chapter I also described the purpose of the study, provided a rationale for the qualitative approach, and included a theoretical framework appropriate for the focus of the study.

Chapter II examines the relevant literature around OER and cost and OER use as it relates to teaching and learning. The literature review examines OER efficacy in terms of student learning and identifies a gap in the research.

CHAPTER II

LITERATURE REVIEW

OER and Cost

Textbooks represent a significant portion of the rising cost of a college education in the United States. The estimates of average textbook costs range from $900 per year (Allen, 2010) to $1,270 per year for students attending a two-year public university (College Board, 2013). Hill (2015) in his analysis summarized the data around textbook costs by triangulating various sources of data from the Bureau of Labor Statistics, the National Association of College Stores, and the General Accountability Office. Hill (2015) found that new college textbook prices have risen by roughly 6% per year since 2001, which is approximately three times the rate of inflation; the average new college textbook price rose from $57 in 2007 to $82 in 2014; and from 2002 to 2012 average new college textbook prices rose 82% while overall consumer prices rose only 28%. Even if Hill's (2015) more conservative estimate that students spend $600 per year on textbooks is accurate, this represents a sizable portion of student expenditure, especially at community college where tuition is generally lower, and students may face greater financial difficulties.

What is most troubling is the way in which the rising cost of textbooks affects students' academic behavior. A recent survey of 22, 129 students of the Florida Virtual Campus, which combines 12 public universities and 28 public colleges across Florida, found that 64% of students reported not having purchased a required textbook due to cost. Furthermore, 49% of students reported taking fewer courses because of the financial impact of high textbook costs. Most troubling is that 27% reported dropping a

course, and 21% withdrew from a course because of the financial impact of high textbook costs (Florida Virtual Campus, 2012, p.8).

Some see OER as way to bridge the gap for students by providing high-quality learning materials at little to no cost, thus increasing student access and success. The research conducted to date seems to at least provide evidence that students can save significant amounts of money by taking courses that utilize OER. In one study, Hilton III, Robinson, Wiley, and Ackerman (2014) reported on the cost savings achieved by students at eight colleges when these colleges began utilizing OER in place of traditional commercial textbooks. The researchers estimated that students in the study saved over one million dollars over the course of an academic year.

OpenStax College, one of the largest nonprofit organizations providing open-source materials, claims to have helped nearly 700,000 students at 1,855 schools save over 155 million dollars since 2012 by providing free peer-reviewed, high-quality digital textbooks. (OpenStax, n.d.). In the Virginia Community College System (VCCS), over 100, 000 students have enrolled in OER courses with a cost savings estimated at over 3 million dollars (Douglas-Gabriel, 2016). To date, the 84,000 undergraduate students at University of Maryland University College (UMUC) have saved an estimated 10 million dollars (Schaffhauser, 2016). At Northern Virginia Community College (the largest college in the VCCS) student enrollment in OER courses has steadily increased since 2013, and students have saved an estimated two million dollars (Blicher & Grewe, 2016).

Northern Virginia Community College (NOVA) is in what is considered an affluent region. There is a large military and political presence, which is logical given its location outside of Washington, DC, and, there is also a large international community.

People from all over the world flock to the area, looking for opportunity. In some ways, the area is considered a “little Silicon Valley” and attracts business and people from the technology sector. In fact, Cyber Security is one of the fastest growing and largest programs at NOVA. The cost of living in the area is very high.

Nonetheless, the extent to which students at NOVA suffer from basic needs insecurity seems to be somewhat extensive. Recent research conducted by the Office of Institutional Research (OIR) at NOVA also bears this out. Their research was conducted to increase enrollment and presented to the President and his cabinet on January 16, 2018. The research revealed that interspersed among the region’s affluent communities, 15 “islands of disadvantage” exist. These islands are clusters of census tracks where residents face multiple challenges, including poverty, poor education, unaffordable housing, and lack of health insurance. Furthermore, the research indicated that enrollment at NOVA of students from these sectors has decreased steadily from 2012-2016. Finally, the proportion of students receiving Pell Grants has become a widely acknowledged proxy for how many low-income students a college or university is serving, and twenty-five percent of students at NOVA received a Pell Grant during 2015-16. While this percentage is low compared to other community colleges in the Virginia Community College System (VCCS), this still means that 19,000 students at NOVA are Pell Eligible. And of these students, a whopping 73% come from families with an annual income of $30, 000 or less (Administrative, n.d.). Cost and financial stress are overarching themes that could not be overlooked in this study.

OER Use and Teaching

At most colleges, OER adoption is a grassroots movement driven by faculty. In these cases, it is often cost savings to students that is the greatest impetus for faculty adoption of OER. But there are other reasons to adopt OER, including open licensing. Because of open licensing which allows OER to be reused, revised, remixed, and redistributed, some researchers have theorized that faculty and students may use OER differently than they use traditional publisher materials (Wiley, 2009). For example, an open license would allow students to update a history text based on recent events. Faculty, in turn, may participate in new pedagogical practices which allow wider sharing of materials and which allow students to become co-creators of a course. These new pedagogical practices fall within the constructivist and social constructivist traditions, traditions which are still relatively uncommon in higher education. Examples of these kind of approaches include students writing their own test questions, switching roles with the instructor and constructing their own learning.

Under the guidance of the teacher as the architect of the learning experience and subject matter expert, students become active participants in their own learning. Students may create their own websites, contribute to an online textbook, become Wikipedia authors, work to solve problems in the real world. As mentioned earlier, these assignments are “authentic” because they are relevant to students’ lived experiences and because the assignments have meaning outside of themselves. This type of assignment stands in contrast to the disposable assignment, which has meaning usually only within a very limited context, such as within a particular course, with a very limited audience or interaction. One example is the familiar essay assignment, in which a student submits an

essay to the professor on an assigned topic. Often only the professor reads the paper, evaluates it, returns it to the student, and then usually the assignment is thrown away. Despite the arguments and urgings of educational researchers, the more traditional, didactic, teacher-centered approach seems more dominant (Hogan, Carlson, & Kirk, 2015).

Indeed, faculty are using OER in much the same ways they have been using traditional textbooks (Wiley, 2009). A more recent study examined the ways in which OER have been adapted and openly licensed by faculty in higher education (Weller, de los Arcos, Farrow, Pitt, & McAndrew, 2015). Weller et.al. (2015) found there was a high incidence of adaptation reported by educators, (79.8%, n = 674) which may indicate the influence of openness; however, there was a much lower incidence of open licensing (14.8%, n = 845). This means that although faculty are aware of open licensing, they are not really looking towards sharing their newly adapted material through the common open licensing mechanisms such as Creative Commons. Another recent study found that although 70% of faculty surveyed (n=78) reported having used OER in some fashion in their teaching, only 35% reported having adapted OER to suit their specific classroom context and only 28% reported having created OER (Jhangiani, Pitt, Hendricks, Key, & Lalonde, 2016). It can be inferred that OER adoption is not having the impact on faculty usage that advocates of OE and OER were hoping for.

Still, there are some examples of faculty intentionally leveraging the full potential of the open licensing aspects of OER, which is referred to as Open Educational Practices (OEP) and sometimes Open Pedagogy (OP). As Hogan, Carlson, and Kirk (2015) noted, “OEP strive to promote what Bloom calls a radically higher academic level in learners, to

use OER to develop networked learners who can self-organize, co-create, innovate, and peer-validate (p. 1). Some examples of this type of pedagogy include an Instructional Design course at Brigham Young University where students adapted and improved an open textbook on project management; a medical school elective course at the University of California, San Francisco, where doctors-in-training became editors and curators of Wikipedia's medical information pages; and a writing course at the University of San Francisco where students contribute to Wikipedia to polish their writing skills (Bliss, 2016).

OER and Student Learning Outcomes

Several studies have examined the relationship between OER and student learning outcomes. These quantitative studies examined the efficacy of OER and student achievement. These studies attempted to use various metrics to determine level of student success in OER courses. These studies, overall, found that students do as well or better in courses that use OER in place of traditional publisher textbooks and materials.

Lovett, Meyer, and Thille (2008) evaluated the effectiveness of the hybrid Open Learning Initiative (OLI) Statistics course developed at Carnegie Mellon University (CMU) in what they called an "Accelerated Learning" study in the spring of 2007. The study employed a quasi-experimental study design in which students were assigned to different groups: those who used OLI-Statistics to supplement classroom instruction or those who received the traditional classroom instruction by itself. Twenty-two students were randomly selected to use the OLI-Statistics course in hybrid mode, while 42 students were assigned to the control group. The control group received traditional classroom instruction. Participants for both groups were selected from a pool of

volunteers. The learning outcomes measured by the in-class exams scores of the OLI-Statistics group were compared with those of the instructor-led groups. Findings revealed that the OLI group completed the course in about half the time of the control group and achieved similar learning outcomes.

Hilton III and Laman (2012) investigated the efficacy of online open textbooks in improving students' academic performance at Houston Community College (HCC). The pilot study assessed the academic performance of students who used the traditional texts in the spring 2011 semester and those who used open textbooks during the fall 2011 semester. Grade point average, withdrawal rate, and departmental examination scores constituted the performance measures. Findings revealed that students who used the free online textbook had better overall outcomes than students who used the traditional textbooks. The study, however, could not establish a causal relationship.

Feldstein et al. (2012) also examined the impact of the adoption of the open textbooks on access and learning outcomes of students in the Virginia State University School of Business in a pilot study. All the participating students took courses that used Flat World Knowledge (FWK) open online textbooks between the Fall 2010 and Spring 2011. Students were also provided access to an array of supplementary online resources. Grades in the courses were used as measures of the students' learning outcomes. The researchers compared the grades of students in core courses using the FWK open text and materials to students enrolled in the same core courses that used traditional texts. The results revealed that there was a significant ($p<0.01$) difference in the students' performance in courses taught with the open online textbooks, having controlled for students' previous academic performance. However, this study has the important caveat

that the courses were not identical and the difference in courses could have dwarfed any impact of open textbooks.

Pawlyshyn, Braddlee, Casper and Miller (2013) provided a case study on Mercy College's participation in a national project called The Project Kaleidoscope Open Course Initiative or KOCI. As part of this project, Mercy College collaborated with seven different post-secondary institutions to develop learning modules implementing OER. These modules were designed to address low student success rates in a Critical Inquiry freshman seminar course and College Mathematics. The rationale for the participation in the project was to improve student retention and learning. The project also provided a collaborative authorship model that other institutions implementing OER could emulate, improve, and customize. Students enrolled in the KOCI courses averaged 5.73 (out of 8) on post-score assessments compared to an average score of 4.99 for students who were enrolled in the non-KOCI version of the Critical Inquiry course. The math pass rate also increased from 48% to 69% between the Spring 2011 semester and Fall 2012 semester as a result of the implementation of My Open Math Lab. One of the key takeaways of this study was that "creative use of OER offers tangible benefits in student success and retention, resulting in measurable performance increases" (par. 1).

Adding to the growing body of quantitative research on OER efficacy, Hilton III, Gaudet, Clark, Robinson, and Wiley (2013) examined the implications of the adoption of OER in a Math Department of the Scottsdale Community College (SCC) in Arizona. The large sample size included 2,043 students. Specifically, the study examined the cost benefits of OER and the impact on the students' retention as well as the perception of the students and faculty about the quality of the OER. The study was conducted in Fall 2012.

The metrics used in measuring the students' learning outcomes included the withdrawal rate and C grade score or better reported by the college. Findings revealed that use of the open textbooks resulted in a significant cost saving; however, there was no significant change in the withdrawal rate and the students' retention level attributable to the use of the open textbooks.

Bowen, Chingos, Lack, and Nygren (2014) examined the learning outcomes of a hybrid machine-guided online interactive learning termed 'Interactive Learning Online' (ILO). The study employed a randomized trial study design with two independent groups of public university students in six campuses in the United States. In essence, this study was a replication and extension of the Lovett et al. (2008) study. The first group was assigned to the traditional manual face-to-face teaching and learning while the other group received machine-guided instruction online. The researchers analyzed the learning outcomes of the two groups in the Carnegie Mellon University-developed Statistics course. The course included textual instructions and explanation, practice problems and worked examples. They measured the groups' learning outcomes on a standardized statistical literacy metric, including pass rates and final exam scores. Findings revealed similar learning outcomes from the two groups. A speculative cost simulation analysis conducted by the authors, however, revealed significant cost savings with the hybrid machine-guided instruction learning model.

Robinson, Fischer, Wiley, and Hilton III (2014) used a quantitative quasi-experimental design to determine whether the choice of open textbooks had a significant impact on student science learning in public high school. After controlling for teacher efficacy and student characteristics, the researchers found that the use of OER did have a

statistically significant effect on student learning in chemistry but not in biology or earth systems as demonstrated by student scores on end-of-year state standardized test scores. This study demonstrated that the adoption of OER can both dramatically reduce cost for students while at the same time improve student learning or, at the minimum, not negatively impact student learning. This study took place in a secondary setting, differentiating it from other studies reviewed here. Even so, the study does provide a framework for further efficacy studies, whether in secondary or post-secondary school settings.

Robinson (2015) examined OER adoption as a correlate of post-secondary school students' academic success. Using an ex-post facto quasi-experimental research design, the study analyzed the academic performance of students using the open textbooks and those that were using the hardcopy traditional textbooks in seven Project Kaleidoscope post-secondary educational institutions. Having controlled for selection bias using propensity score matching (PSM), multiple regression and logistic regression models were used to analyze the effect of the OER on the students' academic performance. The findings showed that students using the traditional textbooks performed relatively better than those using the open textbooks in business and psychology courses. In addition, students in this study who used open textbooks enrolled in more credits than students who used textbooks.

Fischer, Hilton III, Robinson and Wiley (2015) analyzed the second year of OER adoption in the same schools as did Robinson (2015). They sought to know whether the adoption of no-cost digital textbooks had an impact on post-secondary students' learning outcomes. The study examined course completion, class achievement, and intensity of

enrollment during and after semesters in which students used OER and compared these to the same outcomes for students enrolled in the same courses that did not use OER. The sample was large, including 16, 727 students, 4909 who were in the treatment group and 11,818 who were in the control group enrolled in 15 different undergraduate classes across 10 different institutions spread out across the United States. The size of this study makes the results more generalizable to a larger population than any other study of its kind conducted to date. There were statistically significant differences in enrollment intensity between students enrolled in courses which used OER and those that did not, with students who used OER taking more credits than their counterparts. There were also moderate differences in completion rates and final grades between the two groups, with those in OER courses performing as well as or better than their counterparts in courses where faculty used commercial textbooks.

Allen, Guzman-Alvarez, Molinaro, and Larsen (2015) assessed the impact and efficacy of the open-access ChemWiki Textbook in a general chemistry class at the University of California in a pilot study during the 2014 Spring semester. The ChemWiki Textbook Project was planned to promote the use of open online textbooks as an alternative to the traditional hardcopy textbooks. The study employed an experimental design with an experimental group using the ChemWiki Textbook in one chemistry class and a control group using a traditional chemistry text in the other chemistry class. The researchers analyzed the performance of the two groups, controlling for possible instructor bias by using the same set of instructors to teach both classes. The researchers examined grades obtained during in-class assessments, pre/post exam scores, and student attitude and self-reported study habits as measures of the students' learning outcomes.

Although there was a difference in the students' attitudes and beliefs between the two groups, the difference was not statistically significant. Likewise, no significant difference was found in students' learning outcomes or study habits between the two groups.

The efficacy studies performed to date indicate that students who use OER do about as well or better as students who enroll in courses that use traditional publisher materials. However, there are still limitations with the work that has been done to date. A particular weakness of more than half of the OER efficacy studies is that they make no effort to control for differences in student characteristics or success metrics.

Another notable gap is the lack of qualitative research around the topic of the efficacy of OER as it relates to student learning. Several studies used survey data to report on student and faculty perception of OER, (Petrides et al., 2011; Jhangiani, Pitt, Hendricks, Key, & Lalonde, 2016; Illowsky, Hilton III, Whiting, & Ackerman, 2016). These studies reflected that students seek out OER and find OER of value. However, there are no qualitative studies that attempt to explore more deeply through focus group data the student learning experience in courses which utilize OER. To date, there are no studies that have examined the ways in which OER use may impact student learning processes and approaches to deep learning from the student perspective.

Cognitively Responsive Perspective on Student Success

With developments in the study of human cognition and the advent of the new science of learning (Doyle & Zakrajsek, 2018), a cognitively responsive perspective of learning has emerged and with it a way to examine student success differently from the more traditional policy-driven, institutional view. The institutional definition of student success tends to focus on student success in the aggregate, using students' self-reports of

their engagement in learning and other metrics like course completion and withdrawal rates, test scores, and grades (Neumann & Campbell, 2016). The OER efficacy studies to date, it can be argued, then take an institutional view of student learning and success.

The cognitively responsive view tends to look at individual student learning processes as measures of success (Neumann & Campbell, 2016). A qualitative study which seeks to describe the individual student experience of using OER and the impact this use has on deep approaches to learning will supplement the existing quantitative research which looks at aggregate student data to measure success. Metrics such as grade in course, time to completion, and standardized exam scores tell only part of the story. Qualitative data will fill a gap in the research and provide a cognitively responsive view of student success from which further research can be conducted.

Chapter Summary

Chapter II examined the relevant literature around OER and cost, OER use and teaching and learning, and OER efficacy in terms of student learning outcomes. Chapter II also provided a cognitively responsive framework for examining student learning processes and student approaches to deep learning.

Chapter III presents the methodology used to conduct the study including the research design, participant selection and sampling strategy, and data collection and analysis.

CHAPTER III

METHODOLOGY

Overview

The purpose of this study was to describe the experiences of students in community college courses which use OER and to investigate the ways in which the use of OER fosters approaches to deep learning in these same students. The researcher collected data by talking to students enrolled in at least one OER course during the Spring 2018 semester at Northern Virginia Community College (NOVA). NOVA is a large, multi-campus urban community college located near Washington, DC, with a total enrollment hovering around 75,000 students. Using focus groups to collect data, the researcher spoke to 93 students about their OER use and learning. The qualitative research presented here is intended to enhance and support quantitative research around OER use and encourage more qualitative research around OER efficacy and student learning from the students' perspective.

Research Design

This study employed qualitative research methods by collecting data from focus groups composed of students enrolled in at least one OER course at Northern Virginia Community College (NOVA) during the Spring 2018 semester. The focus group method was selected because, as Creswell (2013) stated, its purpose is to "…discuss a particular topic of interest among a gathering of individuals who are homogeneous in some manner" (p. 252). In this study, community college students were able to discuss with detail their common experience of using OER to facilitate learning in a community college course.

Focus groups had several advantages for this study including direct contact between participants and researchers, the ability to ask follow-up questions, and the more socially-oriented and relaxed nature of the group (Creswell, 2015). Because the format is socially oriented and tends to create a more relaxed atmosphere, focus groups were an appropriate choice for talking with community college students. These students are accustomed to sitting in community college classrooms where faculty have created safe learning environments for them; students are accustomed to discussing topics of interest and sharing their individual experiences related to their learning.

Focus groups may also facilitate self-exploration regarding the impact of the phenomenon under investigation. This was observed during the focus group discussions. Students thoughtfully answered questions about OER use and laid out their learning processes in detail, obviously feeding off each other's responses. As a result, students in some cases realized they knew more about OER than they had previously thought. In practical terms, then, the focus group format also allowed for greater (deeper) data collection in less time (Hays & Singh, 2012, p.253).

Focus Group Participants and Sampling Strategy

Criterion sampling was used to recruit student participants from Northern Virginia Community College (NOVA), a large, multi-campus urban community college located near Washington, DC. Total enrollment hovers around 75,000 students. Of those students, 49% are male and 51% are female. Forty-three percent of the student population is under the age of 21 while nearly 30% is between the ages of 22 and 29. The population is diverse. Although approximately 50% of the student population is white, 16.4% are Black, 17.1% are Asian and 14.7% are Hispanic ("At a glance," n.d.). As noted in

Barbour (2013), the purpose of qualitative sampling is to reflect the diversity within the group or population under study rather than aspiring to recruit a representative sample (p. 60). The participants in this study did not represent a random sampling since a series of similar conditions brought students to the OER courses; nonetheless, the demographic composition of the focus groups seemed to fulfill the aspiration of reflecting diversity within the population under study, in this case, community college students taking at least one OER course.

To gain access to students currently enrolled in Spring 2018 OER courses for the focus groups, top OER faculty at NOVA were nominated to participate in the study. These faculty would provide the researcher access to students in their face-to-face OER classes during class time to hold focus groups. These faculty members had been identified as OER leaders at NOVA through their early adoption and creation of OER, their participation in systemwide and statewide initiatives, and their excellent teaching reputations.

The NOVA OER director nominated these faculty to participate in the study by sending them a nomination letter via NOVA email at the end of the fall semester, inviting them to participate in a research project the following Spring 2018 semester. This strategy was designed to both provide incentive for faculty participation and to garner support from the institution by following formal avenues of protocol (see APPENDIX A for a copy of the nomination letter).

Five faculty members agreed to allow the researcher access to their students for the last 20 minutes of a scheduled class meeting time to hold the focus groups. Each participating faculty member acted as a research assistant and liaison between the

researcher and the students. Three of the participating faculty members were teaching English at the Loudoun Campus of NOVA. The final faculty member was a math instructor from the Annandale Campus. Participating faculty informed their students about the study and explained what it was about. They provided the students a copy of the questions that the researcher planned to ask, and they also provided students a copy of the Informed Consent Form (see APPENDIX B for the focus group discussion protocol and APPENDIX C for a copy of the Informed Consent Form). This strategy was intended to prepare students before the focus group meeting time so that most of the reserved focus group meeting time could be used for discussion

One other faculty member who originally agreed to participate, pulled out of the study at the first week of data collection. He was from the Manassas Campus of NOVA. With the help of the student activities coordinator at the Manassas campus, the researcher tried to solicit student participation in focus groups through electronic signage and email blast to make up for the cancelled sessions. This was not ideal as it did not give adequate time for promoting the focus groups, nor was there much incentive for students to participate. These impromptu, last-minute focus group sessions were not well-attended. Only one student participated in one of the sessions.

Worthy of note is the reason the instructor pulled his students from the study. The instructor, in preparing his students for the focus groups, did what he called some "pre-surveying" of his students to gauge what they knew about OER. According to the instructor, his students "did not feel they have had a chance to experience use of the OER enough to warrant discussion." This seems important to note because two other participating faculty members had the same concern before the focus groups were held.

One of them was Patty who taught both the English Fundamentals course and the Honors English course. She is a seasoned professor who stays current in her field and who is an obvious student advocate. She felt her English Fundamentals students would have nothing to add to the conversation, given their limited experiences with OER. This turned out to be false.

The final unexpected development in setting up the student focus groups concerns a math faculty member participating in the study, Linda. Linda did not realize that the researcher wanted to talk to students in face-to-face classroom settings. Linda volunteered to participate even though she was teaching all her OER math classes online. The researcher scheduled a few online focus group sessions to accommodate Linda's math students.

Using email and announcements in her online math courses, Linda invited all her Math for Liberal Arts I and II students to attend one of four sessions that had been scheduled at various times throughout the week. This session schedule was intended to accommodate as many students as possible. Linda also offered her students extra credit to motivate them to participate. Other participating English faculty members from Loudoun were also teaching online courses. They also posted announcements in their online courses about the scheduled online sessions. Patty offered students extra credit to participate. Even though Linda and Patty offered students extra credit to participate, attendance was sparse in the online sessions, with only six students total participating in all the online sessions offered.

Although the number of students participating online was low, it was important to give online students a voice in this study for a couple of reasons. First, OER are often

digital. In fact, although the William and Flora Hewlett Foundation definition is the most widely quoted one, there are other definitions of OER. One of those definitions comes from the Organisation for Economic Co-operation and Development (OECD) and seems to include the criteria of digital more forcefully than some other definitions. According to researchers for the Center for Educational Research and Innovation (CERI), the research around open is so new that only now are the major tenets of OER being hashed out on a conceptual level by researchers and practitioners in colleges and universities around the world. The report "Giving Knowledge for Free" traces the development of the concept of open, the definition of OER, and notes some of the areas of tension among scholars (2007). Whether OER must be digital or not is one of those areas. In fact, it is the digital nature of OER that sometimes conflates students' comments about OER. During the focus group discussions, the researcher had to bring the discussion back around to OER, specifically, and away from the more general benefits of digital access. Given the strong intersection of OER and digital, hearing from students taking courses in fully digital formats was important.

The other reason it made sense to add online meeting sessions for the online students is because the fully OER degree programs that NOVA developed in 2013 and 2014 were composed solely of online courses. It seems only logical, then, to give the online OER students a voice in this study. However, it is to be noted that at NOVA very few if any of the online courses require synchronous class meetings. So, to assume a web-conferencing opportunity with online students would provide a similarly comfortable setting as the face-to-face class meetings would be erroneous, since many students do not have experience attending synchronous class meetings using web

conferencing software. Nonetheless, these small groups of students seemed open and willing to share their stories. Also, although only a small portion of the overall sample, the online students who participated virtually through web conferencing software made valuable contributions to the study with their insights and stories.

The researcher held 11 focus groups overall, then. Eight of them were held face-to-face in physical classrooms on the Loudoun Campus of NOVA and in a student meeting space at the Manassas Campus. The remaining three sessions were held online Table 3.1 includes the meeting schedules, provides course titles, and indicates number of participants in each session.

Table 3.1: Schedule of Focus Group Meetings

Course	Mtg. Location	Date of Focus Group	#Participants
ENG 111: College Composition I	Loudoun	Monday, February 5, 2018	10
ENG 112: College Composition II	Loudoun	Tuesday, February 9, 2018	9
ENF 2: Preparing for College English 2 (Developmental)	Loudoun	Wednesday, February 14, 2017	5
ENG 255: Major Writers World Literature (Honors)	Loudoun	Thursday, February 15, 2018	11
MTH 151: Math for the Liberal Arts II	online	Wednesday, February 7, 2018 (7 pm)	1
MTH 151: Math for the Liberal Arts II	online	Thursday, February 8, 2018 (9 am)	2
MTH 151: Math for the Liberal Arts II	online	Thursday February 8, 2018 (noon)	3
MTH 151: Math for the Liberal Arts II	online	Sunday February 18, 2018 (7 pm)	0
ENG 112: College Composition II	Loudoun	Wednesday, Feb. 7, 2018	14
ENG 250: Children's Literature	Loudoun	Tuesday, February 14, 2018	16

ENG 111: College Composition I	Loudoun	Tuesday, February 14, 2018	21
Impromptu Focus Group Meeting	Manassas	Monday, February 12, 2018 (6 pm)	1
Impromptu Focus Group Meeting	Manassas	Thursday, February 15, 2018 (11 am)	0

Description of Participants

The participants in this study were students who attended Northern Virginia Community College (NOVA) during the Spring 2018 semester. Students were selected for participation in the study based on their enrollment in at least one OER course being taught by OER lead faculty at NOVA during the Spring 2018 semester.

Of the 93 participants in this study, 86 were students enrolled in one of several English courses held on the Loudoun Campus of NOVA. These courses represent a wide range of student entry skill level and curricular advancement. For example, the researcher spoke with one group of English Fundamentals students. This course is a remedial or developmental course that students are required to take and pay for which does not count towards graduation. The hope is that students will improve their fundamental English grammar and composition skills so that they will be successful in college-level classes. The researcher also spoke with students at the other end of the spectrum who were near the end of their time at NOVA and about to graduate or transfer to a four-year university. Some of these were enrolled in an Honors English class studying world authors, while the other group was studying children's literature.

The researcher spoke to students enrolled in Parts I and II of College Composition courses. Some of these students appeared to fit the traditional profile of such a student --

in their first or second semester of college, between the ages of 18-22 -- but there were others who did not fit that profile. Some were international students who had come to the United States in hopes of a quality education, like Greta, who came from Lithuania. Some international students were successful professionals in their home countries, such as Luciana, who was an elementary teacher in her home country of Colombia. She came to this country because her husband is in the U.S. military. Now she is acting as a nanny while she goes back to school to get credentialed with an associate degree in early childhood education. Some are older parents with grown children, like Rosalyn, a student in the remedial English course. As she put it, "I was a mother and I have a full-time job. So everybody's pretty much, one, graduated college and, two, in college. So it was my time to come back to get an education." Although Rosalyn's exact age is uncertain, it can be inferred that she does not fit the traditional profile. An educated guess would put her in her forties since she stated that she had been out of school for 26 years. Others are young parents who are hoping for a better life for themselves and their families via a college degree.

There were also students who self-identified as first-generation college students. These students saw their performance in college as paving the way for younger family members. One student in English 112 described her family and how she wants to provide a good example to her younger siblings.

> Yeah. I just had two baby sisters born last year somehow, I don't know. But however that happened, I have to be there for them to look up to me. I have a 17-year-old sister; she's also like right behind me. Like a lot of her friends that are in college, they kind of slack off a lot and party, but she sees like how I'm always,

> literally always, studying or working or doing something. So, she like looks up to me already and she wants to do the same.

These students' stories in the face-to-face focus groups were widely varied and diverse and reflected well the wide-range of student experience often encountered in American community colleges.

Finally, six other students participated in this study through one of four online sessions offered, having been informed about the sessions by their online math or English instructor. There was one male participant from the Manassas campus, Brandon, who was not enrolled in any of the participating instructor's courses. He was the lone student who responded to the email message blast sent out to all Manassas students the first week of the study inviting them to participate.

Of the 93 students who participated in this study, 48 were female and 45 were male. Thirty-four students identified themselves as first or second semester students. Five students mentioned their roles as parents. Some students volunteered that they were born or had lived in another country. There were students who self-identified as East African, Ghanaian, Lithuanian, Columbian, Egyptian and Spanish. Over half of one English 111 course was composed of dually enrolled students. (These students, still enrolled in high school, also take college-level courses at the same time, earning both high school and college credit for the coursework.)

It is also important to note, that while Brandon and six online students make up only a small proportion of the total number of participants in the study, these students' stories, insights, and perceptions around OER and their own learning as community

college students make valuable contributions to the overall voice of community college students represented in this study.

Focus Group Site Selection

The researcher chose the Loudoun and Manassas campuses of Northern Virginia Community College (NOVA) to conduct the focus groups. It was at these two campuses where participating OER faculty hold their face-to-face meetings with their OER classes. The researcher used classroom space and a portion of class time to hold the focus groups. Given the difficulty of maneuvering heavy traffic in the area and some students' challenges in getting to campus, using the home campus classroom meeting site and meeting time for the student focus groups was most convenient for students and accounts for the robust participation. Besides the convenience of using classroom sites and meeting times for the focus groups, it also provided the students a familiar environment in which to talk about their use of OER and approaches to learning. It was obvious from classroom visits that these comfortable learning environments had already been set up by faculty members in their classrooms during the first few weeks of the semester. This both expedited the process and facilitated rich discussions in the focus groups.

Research Questions

This study addressed the following questions:

1. How do students enrolled in OER courses describe their *use* of OER materials?
2. How do students' descriptions of their ***use*** of OER materials reflect deep approaches to learning?

Focus Group Protocol

The researcher developed the focus group protocol using the sub-categories of deep learning approaches developed in part by Entwistle, McCune, and Tait (2013). These approaches include seeking meaning, relating ideas, use of evidence, and interest in ideas. These approaches can be viewed in contrast to surface learning approaches which include a lack of purpose, unrelated memorizing, syllabus boundness (do not seek out ideas or activities not written in the syllabus), and fear of failure.

In addition to deep learning approaches, the researcher used a cognitively responsive lens for interpreting learning processes related to deep approaches to learning. According to Neumann and Campbell (2016), learning theory which draws on research in human cognition and the learning sciences is termed cognitively responsive. The cognitively responsive perspective considers four factors when examining the teaching-learning process: the learner, the instructor, the content, and the contexts in which learning happens. While the cognitively responsive view holds that all four of these factors should be examined simultaneously to understand learning, this study focused on the learner, the content (OER), and the contexts in which learning happened for these students while using OER.

Finally, the researcher also used an interview bank created and openly licensed by the OER Research Hub to develop focus group questions (Farrow, Perryman, de los Arcos, Weller, M., and Pitt, R, 2016; see APPENDIX B for the focus group protocol).

Informed Consent and Right to Privacy

The researcher provided participating faculty members with an electronic a copy of a straightforward, jargon-free Informed Consent Form (ICF) and asked faculty

members to share with their students prior to the scheduled focus groups. Providing the IFC ahead of the focus group discussions gave participants a chance to review the form before the scheduled time of the focus group discussion. Indeed, many students had their IFC with them at the beginning of the focus group. Those who did not were provided a copy. The researcher reviewed the IFC with participants. Participants were encouraged to ask questions to be sure they understood their right to privacy. Participants were assured that their privacy and confidentiality would be rigorously protected with electronic files being password protected and hard copy files being kept under lock and key. Furthermore, the researcher assured the participants that their participation was voluntary and that they could opt out at any time for any reason without fear of penalty (see APPENDIX C for a copy of the Informed Consent Form).

Measures to Ensure Participant Confidentiality and Safety

Students were informed that the study is voluntary. At any time during the various stages of the research, participants were told they may decide to leave. It was made clear that any participant deciding to opt out or withdraw from the study would not be penalized in any way, especially in terms of their grade or standing in the class. As a matter of fact, the researcher made this point so clearly in one group, that over half the class left! Most students were happy to participate and seemed to enjoy talking about their learning processes, OER use, and personal academic journeys.

Hard copy data collected from the study has been stored in a locked file cabinet for which the researcher has the only key. Electronic data has been stored on a password protected computer in a password protected file.

Data Collection and Analysis

Data collection. Different instructors had different expectations for the researcher visit to their classrooms for the focus groups. The researcher was invited to come to the classroom door at the designated time in five of the eight face-to-face sessions. In two of the face-to-face sessions, the instructor invited the researcher to come to the class for the entire class period. This made for a smooth transition into the focus group discussion and presented an unexpected opportunity to observe students interacting with the instructor and content in an OER course before the focus group discussion. One focus group meeting was held in a student meeting space and only one student attended the session. The researcher, along with an assistant, went through the same questions with the lone student participant and coded his answers along with the other focus group discussions. Finally, the researcher held three online focus group discussions using the web conferencing tool within the college's learning management system (LMS).

At the beginning of each session, the researcher reviewed the Informed Consent Form (IFC) and made sure all in attendance understood their rights to privacy. The researcher witnessed the signing of the forms and her research assistant collected the forms. In the online sessions, students had been forwarded the IFC ahead of time via an email from the participating faculty member. Students read, reviewed, and signed the IFC and emailed it to the researcher ahead of the scheduled focus group meeting time.

After IFC were reviewed and signed in the face-to-face classes, the researcher asked her assistant to start the audio recorder. The researcher used a reliable, mid-range, hand-held recorder to record the sessions. At the same time, the researcher also turned on her cell phone voice recorder to be used as a backup. In the online sessions, after the

researcher reviewed the IFC, she began using the recording tool in Blackboard Collaborate Ultra to record the sessions. At the beginning of each recorded portion of the session, the researcher began by introducing herself (and her research assistant in the face-to-face classes) and describing again the purpose of the study. Because the focus group discussions were being recorded, there was no need for the researcher to take notes during the discussions. The researcher could be fully engaged with the students during the discussions.

The researcher began each discussion by telling the participants about her history as a community college educator. She communicated her love and interest in community college students and asked them to introduce themselves and to tell a bit about why they were there, what their program of study is, what their educational goals are. These introductory stories yielded surprisingly rich information that served to provide some demographic information that was not otherwise available given NOVA's tight protections on student privacy and security which prevented the researcher from having access to demographic student information on the SIS.

Using a pre-discussion questionnaire was considered as a method to gather demographic information but was rejected. First, because instructors gave up valuable class time for the focus groups, the time for discussion was very short, usually 20-25 minutes. The researcher did not want to use valuable discussion time having students fill in questionnaires. Also, the researcher was worried that having students fill in a form to begin the session would set the wrong tone. As it turns out, asking students to talk a little about themselves to begin the discussion set the right tone. Students opened up and volunteered much personal information that had not been requested.

After each session, the researcher participated in peer debriefing with her research assistant. This was a valuable exercise because the research assistant, being an outside to higher education and the research topic, provided an important outsider's perspective. The researcher also did reflexive journaling immediately after each peer-debriefing session.

The researcher worked with an academic transcriptionist to transcribe the recordings. The recordings were submitted as they were completed. The transcriptionist submitted draft transcriptions to the researcher about three weeks after the focus groups had concluded. The researcher reviewed each transcription listening to each recording again and checking the written transcriptions against the audio recordings. She found several significant errors and corrected those and filled in some inaudible sections.

Once she had read through, corrected, and re-read the transcripts as well as listened to each of the sessions again, the researcher began the formal process of analysis.

Analytic strategy. The researcher adopted a variation of Lichtman's (2012) process for analyzing the data, using the three C's: coding, categorizing and concepts. Using deductive analysis, the researcher used codes developed from deep learning approaches and elements of the COUP framework. For example, participants were asked to describe the process of studying (deep or surface approach to learning) and explain the ways in which the *use* of OER (part of the COUP framework) impacts their process of studying. In analyzing student responses, the researcher looked for patterns that indicated students were syllabus bound or using unrelated memorizing and thus employing surface approaches to learning. At the same time, the researcher looked for patterns that indicated students were relating ideas to their own lives or trying to build on previous knowledge

and thus using deep approaches to learning. Inferences were drawn about the learning process in which students were engaged. For example, if students described their studying as relating ideas, the researcher inferred that students were using prior knowledge to help them grasp the new concept being learned. Based on students' descriptions of how they actually used OER in the course to learn, themes emerged related to students' deep approaches to learning.

Besides deductive analysis, the researcher used inductive analysis, looking for other patterns of response outside the expected. Several interesting ideas emerged that merit further research and which may impact teaching practice. "CHAPTER IV: FINDINGS" discusses new ideas that emerged during the study based on inductive analysis.

Trustworthiness

To create a more detailed, rich, and comprehensive picture of students' deep learning in OER courses, the researcher used thick description to detail research results. This method provided credibility, transferability, confirmability, authenticity, coherence, and substantive validation of research results (Hays & Singh, 2012). In addition, thick description provided context, intention, meaning, synthesis, interpretation, and development of the phenomenon being studied (Hays & Singh, 2012).

The researcher also practiced memoing to stay organized and to analyze and describe the findings as they developed. The iterative process of memoing allowed the researcher to keep detailed notes that defined concepts, made connections between concepts as they emerged, and in general, reflected on the data. Such detailed note-taking

adds to the credibility of the study. Also, the researcher practiced reflexive journaling to address researcher bias and document thought processes during the research process.

Finally, the researcher kept an audit trail including focus group transcripts, audio recordings of the focus group discussions, codebook, memos, and the reflexive journal. Such a trail provided "physical evidence of systematic data collection and analysis procedures" (Hays & Singh, 2012, p. 214). While not guaranteeing trustworthiness, these forms do provide additional evidence and paint a more vivid picture.

There was another aspect of the study which may have had an unintended consequence on participant response. In each of the eight face-to-face focus group sessions, the instructor for the course remained in the room. This may also have had an unintended impact on participant response. Knowing that they were enrolled in an OER course designed by the instructor who was in the room certainly may have led to more positive responses from participants regarding student OER use.

Nonetheless, to conduct the study and ensure that students participating in the study had at least some OER experience, the choice was made to talk with students enrolled in an OER course. Talking with students during the last 20 minutes of an OER course was the best way to ensure robust participation. The instructors served as research assistants in one capacity as they informed students about the study ahead of time and facilitated the review and signing of the Informed Consent Form (IFC). They were also integral to the study as it was only through their participation that the researcher was able to gain access to participants at all. It made logical sense, then, for instructors to remain in the room. It was less disruptive to the environment and put the students at ease.

Nonetheless, instructor presence may have also had an impact on the tone and content of student response.

Researcher bias. Because the researcher serves as an instrument through which data is reported, it is important for the researcher to understand her role and how her biases may impact the results of the study. The researcher is a progressive community college educator who is part of the Open Movement in education. She is aware of her beliefs that OER make learning more accessible and affordable for community college students.

As a former community college English professor, the researcher revealed her enthusiasm for community college students in her introductory remarks to participants. While this may have served to put students at ease, it may have also had an unintended impact on their responses and what information they decided to share or not share about their use of OER and their approaches to learning. They may have associated the researcher's positive attitude about community college students and learning with OER.

To check these biases, the researcher bracketed her assumptions while memoing, provided thick description, used multiple data sources, conducted peer debriefing with a research assistant after each focus group session, and had experts in her field of inquiry review the findings and provide feedback. These are techniques that can be used to address subjectivity and researcher bias in qualitative research (Hays & Singh, 2012, p. 146).

Furthermore, the focus group protocol contained questions about how students use OER and how they approach different learning situations when they are using OER. The questions did not ask students whether they liked OER or even how they perceived

OER. Research around perceptions examines how students and faculty think about and feel toward OER as well as how other stakeholders such as parents of policy makers view them ("The COUP Framework," n.d.). That was not the purpose of this study, nor did any of the questions seek to discover student perception of OER. Nonetheless, it can be acknowledged that the researcher's enthusiasm for her research topic could have had an impact on how participants answered the questions about use and described their learning approaches while using OER. However, the researcher did work throughout the research process to reduce confirmation bias by employing the techniques discussed above such as bracketing assumptions, peer debriefing, and memoing.

Chapter Summary

Chapter III provided the methodology driving the study. This study used qualitative research methods to conduct 11 focus groups. A semi-structured focus group discussion protocol was designed using OER Research Hub questions. The questions were open-ended and designed to solicit detailed student responses. The participants of this study were students who were currently enrolled in at least one OER course at Northern Virginia Community College. The researcher used deductive and inductive techniques to analyze and interpret the results. Chapter IV will provide a detailed overview of the major findings.

CHAPTER IV

FINDINGS

Overview

The purpose of this study was to describe OER use among community college students and to investigate the ways in which OER use fosters deep approaches to learning in these same students by answering the following research questions:

- How do community college students enrolled in OER courses describe their use of OER materials?
- How do community college students' descriptions of their *use* of OER materials reflect deep approaches to learning?

OER use. Conversations with students revealed the ways in which students use OER outside of class to teach themselves and personalize their own learning. Students seek out OER to accommodate learning difficulties, remediate weak skills areas, seek out varied points of view, and gain new knowledge on topics of interest. Students often do this on their own, outside of class requirements and often as a result of thoughtful self-analysis. Students know how they best learn, and they seek out OER that appeal to their unique learning preferences, interests, and needs.

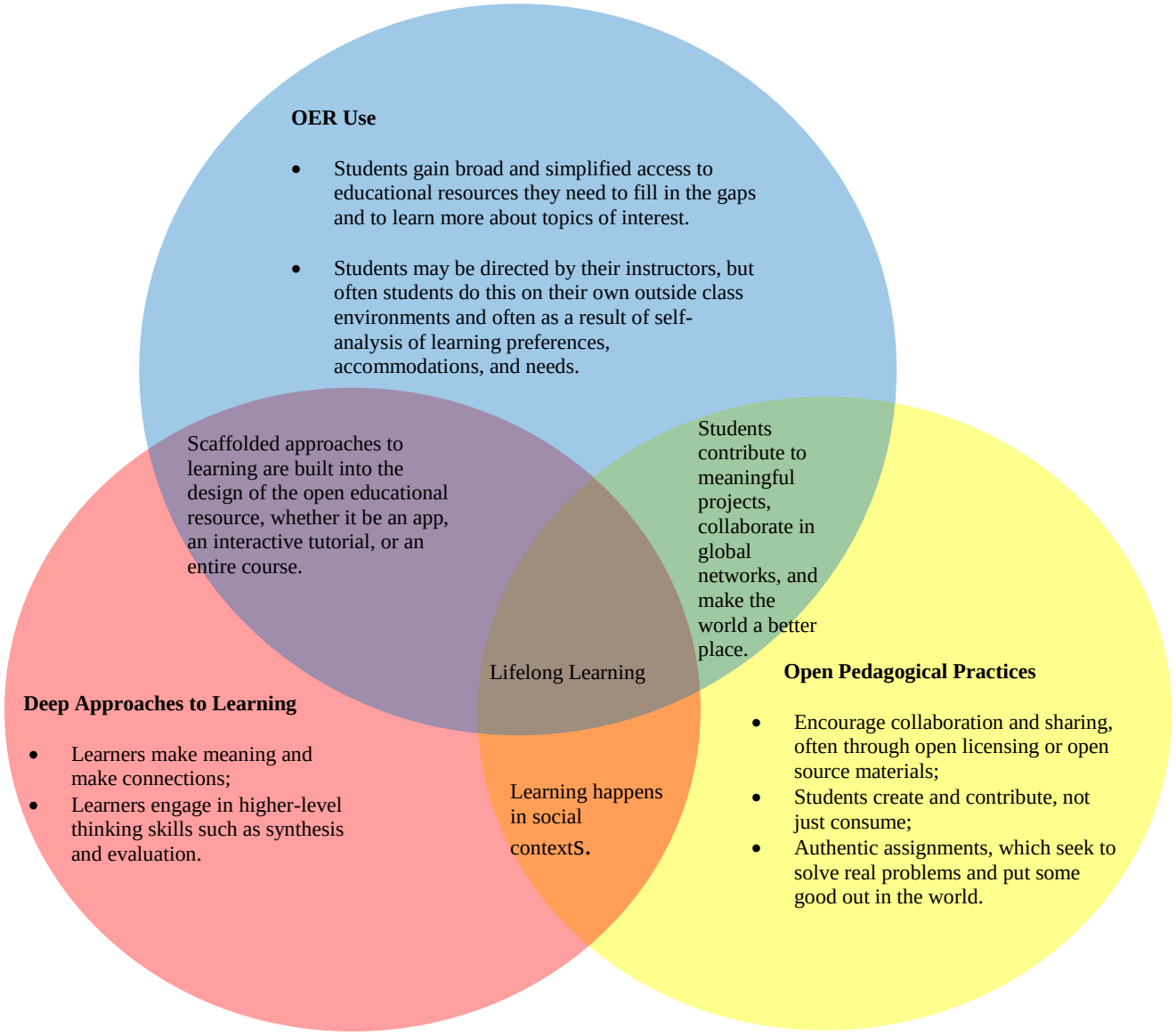
OER use and deep approaches to learning. OER are often designed with learners in mind, employing techniques such as scaffolding and chunking which facilitate deep learning. OER are interactive, multi-modal, and adaptive; such aspects appeal to students because they can be fun, they provide a personalized approach, they provide immediate reinforcement and feedback, and they allow students to work at their own pace. Finally, OER are often sequenced in a way that is logical. Students in this study were aware of the

logic of such designs, another aspect of a deep approach to learning. The design of many OER accommodates the development of students' systematic approaches to solving large problems. Students expressed the ways in which these aspects of OER design motivate them to learn, which reinforces deep approaches to learning and helps cultivate a love of learning.

OER use and Open Pedagogical practice. Students who find and use OER to supplement their learning benefit from Open Pedagogy (OP). Open Pedagogy encourages collaboration and sharing, often through open licensing or open source materials. Students employ open pedagogical practices when they go outside of assigned course materials to access open materials to teach themselves. They seek out varied points of view to validate or inform their own points of view on assigned topics. While many students reported not sharing or collaborating as part of their OER use, students did benefit through access made possible through openly licensed and freely shared OER.

At the confluence of student OER use, deep learning, and Open Pedagogy lies the main finding, that OER use can lead to life-long learning. Figure 4.1 encapsulates the major findings of the study and illustrates the ways in which OER use intersects with deep approaches to learning and open pedagogical practices to lead to lifelong learning in students.

Figure 4.1. Conceptual framework of the intersection of student use of OER, student deep approaches to learning, and open pedagogical approaches.



OER Knowledge—What students know about OER

Before OER use could be discussed, OER knowledge had to be explored. What did students already know about OER? Because the researcher was speaking with students who were enrolled in at least one OER course, she assumed that students must

know at least a little about OER. Furthermore, English 112 is the second part of the required College Composition sequence at NOVA. Students typically take these courses their first and second semesters. If students have a good experience in College Composition Part I (English 111), they will often choose the same professor for College Composition Part II (English 112). This was the case in that several of the students in the three sections of English 112 had taken the same professor the previous semester for English 111. English 111 and English 112 were designed in tandem as OER courses; yet, many students did not realize that the English 111 course they had taken the semester before was an OER course. (The English 112 instructor remained in the room during the focus group discussion and confirmed that the English 111 course she taught the same students was indeed an OER course.) Even so, several of the students in the two English 112 OER courses claimed to have never been in an OER course before. One honors student was surprised to discover that he had been in an OER course before: "I'm just realizing now that technically I've taken an OER course without even knowing. Last semester my history course textbook was optional. You didn't have to buy it . . ."

Despite this apparent gap in student knowledge about the formal definition of OER, overall it would seem that students know more than they think they do about OER. They use free and openly licensed learning resources either recommended by the instructor or found on their own. For example, some students said they used, Grammarbytes in the English 111 course because the instructor directed them to do so. Noteworthy, is that students, in some cases, are required to self-identify their grammar skills gaps in order to benefit from the use of Grammarbytes. Sometimes the instructor

does provide guidance, but sometimes not. Such student self-diagnosis is more commonplace than the researcher expected.

Students in this study seemed particularly sophisticated and self-aware. If they had a documented learning disability, they communicated their need for accommodations to their instructors and, in some cases, would supplement the provided accommodations with use of OER outside of class space and time. Some students simply needed to refresh a long dormant skill set or needed to do serious memory work, like in the case of anatomy or foreign language. If students have a need, they can usually find free and openly licensed materials to help them.

For example, many students in this study used Khan Academy. Some were directed by their math teachers in their OER math courses to specific tutorials and activities in Khan Academy. In other instances, though, students reported using Khan Academy as a tool to help them self-diagnose their math skills deficits and then work on those deficits to reach or surpass required benchmark scores on college placement tests. Several students in the study used Khan Academy to self-remediate math skills gaps or to supplement teacher-assigned math learning materials. OER have become such a natural part of students' lives that they are using OER in unique ways to personalize their own learning experiences, whether or not they can define OER when asked to do so.

What students do know about OER is that they provide free entry points into publicly funded, openly-licensed materials, such as NASA PubSpace, a publication repository in which all NASA-funded studies are required to publish their peer reviewed papers and associated data. Students also know that OER are often published in easily digestible digital formats which makes using them at any place or any time possible.

Finally, the low-cost or no-cost aspect of OER provides the greatest access and continues to be the noteworthy characteristic mentioned most often by students. The following short sections highlight these three main ways in which students in this study identified OER as free or low-cost digital learning materials which provide access to valuable information.

OER provide access. One thing students know about OER is that OER provide access. Students defined access in different ways. For example, one student felt very passionately about access to publicly funded research. This was Brandon, the sole Manassas student who responded to the email blast asking for student volunteers to participate in the study. Brandon was so passionate about the importance of access that he volunteered his time at the last minute to come talk about his experiences using OER one evening. He is majoring in physics and planning to transfer to a Bridgewater College for their quantum physics program. He expressed great excitement about NASA PubSpace. He explained how motivating access to this open material is to him: "I have a friend who used to work at NASA; they had this page on their website that I wasn't aware of, where you can actually access research papers and read them for free. Let me tell you, I have devoured that. I spent a solid month reading that [research on the Large Hadron Collider]."

Brandon sees access as a free entry point into material that is of great interest to him. The PubSpace repository made access easy for Brandon. The digital nature of this resource suggests access as well, since so many OER are in digital format and since digital format is often more portable and thus provide more access to students, especially

community college students who often have to get in their studying on the run, between other life activities.

OER are digital. Sometimes students interpreted the digital aspect of OER as the aspect that most provided access, like the student who would rather study for exams using her phone instead of a typical, hardbound textbook because in her words, “it’s an ease of access in comparison to say my accounting course where I have this huge book and I'm not going to have that with me at work, when I have that break or something like that.” Another student in the children’s literature course put it this way, “There are links in the class and we just click it.”

Whether it was the English Fundamentals student who used Khan academy to practice her math skills before taking the placement test or the honors student who used memorize.com to teach herself Korean, OER provide students access to a wide range of digital learning materials that can be digested and interacted with at any time and in any place. This means community college students, with their demanding schedules, can carry their learning materials in digital format with them anywhere. While it is true that sometimes students conflated OER with any digital materials offered in varied formats for various mobile platforms, there is a reason. It is the digital nature that is useful and important to these busy students.

OER save students money. By and far, the most well-known aspect of OER to students and the one they talked about the most was the idea that OER are free or low cost. While frequency counting can be misleading in qualitative research, in this case, it may help illustrate what is most well known and most important to students: OER save students money. Students referenced cost in their description of OER 36 times. Cost was

mentioned in all focus groups. Compare that to the 10 or 11 times students mentioned the access or digital aspect of OER in six of the 11 focus groups, and we get an idea that the low-cost aspect of OER is important to students. Indeed, more than one student alluded to the fact that community college is an affordable option for students and that expensive textbooks should not be part of the equation: “It’s about the $ 300 textbook and some people can’t afford that. So, I feel like that’s why a lot of people come to community college, just because of the cost, and if you don’t have the money for the textbook, it’s really handy for you to have open resources then you don’t have to pay for it.”

Another student explained part of the cost trap some publishers create for students, even while claiming to change their business model to better serve students and save them money: “I took a psychology course last semester and I ended up withdrawing and I'm taking it again. Exact same. [The textbook] is like $200 this semester and the text book is different [from last semester], so I ended up renting it online digitally for $50 or else it would have been $100 to rent or $ 200 to buy for the same exact course one semester later. I don’t know why it’s a different text book.”

Offering digital rentals is one way textbook publishing companies are providing students more options. Sometimes, though, students choose the lower-cost option, whether it serves their needs or not. In this instance, the student chose the $50 online digital rent option because it was the least expensive option, not necessarily because that was the format of her choice. Two realities seem present. Students are self-aware, understand the ways in which they learn best, and are able to self-remediate is one reality. The other reality is the financial burden that textbooks impose and the financial relief the free or low-cost option of OER provide to students.

While it was not possible to know the financial situation of students in this study, some of the students' comments do suggest that paying for college is difficult and stressful. Therefore, as a result of asking students to tell what they knew about OER, a theme emerged around student use of OER and their learning that will be called financial stress.

OER relieve financial stress. The researcher did not intend to discuss cost as much as it was discussed in the focus groups. But it was obvious that cost was something that students felt compelled to discuss. It was startling to hear students talk about worrying about not having enough money and not having or being able to afford the materials they need to learn. This worry is an impediment to their learning. All students, from English Fundamentals students to Honors students, shared stories about financial stress. This was surprising, in part, because of the perception of NOVA as affluent.

For example, in the Honors English class, Neve talked about how students end up resenting a course in which they spent a lot of money for the text and did not use it. This topic had come up in the general discussion with the Honors class. Neve cogitated on this idea for part of the class and then asked the researcher to talk more after class about it. Neve said she has friends whose grades declined because they ended up resenting the class with the over-priced, under-utilized text. As Neve explained it, since students do not have money to spare, they do not want to waste money on a textbook they are not going to use. Not only the resentment toward the class that is costing more than it needs to, but also the emotional turmoil and constant worry of not having enough for the basics like food or housing weighs heavily on students across the spectrum. The financial stress and the psychological state of mind it produces in students is a barrier to academic success

What students also communicated again and again is how OER are great for relieving part of that stress, which removes barriers to their learning. Brandon, the physics student at Manassas, talked about the stress of not having enough money for books. He said that students are less "stressed out" if they do not have to worry about whether they can go the semester without getting material "required" for the course. Brandon claimed that he learned better, ". . . maybe half a letter grade difference I would say. Because that is the difference between having the text book and not." Another honors English student put it this way: "Mostly it gets rid of that worry or like kind of things getting in the way. You don't have to worry how am I going to pay for that textbook to learn this or how am I going to get enough money for resources to learn a language. Instead you can just do it, there's nothing in the way." One of the English 111 students communicated in similarly strong terms her opinion of OER. She said that OER are "like the backbone" for students because they "provide a way for you to still learn."

Conversations with students in this study revealed the extent to which OER relieve financial stress, leaving more energy and brain power devoted to learning the course material and passing classes. While not directly related to the research questions in this study, it does seem fair to conclude that OER remove psychological and logistical barriers to learning by providing learning materials to students in formats that are portable, easily digestible, and free. OER do have a positive impact on students' state of mind and the ways in which they approach learning in their courses. Now that cost has been examined as an aspect of OER use which removes financial barriers to learning, we can examine more directly the ways students *use* OER and how this impacts their approaches to learning.

OER Use –What Learners do with OER

What this study aimed to examine is the ways that students use OER and how students' OER use impacts their approaches to learning. The level of self-awareness displayed by students in their discussions of their own learning processes, learning anxieties, and learning disabilities was surprising. In addition, students revealed that they are savvy consumers of information; they use whatever format they have determined works best for them, whether it is digital, mobile, paper and pencil, or a combination of those. Some students seek out opinions other than their teacher's. Students also revealed the extent to which they look outside of class for peer validation. In some instances, students shared stories about how they collaborate with other students using OER. Finally, some students (and this seemed especially true with the honors students) explained how they go outside of class to teach themselves about subjects about which they have an interest.

Students reported using deep approaches to learn in informal ways outside of class most often to self-remediate, self-educate, or personalize their learning experience based on their learning preferences and demanding daily routines. Students shared stories about how they are teaching themselves when course materials provided for them in their classes are not helping them learn the material or master the skill. In some cases, students explained how they seek out varied opinions about important concepts and theories. Some students found it important to get opinions and viewpoints other than the teacher's to formulate their own ideas and opinion. Students also go outside of class to discover varied approaches to solving problems. Students also described these personalized

approaches to learning not as something faculty directed them to do; in many cases, they are doing it on their own.

The following sections highlight the ways in which students often go outside of class to find and use OER to fill in the gaps and teach themselves more deeply about topics of interest. These uses of OER demonstrate students' deep approaches to learning and intersect with elements of Open Pedagogy.

Personalizing their own instruction. Students seemed aware of their own learning preferences and learning strengths and weaknesses. Some students expressed in matter-of-fact ways their struggles dealing with their learning disabilities. One dyslexic student claimed OER helped him succeed because of their multiple formats and interactive nature. In his words:

> It's just the fact that I'm always having issues cramming these complex materials, just because of my dyslexic tendencies because I'm dyslexic, it made it really hard for me to sit down and read a textbook. Now it's getting to a point that I can get very high grade on a test. When I found OER and how I can listen to it or is more interactive that I can learn it better, I found that I can do much better on school.

Another student referenced his dysgraphia and how digital materials help him with this. He uses a combination of digitally open materials and open-source software to record himself talking what he wants to write. This reduces his anxiety about creating content to write as well as saves him the pain in his hand that he experiences when he physically writes: "It is especially more convenient for me because I have dysgraphia, so

my hand will start to cramp up when I physically write stuff down. I prefer to take my notes on the computer."

In some cases, students use OER to get the skills they need to perform duties on their jobs and maybe even be promoted at work. One example was Amare. He talked about his time growing up in East Africa, where access to education is a rare and premium commodity. In his family, there were a couple of educated relatives who tried to provide some teaching, but the real gateway, according to this community college student, was the Internet and access to open education. Amare related his experiences in Open Education. He has taken several Massively Open Online Courses (MOOCs) and participates fully in them, sometimes even garnering feedback from classmates and professors alike. He works in IT and is the "go-to guy" at work. Despite his technical expertise, Amare cannot advance in his field any further without a college credential, which is why he was sitting in an English Fundamentals course. His OER experience perhaps led him to this OER section of the course at NOVA. Amare went as far as he could on his own through his participation in MOOCs and now he planned to continue to benefit from some of the self-edification qualities of OER by choosing to enroll in OER courses at NOVA.

Another reason they go outside of class is to self-remediate. Students were aware of their own need to get up to speed in certain subject or skills areas. For example, many students discussed using Khan Academy to remediate weak math skills areas. They did this to prepare for the math placement test, to supplement instruction in their remedial math courses, or to be provided with another approach to learning a difficult math concept. Other students discussed using various apps such as memorize.com and

Anatomy and Physiology outside of class requirements to help themselves prepare for tests and quizzes. Students expressed an awareness of a need for remediation and often found a free and often open resource online to help them overcome the weak skill or knowledge areas.

The final way students personalize their own instruction is by pursuing topics of interest freely and in the format that most appeals to them. From one of the honors students: "I'm curiosity driven. So, I like to check the things I'm interested in but not the other ones. So, like Professor teaches a lot of different things and she says check the things that actually interest you that you can relate to the topic. That's great because you get to choose what you like."

This student also recognizes that the multi-modal and interactive nature of the OER make pursuit of outside interests most convenient and may lead to a love of learning and life-long learning:

> So, it makes it easier because maybe someone would rather read than watch a video, someone else would rather listen to it or watch a presentation and then we would have examples from other students we can relate to. So, it makes like, its expandable so it's to a point that you get to choose what makes you passionate about what you're doing instead of coming to do it to pass the class.

One of her classmates concurred that the interactive/multi-modal aspects keeps her engaged and motivates her as a learner: "For me, my motivation would be like personal interest and whatever I'm interested in also the fact that everybody likes learning in different ways. If you keep reading the same thing you get kind of bored; like a textbook is basically just reading."

Students reported being more motivated when they can do career exploration at no cost, personal or financial. The digital resources are vetted and easily accessible and allow for exploration of topics. Because these OER are free, it makes the process even more convenient: “I think what motivates me is that even though I’m in school I don’t have to be focused in exactly my career. Like I can just also explore other things and it doesn’t necessarily have to cost me any extra thing. For example, I’m learning Japanese and I don’t have to take a class for it.”

From these approaches to learning, a new theme emerged: Student becomes teacher

Student becomes teacher. Students, though their OER use, are learning how to be more active participants in their own learning and are ultimately managing their own educations. They are learning how to teach themselves. Ultimately, we want our students to be able to pursue their own learning independently, think critically, synthesize multiple points of view, and perhaps even contribute to the greater good. It is best to hear it in the words of one of the honors students:

> I wanted to say that the open educational resources kind of helps you also become a teacher. Because it’s easier for you if somebody asks a question you’ll answer. But because you know that you’ve done all those research and certain things that you’re interested in then you kind of become like a teacher because you know so much and did so much research and it didn’t cost you anything.

Helping students become more independent and participatory in their own learning is not only the goal of most teachers, but it is also one of the tenets of Open Pedagogy, where students create and contribute to content instead of just consume it.

OER Use and Deep Approaches to Learning

Conversations with students revealed not only the ways in which they use OER regularly but also the ways in which OER use cultivates approaches to deep learning for them. Several characteristics of OER and OER use align well with approaches to deep learning as described by these students. The following brief sections highlight in more detail some of the ways in which OER use contribute to students' deep approaches to learning.

OER are sequential, interactive, and adaptive. First, the way OER materials and courses are designed promote students' deep approaches to learning. OER are often sequential. For example, one student in this study needed to self-remediate in anatomy. He found a free open-source app called Anatomy and Physiology by Open Education, which allowed him to study different anatomical systems on the go. While on the surface it may appear as if this is surface learning—memorizing – it is not. Memorizing in this instance is critical to success in the course and in the field. Other academic disciplines, such as foreign languages, are similar in that memorizing has a clear purpose. It is not a means by which a student passes a test by regurgitating the textbook or the instructor's lecture notes. In his words:

> While this may be my first 100% OER class where I don't have to pay for anything, I have used OER to kind of boost my skills in other classes. For instance, last semester, I had some trouble initially with anatomy. What I did to kind of remediate that was I downloaded some anatomy app.
>
> Anatomy is very memory intensive, so you have to have an understanding on that. So, what I did was I downloaded some apps. The apps were talking

> about different parts of the body. I had one that was muscle app, one was bones, nerves and so forth. That helped me because really getting at the heart of what I'm saying is that, it's much more affordable.

This student seemed to conclude randomly that the sequencing and pacing of the material made the anatomy app "affordable." (As referenced earlier, students seemed to want to talk about cost a lot in these focus groups.) What this student referenced, though, is the way in which the anatomy apps are sequenced in discrete blocks to help students learn better. Besides this, adaptive learning technologies are in place, since the app adjusts to student responses and provides personalized content based on those responses.

Another good example of OER which uses strong design principles from this study is Khan Academy. Khan Academy is a resource that many students in this study said they used. In some instances, students were directed by faculty to use Khan Academy. Some math faculty pointed students directly to tutorials students should use to help them complete assignments in the course. In other instances, as noted earlier, students indicated that they found and used this resource on their own.

A notable example from this study was Rosalyn, a student in the English Fundamentals (ENF 2) night course. Rosalyn is an African-American woman who put her own educational goals on hold to raise her family. Rosalyn explained how she does not excel at math. Rosalyn claimed to suffer from math anxiety. Her poor performance on the math placement test at NOVA reaffirmed her worst math fears. (Although community colleges are open access institutions, students are usually placed in courses based on placement tests they are required to take upon acceptance to the community college. The

placement tests assess students' basic skills in reading, writing, and math. If students do poorly, they are often placed in remedial courses, which charge tuition but do not count towards graduation.

OER are providing Rosalyn access to what she needs to teach herself and get her skills up to a more acceptable starting level for her college career. She explained how she had been using Khan Academy to refresh her skills before attempting the math placement test again. She meticulously described the process of watching a video and doing the practice, being taken step by step through the process. For her, this was a way to "teach herself" so that she would not be "embarrassed" when re-taking the placement test or participating in more formal classroom instruction. Here are Rosalyn's words:

> What they do is, they have somebody like a professor talking, and they walk you step by step on how to do it. Then each video is depending on what subject it is and I'm just doing strictly math. Like a minute to two and then after you do that bit, you take little quizzes and you just work your way up to each level that they have.

While Rosalyn may not have the language to describe it, she is talking about many approaches to learning promoted by the new science of learning and utilized by many OER creators. Chunking, pacing, guiding practice, and immediate feedback are all often built into the OER by design. For example, Khan Academy is set up to deliver instruction in small, discrete chunks. Video tutorials are only three to five minutes long. There is guided practice in the form of interactive tutorials, reinforcement exercises to provide more practice, and scaffolded instruction, where skills are built, as Rosalyn put it, "step by step." Adaptive technologies are in place so that students are either prompted to

practice more based on performance on quizzes or are instructed to move forward in the series. Students can learn at their own pace and at their own comfort level.

Such an approach gave Rosalyn the confidence to take the math placement test again. Beyond that, she understood the structure in the content and described it clearly. These descriptions provide evidence of deep learning. And if Rosalyn is able to do better on her next attempt at the placement test and place into a college-level math course, the use of Khan Academy will have saved her time, money, and credits towards completion of a college credential. (As mentioned previously, remedial or developmental courses cost students money but do not count towards the required credits to graduate.)

The no-cost or low-cost aspect was intricately intertwined with the learning benefit. Besides saving Rosalyn money, Khan Academy has also helped Rosalyn save face and grow in confidence. Ultimately, such free, quality, openly licensed and accessible learning materials are leveling the playing field. More students have more access and more frequent and plentiful opportunities to participate in their own learning and in their own formal and informal education.

OER also tend to be interactive and adaptive. One student explained how she likes to use memorize.com for language learning. She also explained how the application uses adaptive technology to move learners through lessons at their own pace. In the student's own words:

> I was using for language learning, memorize.com, it's like also game style. You have a variety of ways to learn and memorize different vocabulary, different words. The system memorizes also how often you make a mistake

with that specific word and then it adjusts how many it repeats and stuff like that. It even has things to help you remember, little pictures, little beams.

This student is like many learners who are motivated by the interactive elements like "little pictures, little beams" and who benefit from the personalized adaptive technology which "adjusts how many it repeats and stuff like that." The constant feedback further enhances the student learning experience and helps them participate in their own learning by tracking their own progress.

OER are well-designed and informed by current learning theory. Student use of OER is directly impacted by the way the OER and OER courses are designed. While this study focuses on student use of OER and how this use impacts students' deep approaches to learning, an observation about course design via OER cannot be avoided. Because OER course designers (in this study the instructors themselves) are keeping students at the center and are using design principles informed by current educational research, the OER courses tend to be structured in a way that puts students and their learning at the center. This contrasts with more traditional designs which put the course content and teaching of material at the center. Faculty are more apt to keep the content or the textbook at the center of their thinking when designing courses using traditional materials. As an instructional designer, the researcher has observed faculty who simply upload the course cartridge into the course site and instruct students to read the chapter, study PowerPoints, and take the quizzes and/or exams. As an instructional designer, the researcher has also observed first hand and taken part in OER course design projects where traditional methods of planning the course were abandoned in favor of more student-centered approaches, where personalized interaction and the social aspect of

learning were considered, and where multiple forms of assessment with lots of instructor feedback were provided. The difference in the two approaches is notable. Students who are engaged will do better; courses designed with students at the center are more engaging to students.

Students may not know the language of good course design, or appreciate the benefits of a centralized LMS, but they do understand the ways in which good course design helps them learn, and they expressed this in different ways. For example, one student in English 112 provided a detailed example of struggling to find needed materials to write a paper for her psychology course. Papers in that class were required to be formatted via the American Psychological Association (APA) style guide for academic writing. There was no material provided in the course to help students write via this format.

In contrast, she outlined the ways OER English courses made learning and completing assignments via a required set of standards easier for her. The papers in her English classes were required to be formatted using the Modern Language Association (MLA) style guide, and the course included learning materials to help students write in the required format. Here is what she told the researcher:

> For example, for English 111, on Blackboard [LMS] I was able to find everything. It was really detailed, like every step so it really helped. Right now, I can access what I need for this course [English 112].
>
> [As a counter] example, my psychology class is not [an] open research class. So, I had to find a way to figure out how to meet APA [requirements]. . . because it's different from MLA and that is really difficult because there was

> nothing on Blackboard. The teacher didn't give anything to us because we were supposed to know how to [format our writing] in an APA format [already], but actually it was the first time for me. So, I just had to Google everywhere and it was so difficult because APA are on other websites where you require like log in, pay for membership or something.
>
> So, I was like in five different websites to figure out detail. One detail from this website, another detail from this website and I put together in one APA format. So that was really difficult. For like this class [English 112] it's so easy because you can access everything that you need. So, that's why it's really helped.

This student was identifying elements of good course design and benefits of curated, centralized space for accessing learning materials. The way the teacher organizes the material in Blackboard is helpful to students and resources are provided to help students every step of the way. In this English 112 student's example, material is provided to help students correctly format their papers via the MLA formatting requirement of the course. Students were taught MLA formatting in English 111 and may have access to an MLA Handbook; nonetheless, the instructor does not assume all students have all the necessary background, materials and experiences they need to succeed in the course. With the students at the center of the design, the instructor makes sure to include reference materials to help students format their papers according to the MLA course requirement.

The course materials are organized in such a way that students can access them easily, download them, print them, or read them from the screen; in other words, students have access to materials they need to help them succeed. Because the course was

designed with learners at the center, the instructor provided all the materials necessary to help students at any level succeed. Because this course was OER, the learning materials were free or low-cost to the students, which also provided wider access. Whether or not students had knowledge of MLA formatting requirements and access to an MLA Handbook did not matter. The instructor made sure all resources necessary for learning were available to all students from the first day of class. This is just one example of the way in which designing a course with OER helps instructors and course designers to keep students at the center of their thinking as they structure the learning in the course. OER become customized and tailored learning resources to help learners reach their goals in the course. OER are not the center of the course, unlike when designing from a textbook. When using tradition textbook materials, it is just too simple not to use the way the book is organized to organize the course and the learning in the course. It's not that the textbook materials are not good or are not also designed using current pedagogical research and best practices. However, lots of times these materials are more than what is needed, are limited to a particular approach or point of view and are not personalized in ways that engage students. Plus, these materials are often VERY expensive.

As discussed earlier, the OER provide students access in several ways. First, and most important to students, OER are usually free or very low cost for students. The materials are digital and portable. Students can take the materials with them and learn on the go from their mobile devices. They can download and print materials and use more traditional study methods such as highlighting and notetaking. OER are versatile and provide access in other ways. They provide access to information that is openly licensed, freely shared. Consumers are encouraged to use OER in any way they need. Usually this

is referred to as the 5 R's of OER: reuse, revise, remix, redistribute, and/or retain openly licensed work. The LMS helps students stay in one place to access materials. As the student above indicated, everything she needs to successfully write the essay in the course is provided to her. She knows she can trust the material because the teacher chose it and she doesn't have to waste valuable time clicking around the internet to find free materials to help her.

Another example of scaffolded assignments comes from the English 111 and English 112 courses. Students described their approaches to writing in those courses, and their approaches were directly influenced by the ways in which the faculty presented the learning and learning material in the OER class.

This approach was displayed in the way writing assignments were structured in the English 111 and English 112 courses in this study. When given writing assignments, students were given parts of the process to complete with solid checkpoints along the way. Students receive feedback from the instructor or from peers at every step along the way. This is the social aspect of learning and also an example of scaffolding, intended to increase student learning and success. Following this approach, students found it nearly impossible to simply wait until the night before the big paper was due to write it. From my discussions with these students and their approaches to writing, it seemed they were required to submit small assignments along the way to submission of the final product. Students talked about writing reflections about their chosen topics, submitting thesis statements for feedback, submitting outlines of their essays for feedback, collaborating with peers for feedback on drafts, and finally submitting a final version of the work for a final instructor evaluation. Each of these steps is a separate assignment, expertly woven

together into a cohesive whole to help students master the art of academic writing. Because each step of the process is evaluated, students are motivated to complete each step. They also learn a better way to approach significant writing assignments in their college classes.

Contrast this method with the traditional method many of us encountered where we were presented with a writing assignment and given a required page count, number of resources required, and due date. It is no wonder, then, that students who participate in these OER courses use deep approaches to their learning, since that is the intent behind the design.

OER use leads to Open Pedagogical approaches. Interestingly, student behaviors around OER and access to learning materials demonstrate aspects of Open Pedagogy. It is driven not so much by course design as by student need. Students often seek out other sources of information to validate their own points of view. One of the honors students likes to compare her teacher's point of view with other professional opinions and then finally form her own opinion. Such activities demonstrate higher level critical thinking skills, as the student is working to make meaning through the synthesis of varied viewpoints. The student is then ready to make arguments of her own around the topic of interest. This is another hallmark of a deep approach to learning. It was not only the honors students who communicated this idea. One of the English 111 students noted that if she could not figure out how to tackle an assignment based on how her teacher suggested, she would look to sources outside of class to find other approaches to solving the problem. Sometimes the teacher would direct students to do so, like how the English 111 and English 112 instructors directed their students to Grammarbytes to improve weak

grammar skills. But several other students noted how they found materials to help them get varied points of view on topics of interest on their own. The physics student, Brandon from Manassas, for example, used NASA Pubspace to access materials about the Large Hadron Collider. Another student was teaching herself Korean in her spare time because she was interested in that topic.

Another open pedagogical practice is to rely on networks of other people to work through problems. Teamwork and collaboration is encouraged and celebrated. Sharing is the name of the game. Students go to Quizlet and download sets of quizzes other students have made and shared. The OER that faculty share with students in class have been openly licensed by other faculty who created them with the main intent of sharing far and wide. Students reach out to other students when they go to sites like Quizlet to find quizzes and study guides others in the same courses have created. Students did not talk much about contributing to such sites. But one conversation with the English 112 students revealed they are using Google to collaborate on writing assignments. They were even directed by their instructor to do so. While such real-time or asynchronous collaboration in a digital space is not the same as publishing material to make the world a better place, it is another example of an open pedagogical approach which relies on social context and new technologies. OER do this for students and lead to their deep approaches to learning.

To work successfully in collaboration with a team, students must be able to see a problem from varied points of view and listen to other ideas different from their own. Such collaborations allow them to make connections between their own experiences and others' experiences, between their own understanding about a topic and others'

understanding. Students in collaboration must learn to synthesize varied points of view in this approach. It is here, within those collaborative working spaces, that students employ deep approaches to learning, develop a love of learning, and get on the road to becoming life-long learners.

OER motivate students to learn. Consistent with the research, OER did motivate students in this study to learn. First the low cost or no cost aspect is very motivating to students. Cost was a topic that came up as part of the conversation around learning and OER often. As noted before, the stress related to financial need seems to be a barrier to learning for students. OER removes the fear of not having the learning materials needed to succeed and takes some of the worry out of students' lives. One student summed it up simply: "OER definitely motivates [sic] me because it's free!" Removing cost barriers is one way to allow students to focus more on learning, make meaning of course content by connecting it to prior knowledge, and enjoying learning for learning's sake.

In this study, student perception of faculty who use OER may have had an impact on student learning and what students described as their deep approaches to learning. In the face-to-face focus groups, the instructors remained in the classroom. It was obvious in each of those classrooms that personal and caring relationships had been formed between the instructors and their students. In all instances, the instructor greeted students by name, addressed them by name, referenced shared classroom experiences, answered questions respectfully and empathetically; in general, these faculty had a positive rapport with the students who participated in the focus group discussions.

It was pleasant and relaxed in the classrooms, and the students did not seem inhibited by the teacher's presence in the room. They did not seem reserved or shy in the least talking about their own learning in front of their teachers in the classroom spaces. Students were very open, and indeed, the instructor's presence in all instances seemed to enhance the level of student comfort. For example, when discussing their approaches to writing, students in the English Fundamentals course were prompted enthusiastically by their instructor, "They just wrote a blog on that." This helped students articulate their own processes verbally during the discussion.

More germane to this study, however, is the way instructors who use OER tend to design their courses. In all instances, the English courses were designed using OER, with learners in at the center, and guided by learning goals and objectives, not textbook organization. A hallmark of good instructional design and the New Science of Learning is providing learning environments which are student centered. OER helps faculty and instructional designers do just that. With learners in mind, these instructors chunk the material into manageable units, give learners plenty of opportunity to build on a previous skill or knowledge, make navigation of the LMS, where OER materials for the course are housed, simple and easy to follow. When students have everything they need, easily accessible and clearly organized; when learning is well-paced and scaffolded; when social interaction and feedback are integrated every step of the way; and when assignments are authentic, students are grateful and associate their academic success with their teacher understanding their needs as learners and caring about them.

OER also provide a safe place for hesitant or anxious learners to build skills without the stigma of being underprepared and/or embarrassed in front of classmates in

more formal classroom settings. OER provide opportunity for skill building outside of formal learning environments, which helps combat anxiety often associated with certain academic endeavors such as math and writing. This skill building is also confidence building and helps students learn to be more independent learners, fully participating in their own educational goals. It does seem from the stories they told that students are well on their way to being lifelong learners, an approach and ultimate outcome associated with deep learning.

OER also motivate students to learn just for learning's sake. This intellectual curiosity was a topic of discussion among the honors students. Such attitudes reflect deep approaches to learning. Several students, although they were busy with work and school responsibilities, were still spending some time outside of class to learn more about topics of interest and using OER to do it. As referenced earlier, the student from Manassas (who was enrolled in a 200-level physics OER class) spent weeks reviewing all the material made available on NASA PubSpace concerning the Large Hadron Collider. Neve was using memorize.com, a popular open-source language-learning app to teach herself Japanese in her spare time. Another honors student referenced Crash Course, John and Hank Green's popular YouTube channel that produces free, high-quality educational videos. The creators encourage teachers, students, and learners of all kinds to use their videos to help them learn (n.d.). Indeed, this approach is tied into the idea of lifelong learning, a major tenet of deep approaches to learning. And students in the honors class love this channel. One student claimed that Crash Course was his "go to."

OER may be an honors privilege. As mentioned previously, the focus group format had several advantages for this study. One advantage is the way in which the

discussion provides context to the participants, triggering thoughts and ideas in each other and encouraging participation. This was the case especially in the focus group held with the Honors English students. Each story told around an OER experience triggered three or four more responses and so on. In addition, the dynamics of the honors group were obviously already well-established. There was an environment of mutual trust, where ideas were expressed freely and where the participants interacted with each other well. Sitting around a small round table with their instructor, books, notebooks, and tablets spread out, they also laughed a lot, shared candy, and in general, obviously enjoyed engaging in academic discussions.

This relaxed, collaborative atmosphere allowed for a discovery of an unexpected phenomenon. Some students in the honors class discovered through the discussion that they knew a lot about OER because they had used OER as part of the curriculum in many of their honors classes. As the discussions unfolded, students discovered that they had been exposed to and had been using OER rather frequently in their honors classes. Once the discussion established a formal definition of OER, students recounted their recent classroom experiences and determined that many of their honors classes could be identified as OER courses. Students in this honors section of English seem to have had much access to OER and to the Open Pedagogical practices research has indicated are advantageous for deep learning and for lifelong learning.

As these students were thinking about the courses they had taken and as they listened to their classmates describe their OER experiences, some of them began to realize the extent to which they had already been exposed to OER. One student expressed it this way: “I’m just realizing now that technically I’ve taken an OER course without

even knowing." This student was not alone and during our discussion several other students had the same realization, with one of them asserting that there seems ". . . to be a trend towards more open educational resources . . . because most of the honors courses I have taken would fall under the OER category." The courses students mentioned included Intercultural Communications, American history, physics, sociology, graphic design, environmental science, chemistry, and biology – all, except the graphic design class, honors sections.

Honors Privilege means honors students at NOVA have access to a wide variety of OER courses with freely available learning materials in multiple formats. This reality sits in contrast to the great need demonstrated by the general student population who sit in the large-enrollment general education courses. It seems logical, then, to assume that students who have more access to OER courses and materials also have more access to all the benefits of OER, which often include (as discussed previously) well-paced and well-organized course design with scaffolded assignments and personalized instruction.

Honors Privilege extends to other learning spaces at NOVA related to information access. Honors students have more access to course materials than their non-honors counterparts through the use of an honors room. The honors students explained that there were copies of course textbooks that instructors had put aside for student use in the honors room. Here, honors students can use textbooks that faculty have provided for them, and in some cases even borrow the books for extended periods of time. As one honors student noted, ". . . like I said before, the honors class professors tend to do those things."

While access to the honors room and the materials in it is not exactly OER, it still is a form of information access for students, which is also what OER seek to provide. In this case, however, only a select group has access to the material. Similarly, if OER, intended to level the academic playing field by providing free and easy access to all, provide increased access to only a select group, (in this case the honors students at NOVA), there is a disconnect. Such a dynamic merits further investigation about who OER are really serving at our community colleges. There seems to be irony in having most of the honors courses at NOVA designed as OER courses while many non-honors sections of high enrollment courses continue to use traditional textbook materials and pedagogical methods. Perhaps it is simply a matter of logistics. Since honors courses are traditionally smaller and since only a few students choose to enroll in the honors program and enroll in honors courses, it may be easier for individual faculty members to use OER to design their courses.

By making resources freely and widely available, OER are intended to serve all. Implicit in this intent is to provide access to those who would otherwise struggle to gain access. Honors students may struggle with the same financial and life issues that most community college students do. However, by virtue of their Honors status, they enjoy smaller class sizes, more one-on-one time with the instructors, and more personalized instruction. Honors students having access to more OER course experiences than the non-honors students seems somehow counter to the intent of OER and the Open Movement.

From talking with the honors students in this study, many of the honors instructors at NOVA experiment with OER. Students theorized that the reason honors

instructors are more drawn to OER involves their intellectual curiosity and their ability to either create their own learning materials or find freely available materials online. These honors students seemed on a more even playing field with their honors instructors and shared stories of collaborations. In this focus group, for example, it was hard to tell who the instructor was and who the student was as everyone was seated in similar fashion around a round table. In another exchange, students expressed that they had not done much in the way of working to revise OER or create OER. One student, however, did know that her psychology professor collaborated professionally with colleagues using open techniques, such as sharing work in Google Drive, or constructing slides for a presentation in another collaborative web space. Much of what students discussed hinted at techniques of Open Pedagogy, where the instructor is more a guide on the side than a sage on the state. It seems these kinds of professors, according to students, could construct the learning for the students without relying on less-than-perfect textbook.

As students discussed their professors and theorized why more of the honors professors use OER, they decided that not being confined to one resource and one point of view or perspective is an important quality for learning materials to have. Both students and professors seemed to agree on this. And even though textbooks are usually written and/or compiled by teams, the point of view of any text is confined to a particular point of view. Those who embrace theories or approaches counter to the commonly held views would not be included in the publisher textbook model. In the open model, students can hear from *anyone* -- even those with ideas on the margins, against the mainstream, or counter to widely held beliefs.

In addition, textbooks are not always right or correct. One student brought up a textbook that had graphics transposed. Students are not taking one source as the authority, and neither are their honors instructors. Because OER are tailor-made or personally curated by faculty who teach the course, both honors students and faculty seem to agree that OER are a high-quality option.

Hand in hand with the quality is the cost of OER to students. Students mentioned the low cost of OER again and again as the aspect most beneficial to them in their daily lives and to their learning. Comments such as "OER definitely motivates [sic] me because it's free" were repeated throughout the conversations with the honors students.

They also mentioned that their honors faculty cared about them and did not want them to waste money on unnecessary learning materials. Since honors class sizes are traditionally small, it is easier for instructors to get to know their students and to provide personalized learning experiences for them. This may also contribute to the feeling that these honors students had about their instructors. The role OER plays in this perception will be interesting to explore more fully.

CHAPTER V

SUMMARY OF THE STUDY

Open Educational Resources (OER) as a research topic in higher education is a relatively new one. The most widely accepted framework for OER research is COUP (Cost, Outcomes, Use, and Perceptions). Some of the earliest research in the field focused more on the *cost* savings to students. OER have been shown to increase access for students because they provide no-cost or low-cost alternatives for students. Research around *use* examines the ways in which faculty and students interact with openly licensed materials, provides empirical evidence about the ways faculty and student use OER and the degree to which impacts on learning outcomes covary with these uses. To date, several studies have been conducted to explore the efficacy of OER use and adoption on student learning outcomes in higher education (Feldstein et al., 2012; Hilton III & Laman, 2012; Lovett, Meyer, & Thille, 2008; Robinson, 2015). These studies use various metrics to measure student success such as exam results, grade point average, withdrawal rates, grade in course, and number of credits enrolled in subsequent semesters. These quantitative studies, however, do not explore the ways in which OER may change the way teachers teach and students learn. Prior to the current study, there has been no qualitative research that seeks to examine a relationship between OER use and students' deep approaches to learning from the students' point of view.

The purpose of this study was to describe the experiences of community college students who use OER and to investigate the ways in which use of OER fosters approaches to deep learning in these same students. The qualitative research was intended

to enhance, support, and assign deeper meaning to the already existing body of quantitative research around the efficacy of OER.

Review of Research Design and Methodology

This study employed qualitative research methods by collecting data from focus groups composed of students enrolled in at least one OER course at Northern Virginia Community College (NOVA) during the Spring 2018 semester. Criterion sampling was used to recruit student participants for the study. Students were accessed through the cooperation of chosen lead OER faculty at NOVA.

Participating faculty allowed the researcher to come to their classes for the last 20 minutes to discuss students' use of OER and students' approaches to learning. Each faculty member acted as a research assistant and liaison between the researcher and the students.

The researcher held 11 focus groups overall; 8 were held in the physical classrooms on the Loudoun Campus of NOVA and in a student meeting space at the Manassas Campus. The remaining three sessions were held online.

This study addressed the following research questions:

1. How do students enrolled in OER courses describe their use of OER materials?
2. How do students' descriptions of their *use* of OER materials reflect deep approaches to learning?

The researcher developed the focus group protocol using sub-categories of deep learning approaches. In addition to deep learning approaches, the researcher used a cognitively responsive perspective for interpreting learning processes as deep learning approaches. Finally, the researcher also used an interview bank created and openly

licensed by the OER Research Hub to develop focus group questions (see APPENDIX B for the focus group protocol).

The researcher adopted a variation of Lichtman's (2012) process for analyzing the data, using the three C's: coding, categorizing and concepts. Using deductive analysis, the researcher used codes developed from deep learning approaches and elements of the COUP framework to look for patterns. Inferences were drawn about the learning process in which students were engaged. The researcher also used inductive analysis to look for other patterns of response outside the expected.

Researcher bias was identified and addressed throughout the research process. To build trustworthiness and the credibility of the study, to address researcher bias, and to create an audit trail, the researcher employed thick description Memoing, reflexive journaling, and peer debriefing were also used to create an audit trail and build credibility.

Summary of Findings

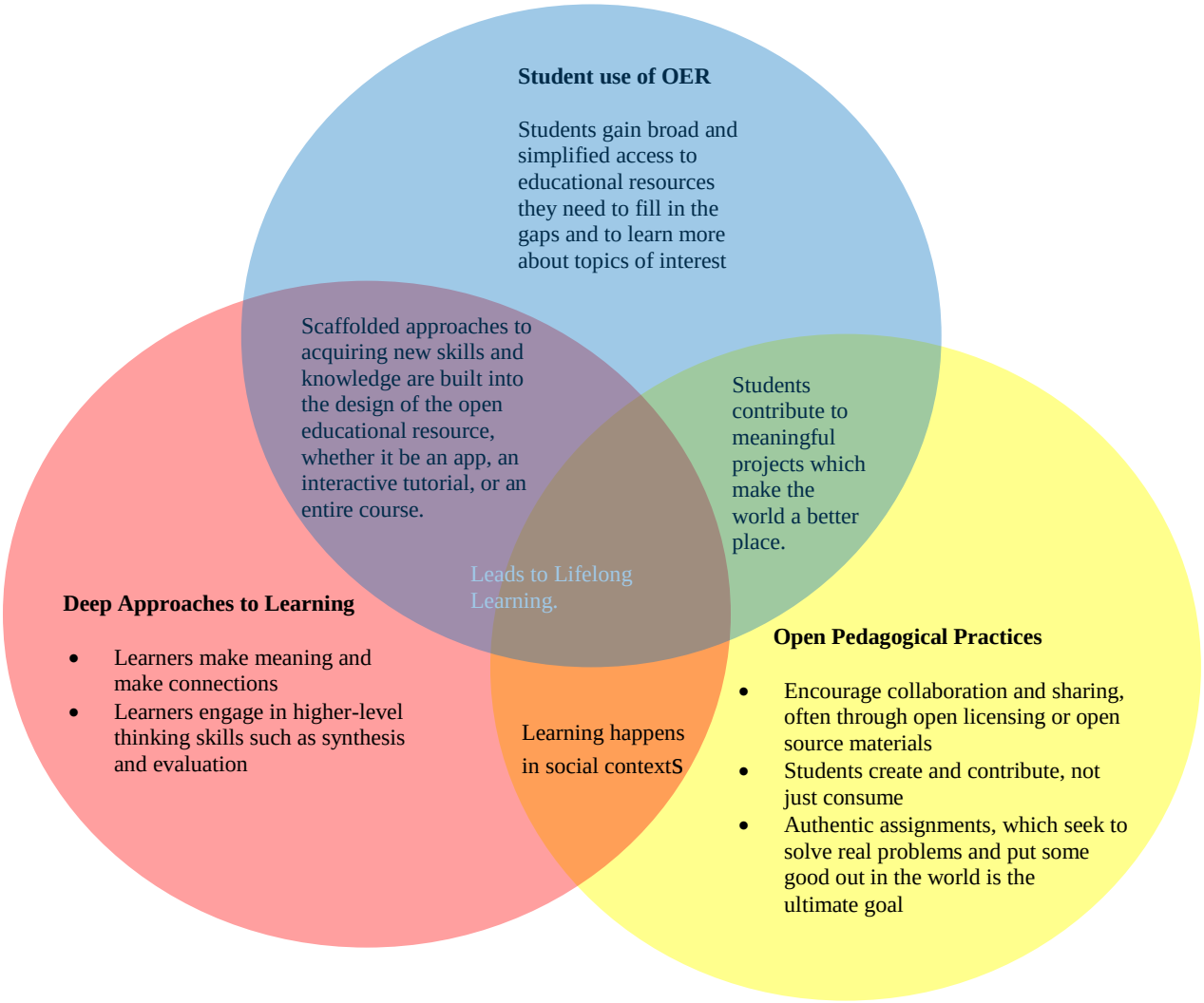
OER knowledge. Before OER use could be discussed, OER knowledge had to be explored. What did students already know about OER? Students know more than they think they do about OER. What they know is that OER provide free entry points into publicly funded, openly-licensed materials. Students also know that OER are often published in easily digestible digital formats which makes using them at any place or any time possible. Finally, students know that the low-cost or no-cost aspect of OER provides them greatest access to learning materials. Cost, by far, was the most important aspect of OER. Students most often do not know about open licensing, which is an important aspect of OER, according to some OER researchers.

OER use. How do students *use* OER? The sophisticated level of self-awareness displayed by students in their discussions of their own learning processes, learning anxieties, and learning disabilities was surprising. In addition, students revealed that they are savvy consumers of information; they use OER in whatever format they have chosen whether digital, traditional paper and pencil, or a combination of those. Students determine what works best for them in a given situation. Some students seek out opinions other than their teacher's. Students also revealed the extent to which they look outside of class for peer validation. In some instances, students shared stories about how they collaborate with other students using OER. Finally, some students (and this seemed especially true with the honors students) explained how they go outside of class to teach themselves about topics of interest.

Several themes emerged. Students reported using deep approaches to learning in informal ways outside of class most often to self-remediate, self-educate, or personalize their learning experience based on their learning preferences and demanding daily routines. Students shared stories about how they are teaching themselves when course materials provided for them in their classes are not helping them learn the material or master the skill. Or, in some cases, students explained how they seek out varied opinions about important concepts and theories. Some students found it important to get opinions and viewpoints other than the teacher's to formulate their own ideas and opinions. Students also go outside of class to discover varied approaches to solving problems. Students described these personalized approaches to learning not as something faculty directed them to do; in many cases, they are doing it on their own.

OER use and deep approaches to learning. This study examined the ways students use OER. First, students most often use OER on their own by going outside of class to supplement instruction provided in the course, remediate weak skill areas, accommodate a self-identified learning disability, validate their point of view, find unique ways to solve problems. Students also use the OER their teachers supply them in their courses and benefit from the student-centered approach to OER development and delivery. Open pedagogical approaches are employed by the students as they seek out accessible sources of information to help them move to the next level in their learning. Through global networks, collaboration, and sharing, and with an eye toward authentic learning and authentic assignments, students are participating in their own learning. The hope is that the positive experiences students associate with learning and OER in college will spur them to be lifelong learners who use digital spaces not only to learn but to make the world a better place. *Figure 5.1* provides a conceptual framework for the ways in which student OER use intersects with deep approaches to learning and open pedagogical approaches to encourage the development of students as lifelong learners.

Figure 5.1. Conceptual framework of the intersection of student use of OER, student deep approaches to learning, and open pedagogical approaches.



Limitations of the Study

First, access to students was limited to a 20-minute focus group discussion at the end of a class meeting or a 30-minute web conferencing session. In addition, it was necessary to complete the data collection and analysis within a 16-week semester, so this also limited the number of times the researcher could meet with the focus groups. Initially, the researcher was hoping to follow up with focus groups a second time during

the semester as a follow up, but time constraints as well as logistical constraints would not allow this. Also, because this is a qualitative study, findings cannot be generalized to the larger population.

Implications for Research

As the academic field of inquiry around OER is broadening, researchers should seek to enhance the quantitative research with more qualitative research. Additional qualitative research could provide opportunities to gather the deeper, richer data that is needed to give the perspectives of students on the use of OER and student learning. Qualitative research methods allow the voice of the students to be heard on this important topic. Community college and other post-secondary leaders need to hear these voices in order to effectively focus institutional policies. Qualitative research uses thick description to detail experience and can enhance existing quantitative research around OER efficacy in terms of student learning. Detailed student stories to accompany the quantitative data can serve to deepen our understanding of OER use and efficacy.

The current study had time limitations which did not allow for a long view of student learning over the course of a semester or for the duration of a chosen program. Future qualitative studies might consider replicating this study and building on it by interviewing the same students multiple times during a semester to see how their OER use and approaches to learning change over time. It would be interesting to conduct a longitudinal study examining student OER use and approaches to learning over the course of a few years as students work through their program of study. Examining the efficacy of the fully OER degree pathways would also be useful.

The use of OER for self-directed learning is another area which merits further investigation. Other studies may replicate the findings in this study and correlate the use of OER with student deep approaches to learning. More qualitative research around OER efficacy on student learning might allow for the development of learning theories around OER specifically. While the COUP framework works well as a conceptual framework, it may well be enhanced by or evolve into a more pedagogically-based framework, focusing more on the relationship between OER use and student deep approaches to learning.

The theme of Honors Privilege also merits further investigation. The question is nagging: Do honors students, already privileged in their honors status, have wider access to OER courses and materials than most non-honors students at community college? Do honors students' frequent access to OER courses make the divide wider between the privileged and the less-privileged, leaving many students even further behind? Such privilege calls to mind Jeffrey Selingo's book *MOOCU: Who is Getting the Most Out of Online Education and Why*? His qualitative research indicated that MOOCs were not serving their intended audience (the disadvantaged students) but instead were serving those who already had college degrees – often youngish white males or entrepreneurs, looking to start a new career.

Similarly, after talking with a wide range of students at NOVA in this study, it seemed the honors students at NOVA were the ones who had the most opportunity to enroll in courses that used OER as well as benefit from the sorts of Open Pedagogical practices touted by open educators as most likely to lead to meaningful, deep learning experiences for students and to life-long learning. While it is certainly not a bad thing that

honors students have access to OER courses, the exclusion of non-honors students from the frequency of opportunity for access does seem a bit ironic, given the mission of the Open Movement. After all, if honors students, who are already at an advantage, have broad access to a wide variety of learning materials via OER courses, but the majority of "regular" or non-honors students do not, this seems to defeat the purpose of OER – to increase access for all, not just a select few. Honors Privilege then, a concept which suggests honors students have more access to OER by nature of their privileged honors status, merits further investigation.

Implications for Practice

Community colleges should continue to pursue OER as a viable means for increasing student access and affordability and student learning, success, and motivation. Students in this study have expressed several ways in which OER help them to succeed in college by removing financial barriers, addressing math and writing anxiety, and accommodating learning disabilities and preferences. OER may also provide skill building for future careers. Students benefit from ease of course navigation and clear alignment among objectives, assessments, activities, and learning outcomes.

Furthermore, recent research around OER indicates that students perceive teachers who use OER as kinder, more encouraging, and more creative than teachers who use traditional textbooks (Vojtech & Grissett, 2017). Much educational research indicates that perceived teacher empathy/caring is one of the top characteristics correlated with student success (Rowell, 2016). Since OER can help students bridge skills gaps, grow in confidence, feel better prepared to tackle college level work, and motivate students to learn, faculty should continue to explore OER use in their courses. The versatility and

flexibility of OER provide rich opportunities for faculty to collaborate with other sectors of their colleges to use OER beyond the classroom to help serve students with disabilities more broadly and to help students prepare for future careers.

Administrators at community colleges, then, have several issues to consider when developing and implementing OER policy at their institutions. First, administrators must begin to commit to OER as a strategic approach to increasing access and affordability for their students. This study showed that OER use removes financial stress for students, allowing students to focus on their learning. Second, administrators must begin to incentivize or require their faculty to use OER whenever possible (and appropriate) and work with instructional designers to use strong, student-centered design principles, driven by the course objectives and learning outcomes and not textbook organization. Faculty who build OER courses have more flexibility and freedom when choosing course materials that work for their students. At the same time, design and development of OER courses often require more planning and work on the part of faculty. Administrators need to be aware of this and build incentive, training, support, and a reasonable timeline into their strategic plans for institution-wide OER adoption.

Administrators must consider the other costs associated with institution-wide OER adoption. As much of the research shows, while OER is free to students, it is often not free to faculty, administrators, or institutions (Lederman, 2018). Administrators should consider the shifting priorities, be creative and flexible in their budgeting. They must work to get the funding and resources necessary to support an aggressive OER policy and then work to sustain the widespread institutional commitment to OER. They must realize the business model will change as college bookstore roles change. They

must strategize new ways of doing business within an OER-dominated landscape beyond the old business models.

Conclusion

OER have the potential to bridge the gap for community college students not only because they are more affordable or provide access but also because they have the potential to make learning more meaningful for these same students. Students know more about OER than they think they do or than faculty think they do. What they know seems to be limited to cost, access, and the digital nature of OER. No student in the study had ever heard of open licensing or Creative Commons.

Students use OER for a variety of purposes – to go outside of classroom learning to supplement their knowledge or fill in gaps in their knowledge, to remediate weak skill areas, to discover varied points of view about concepts reviewed in class, to make accommodations for learning disabilities, or to teach themselves about topics of interest. There is a relationship between student use of OER and student approaches to deep learning. While some students do use OER to take short cuts, by and far, most students use OER to teach themselves using deep learning approaches.

Students benefit from the strong course design employed by faculty who use OER. The sequential nature of the learning, the straightforward navigation, and the skill building through scaffolded assignments all serve to help students succeed. While students may not have the theoretical knowledge or language to express this, they certainly do know when a course is well-organized with the learners at the center of the design. Courses organized via the publisher textbook feel less personal and relevant to students. Community colleges should continue to explore OER as a viable way to provide

learning materials to their students, reduce cost for their students, and improve approaches to course design, teaching, and learning.

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APPENDIX A: NOMINATION LETTER

Dear (Name of Outstanding OER Faculty Member),

Because of your outstanding leadership in teaching with open educational resources, I have nominated you to participate in an important research study examining NOVA students' use of OER in a course and how their use of OER impacts their approaches to learning. Your commitment to student success through the OER initiative at NOVA has not only impacted student academic success, but it has also helped put NOVA on the map as a national and even global leader in the OER movement. I hope that you will accept this invitation to contribute to the growing body of research around OER and students' approaches to learning.

Kim Grewe, an Instructional Designer with ELI and recipient of the VCCS Chancellor's Faculty Fellowship for 2017-18, is conducting an important research study on OER efficacy at NOVA as part of the final requirements of her Ph.D. program at Old Dominion University. Participation in this research project would necessitate Kim coming into one or more of your OER campus or Hybrid courses during the first half of the spring 2018 semester to talk with your students about their OER use and their approaches to learning in your course(s). Students will have the option to opt out of participating, but students who stay will be given a wonderful opportunity to reflect on their own learning in the course and their use of OER materials. Such self-reflection, or meta-cognitive activity is often helpful for students as they continue to learn and progress in a course/program. Student and faculty identity will be kept private, your confidentiality will be strictly protected. Aggregate data or pseudonyms will be used in dissertation and research presentations. Informed Consent Forms approved by NOVA OIR and ODU's IRB will be reviewed with all students and signed before the study takes place.

Preliminary results will be shared with you as part of the select group of faculty participants. Such discussions after the data collection and during data analysis is considered a technique for ensuring credibility or trustworthiness in qualitative research. This peer debriefing will give you the opportunity to serve as a co-researcher in this process, culling through the data, asking questions, noticing patterns or themes, and discussing the preliminary data and its implications.

Faculty participants will be awarded a Digital Badge and will be given the opportunity to be featured in and/or participate in a presentation on OER efficacy at NOVA stemming from this research project. This project will give your students a voice to share and validate the impact that you and your adoption and use of OER has had on their educational experience.

If you are willing and able to participate in this important research project, please let me know via email by Friday, December 15 if possible. I will then send a list of interested faculty to Kim Grewe, who will contact you with more information about the study and to begin coordinating efforts for next semester. Thank you for all you have done and continue doing to support our students through your leadership in our OER initiatives here at NOVA.

Sincerely,
Preston Davis

Wm. Preston Davis, Ed.D.
Director of Instructional Services
Northern Virginia Community College

APPENDIX B: FOCUS GROUP PROTOCOL

General Questions:

1. Tell us a little about yourself. How long have you been taking classes? Program of study?
2. Tell us what you know about Open Educational Resources (OER)? Open licensing?

OER Knowledge:

1. How many courses have you taken that use OER? Describe some of those courses.
2. How often have you used OER in your college courses?

OER Use:

1. What OER materials have you used? (textbooks, tutorials, videos, simulations, Google Docs, wikis, e.g.)
2. How did you use the OER materials? (Read on screen, print out, interaction with online resource, collaboration, authentic assignments, e.g.)
3. Describe your experience using OER for your studies.
4. Do you use open resources differently (to those that are not open)? How?
5. When you are using an OER, what helps you to learn?

Learning Strategies:

1. Describe your reading process. In what ways does the use of OER impact your reading process?
2. Describe your writing process. In what ways does the use of OER impact your writing process?
3. Describe your process of studying. In what ways does the use of OER impact your process of studying?
4. Since you started using OER, have there been any changes to the way that you learn? If so, describe those.
5. Has the use of OER made a difference to your studies? If so, how? Why?

Motivation:

1. What motivates you as a learner?
2. Do you feel that you are less or more motivated to study when using OER? Please explain why.

APPENDIX C: INFORMED CONSENT FORM

PROJECT TITLE
Community College Students' Deep Learning Approaches in OER Courses

RESEARCHER
Kim Grewe, Instructional Designer at Northern Virginia Community College Extended Learning Institute, Doctoral Student, Community College Leadership, Old Dominion University.

DESCRIPTION OF RESEARCH STUDY
Open Educational Resources (OER) have the potential to bridge the gap for community college students not just because they are more affordable or provide access but potentially because they make learning more meaningful for these same students. Although issues related to access and affordability have been extensively researched, less is known related to the conditions under which courses that incorporate OER foster deep learning approaches among community college students. This study will use focus group discussions with students enrolled in OER courses to conduct a qualitative research study which examines the efficacy of OER on student learning.

WHAT DO WE HOPE TO LEARN FROM YOU?
If you decide to participate, then you will join a study involving research of students enrolled in OER courses and their experiences using OER in those courses. You will take part in a focus group discussion and be asked to answer a series of questions in a group setting about your experiences as a student enrolled in an OER course. If you say YES, then your participation will occur during the Spring 2018 semester. You will participate in a focus group meeting once during the semester. This meeting will last approximately 25 minutes to 45 minutes. This meeting will be audio recorded. The meetings will take place on a campus of Northern Virginia Community College or online through the web conferencing tool Blackboard Collaborate. Approximately 200 students will be participating in this study.

COSTS AND PAYMENTS
The researcher wants your decision about participating in this study to be voluntary. Yet she recognizes that your participation does require you to sacrifice some of your valuable time. The researcher hopes that you will find participation in the study to be rewarding, both as a self-reflective exercise about your own approaches to learning but also as a valuable contribution to the growing body of research around the impact of OER on college students' learning.

CONFIDENTIALITY
Please know that the confidentiality of your personally identifying information will be protected to the maximum extent allowable by law. Your name and other identifying information will be known only to the researcher through the information that you provide. You may refuse to answer any questions if you so choose. You may also terminate your participation in the study at any time. Neither of these actions will incur a penalty of any type. Your participation in this study is completely voluntary. If you decline to participate, this decision will not endanger you or your academic career in any way. A copy of the resulting paper and presentation will be sent to you electronically after the study has been completed.

VOLUNTARY CONSENT
By signing this form, you are saying several things. You are saying that you have read this form or have had it read to you, that you are satisfied that you understand this form, the research study, and its risks and benefits. The researcher should have answered any questions you may have had about the research. If you have any questions later on, then the researcher should be able to answer

them: Contact Kim Grewe via email at kgrew003@odu.edu or via phone call or text at 757.894.0251.

If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should call Dr. George Maihafer, the current IRB chair, at 757-683-4520, or the Old Dominion University Office of Research, at 757-683-3460.

And importantly, by signing below, you are telling the researcher YES, that you agree to participate in this study. The researcher should give you a copy of this form for your records.

Subject's Printed Name & Signature	Date

INVESTIGATOR'S STATEMENT

I certify that I have explained to this subject the nature and purpose of this research, including benefits, risks, costs, and any experimental procedures. I have described the rights and protections afforded to human subjects and have done nothing to pressure, coerce, or falsely entice this subject into participating. I am aware of my obligations under state and federal laws, and promise compliance. I have answered the subject's questions and have encouraged him/her to ask additional questions at any time during this study. I have witnessed the above signature(s) on this consent form.

Investigator's Printed Name & Signature	Date

Study Description and Contact Information

This interview has been constructed to collect data and create themes and categories on the comparative experiences of students enrolled in OER courses. The research seeks to understand the lived experiences of the students enrolled in OER courses and how the chosen course materials had or did not have an impact on their deep learning approaches.

Contact Information:

The researcher may be reached at the following number and email address:
Kim Grewe, kgrew003@odu.edu, 757.894.0251

If at any time you feel pressured to participate, or if you have any questions about your rights or this form, then you should call Dr. George Maihafer, the current IRB chair, at 757-683-4520, or the Old Dominion University Office of Research, at 757-683-3460.

VITA

Kim Ellen Grewe

EDUCATION

Old Dominion University — Norfolk, VA
Ph.D. Candidate Community College Leadership 2018

San Diego State University — San Diego, CA
Master of Arts Educational Technology 2012

Master of Arts English
Salisbury University 1996 — Salisbury, MD

Bachelor of Arts English
St. Vincent College 1988 — Latrobe, PA

PROFESSIONAL EXPERIENCE

Northern Virginia Community College — Fairfax, VA
Instructional Designer 2015-present

Eastern Shore Community College — Melfa, VA
Instructional Technologist and *English professor 2008-15*

Wor-Wic Community College — Salisbury, MD
English instructor 2002-2007

RECENT PUBLICATIONS

Book review of John Shank's *Interactive Open Educational Resources: A Guide to Finding, Choosing, and Using What's Out There to Transform College Teaching* in *Inquiry: The Journal of Virginia Community Colleges*

"The Impact of Enrollment in an OER Course on Student Learning Outcomes" in the International Review of Research in Online and Distributed Learning (IRRODL)

RECENT PRESENTATIONS

OER Use and Community College Students' Approaches to Deep Learning — Global OE 2018

A Model Pilot OER Efficacy Study for Community Colleges — OpenEd17

Open Educational Resources
(invited to present at Howard Community College)

Establishing the Actual Costs of Textbooks:
Data from VA's Community Colleges — OpenEd16