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UDL and Motivation: Student Perceptions of the Impact of Universal Design for Learning
on Motivation of First-Year Community College Students in Rural East Tennessee

A dissertation
presented to
the faculty of the Department of Educational Leadership and Policy Analysis
East Tennessee State University

In partial fulfillment
of the requirements for the degree
Doctor of Education in Educational Leadership

by
Jennifer L. Mayes
May 2020

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Dr. Don Good
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Keyword: universal design for learning, community college, motivation

ABSTRACT

UDL and Motivation: Student Perceptions of the Impact of Universal Design for Learning on Motivation of First-Year Community College Students in Rural East Tennessee

by

Jennifer Mayes

The purpose of this quantitative study was to identify the perceptions of how Universal Design for Learning (UDL) impacts motivation in first-year community college students in rural East Tennessee. This study investigated the effects of UDL on motivation of first-year community college students in East Tennessee. This involved multiple sections of courses participating in a UDL pilot training program with the college's Instructional Design department. Two of the courses were part of the UDL pilot, and two of the courses were teaching the Standard approved Master Curriculum. The study had a total of 109 participants, and 9 research questions were analyzed at the .05 significance level. Interactivity was significantly higher in the English UDL courses than the Education UDL courses. Rural students and nontraditional students were significantly more motivated in the UDL courses. There was no difference in predicted grades between the UDL and non-UDL courses. While results of this study did not align with other studies being published regarding the success of UDL programs, it provides good groundwork for more in depth studies. It also supports the idea that courses should implement UDL from beginning to end rather than just isolating one module for a UDL design.

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DEDICATION

I would like to dedicate this dissertation to my wonderful husband, Dr. Alex Mayes. I cannot imagine a better supporter, partner, or friend. I would also like to dedicate this to my grandfathers, Grover Wade Edwards, Sr. and Charles Edward Whiteaker, Jr. Though they never saw its completion, I know they would be more than proud.

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CHAPTER 1

INTRODUCTION

Educational reform is in constant fluctuation. Higher education is notoriously reluctant to embrace change regarding classroom instruction and learning (Tagg, 2008). However, Universal Design for Learning (UDL) is a framework that some insist should be incorporated and implemented in all classrooms (Shah, 2012).

In the summer of 2018, a group of instructors and instructional designers at a rural community college in East Tennessee attended the UDL-IRN International Summit in Orlando, Florida. The purpose of the summit was to encourage instructors and instructional designers, as well as educate them on the benefits of designing courses with UDL. The information presented at the conference had a large impact on the current instructional design practices at the college. The Director of Instructional Design then offered a unique summer training program that would be offered to all instructors, including adjuncts. The training was conducted over a one-week period and attendees were offered compensation for successful completion. Beyond this, the instructors who attended would be offered the chance for more compensation to pilot a new program. This new program included offering one module during a Fall course that was designed using UDL principles. Each instructor was paired with a mentor who attended the summit, and when module plans were approved, the instructors taught the module and sent in a narrative detailing their experiences. Module approval was based on a college adopted rubric associated with UDL practices. Students who participated in a UDL module were asked to complete a survey about their experiences with the uniquely

designed module. As a result of the success of the pilot program, the training program was replicated the following summer.

One reason for encouraging the use of UDL in courses is to make them more accessible for all students (Hartmann, 2015). The Tennessee Board of Regents (TBR) developed a task force to oversee new accessibility mandates at all TBR colleges (The Tennessee Board of Regents, n.d.a.). Seale (2006) stated that colleges have long been advised to make materials more accessible to students due to legal, moral, and financial pressures and influences. As a result, community college administrators and course designers have been seeking opportunities to implement fully compliant accessible courses.

UDL could be an effective course design to address the needs of an ever-changing community college student population. In frequent attendance at Community Colleges are students who do not represent the attributes associated with college success. This population includes older students, students with remedial needs, and many other students who are outside a traditional learning paradigm (Burns, 2010). Because of its diverse learners, community college instructors are constantly seeking new methods to improve instruction. In 2018, the Tennessee legislature acted to implement the *Drive to 55 Initiative* that included a financial aid program for adult or nontraditional students to complete a degree. A central component of this legislation focused on the goal that by 2025, 55% of the residents of Tennessee would have a degree or certificate (Drive to 55 Alliance, 2018a; 2018c). The number of adults to take advantage of this program was nearly 14,700 in 2018 (Kast, 2018).

UDL has gained momentum. Rose (2000) explained in an early seminal article that the key takeaway of UDL is that content should offer diverse assignments and materials so that all students can learn without barriers regardless of their abilities or preferred learning methods. If a new instructional approach could address accessibility, as well as diverse learners, it is feasible that instructors in post-secondary institutions would embrace an opportunity to engage more students.

Purpose of the Study

The purpose of this quantitative study was to identify the perceptions of how Universal Design for Learning impacts motivation in first-year community college students in rural East Tennessee. This study aimed to explore whether or not UDL may have impacted the motivation to learn in participating first-year community college students in a rural area. This may be invaluable for evaluating how to best spend time and financial resources regarding training faculty on UDL for this college, as well as any rural community college looking to implement a UDL program.

Research Questions

The following research questions were used to examine relationships and compare other items related to the UDL pilot.

Research Question 1: Is there a significant difference in perceived content effectiveness between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module?

Research Question 2: Is there a significant difference in interactivity between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module?

Research Question 3: Is there a significant difference in motivation to learn between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module?

Research Question 4: Is there a significant difference in perceived content effectiveness between English students and Education students who have completed a UDL designed module?

Research Question 5: Is there a significant difference in interactivity between English students and Education students who have completed a UDL designed module?

Research Question 6: Is there a significant difference in motivation to learn between English students and Education students who have completed a UDL designed module?

Research Question 7: Is there a significant difference in motivation to learn between students who have completed a UDL designed module and identifying as being from a rural area and the test value of 3.66, the average motivation to learn of students identifying as non-rural, who have completed a UDL designed module?

Research Question 8: Is there a significant difference in motivation to learn between students who have completed a UDL designed module and are traditional students younger than 24, and the test value of 4.37, the average motivation to learn of nontraditional students over 24 who have completed a UDL designed module?

Research Question 9: Is there a significant relationship between predicted grades of first-year community college students who have completed a UDL designed module and whether or not they have completed the standard curriculum module?

Significance of the Study

Retention is vital to the community college, as it is directly related to financial support (Fike & Fike, 2008). Morrow and Ackermann (2012) found that motivation has a direct impact on retention. Because Universal Design for Learning is a framework offering flexibility and choice, it is important to know if this design method may increase motivation in first-year community college students. Because first-year community college students will have to face the decision whether or not to continue to a second year, this population is paramount for retention efforts. This study could reveal whether UDL is a worthy investment for community colleges. This may be especially useful for community colleges considering spending money on new UDL training programs. And more importantly, this could reveal a new framework to aid in retaining and graduating students who may need motivation to continue in their studies.

Definitions of Terms

The following definitions of terms are vital for understanding the study and the context in which the study was devised.

Content Effectiveness – In this study, content effectiveness refers to the measure of how effective students found content in the course to be. There will be some

overlap of content and interactivity because interactivity requires content and content may include interactive elements.

Course Grade – Course grade is the overall grade in the course on an A – F scale.

First-year college student – A first-year college student is a student who has earned less than 30 hours of college credit, as this is the first year of undergraduate work. First-year student is an undergraduate freshman (2010-2020 Common Data Set, 2019).

Instructional design – Instructional design is “... the systematic development of instructional specifications using learning and instructional theory to ensure the quality of instruction. It is the entire process of analysis of learning needs and goals and the development of a delivery system to meet those needs” (Brown & Green, 2016, p. 6).

Interactivity – Interactivity refers to the levels the student is interacting with the course and content. This will include engagement, and again, there will be some overlap of content and interactivity because interactivity requires content and content may include interactive elements.

Module – In this study, a module refers to “1 unit of information- as in 1 chapter for a history class, 1 essay for a Comp 1010 class, or 1 system in a biology class. It’s however the instructor chooses to chunk the information,” as defined by the Director of Instructional Design at the college used in the study (C. Justice, personal communication, February 11, 2019).

Motivation to learn – Motivation to learn refers to the motivation needed for “...students [to] initiate learning activities and maintain an involvement in learning as well as a commitment to the process of learning” (Ames, 1990, p. 410).

Nontraditional Student – A nontraditional student is a student over 24 or a student who is considered financially independent.

Retention – Retention is the percentage of students who return from one academic year to the next (U.S. Department of Education, 2019-20).

Standard curriculum – A master course is developed by a lead faculty in the department. It is assumed all adjuncts will use this developed course, but full-time faculty may be able to personalize or alter.

Universal Design for Learning (UDL) – As further defined in Chapter 2, UDL is an method of course design and teaching that allows for built in choices so that students may interact with content and assignments using methods most conducive to their individual needs and learning styles.

Delimitations and Limitations

One delimitation of this study is that the UDL training and acceptance parameters were unique to a single institution. Another delimitation is that this study focused only on only certain aspects of the learning experience. A further delimitation is that the study was conducted in only two content areas. Different courses may experience different results. And finally, the survey used in the study was specifically created for online classes only.

A limitation is the personality of the instructor. Student rapport with instructor and instructor personality could account for course motivation. Another limitation is the subtle curriculum changes from instructor to instructor. These could have affected overall motivation. Finally, survey conditions may have affected overall results. Because the students completed the surveys in class, students may have responded to items differently due to the teacher being present in the classroom.

Overview of the Study

Chapter 1 provides context for the study, purpose, and nature of the problem. Chapter 2 reviews the literature on Universal Design for Learning, Motivation, Adult Learning, First-Year Community College Students, and other vital areas to this study. Chapter 3 discusses the methodology chosen, population of study, ethical considerations, and provide justification for those choices conducive to this study. Statistical analyses performed on each research question are reported in Chapter 4. And Chapter 5 discusses findings, conclusions, and recommendations for future study.

CHAPTER 2

LITERATURE REVIEW

There have been numerous studies on first-year community college students (Krumrei-Mancuso et al. 2013; Chen 2018; Bowman, 2010), rural students and technology (Hannum, Irvin, Banks, & Farmer, 2009; Scott et al., 2016; Trabuc, 2015), and on Universal Design for Learning (UDL) (Archambault, 2016; Bowe, 2000; Courey, Tappe, Siker & LePage, 2012). However, there is a paucity of research on how UDL may or may not motivate first-year community college students, specifically in East Tennessee. It is important, however, to understand the current research on Universal Design for Learning, motivation theory, characteristics of first-year community college students, as well as rural students and technology individually before conducting research on how these components may interact. A review of the current literature will provide the fundamental background on all these elements.

Universal Design for Learning

The Center for Applied Special Technology (CAST) specified that, rooted in learning theory and empirical investigation, Universal Design for Learning (UDL) is a design and teaching concept which may allow instructors to reach more learners (CAST, 2018). According to CAST, in 1988 Ron Mace created the term “universal design” (CAST, 2018). In a foundational review of the history of UDL, McGuire, Scott, and Shaw (2006) recap how Ronald Mace developed UDL as a means to ensure buildings were accessible to individuals with disabilities. Architecture and design had

previously been dictated based on traditional consumers. However, Mace instated the idea that all product development should be built with the concerns of all consumers considered, including those with disabilities and diverse needs (McGuire et al., 2006). Creating and developing businesses with diverse people in mind would mean saving the business time and energy later by not constantly having to implement changes to allow service and entrance to all visitors. This is seen today in elements such as automatic doors.

UDL used for this purpose consists of seven distinct principles. These are: Equitable Use, Flexibility in Use, Simple and Intuitive Use, Perceptible Information, Tolerance for Error, Low Physical Effort, and Size and Space for Approach for Use (National Disability Authority, 2014). These principles are the building blocks for ensuring the design of a building, for example, is inclusive. However, these principles do not directly apply to the field of education. The connection from consumer-based principles to education would be inevitable, since reaching as many students as possible has always been a prime concern for most educators. Accommodations for students often take time to implement during and after a lesson. By using UDL to design lessons for all students in mind, including the most diverse learners, teachers benefit everyone in the class and save time and effort planning ahead (Spencer, 2011). As a result, UDL is now embedded in Education.

The National Disability Authority UDL principles have been modified for an educational context to include three basic design tenets: *modes of representation*, *modes of action and expression*, and *modes of engagement*; these concepts offer diverse methods of classroom participation (Courey, Tappe, Siker, & LePage, 2012, p.

10). Modes of representation is the design tenant associated with making materials accessible for the widest possible range of learners. Action and expression relate to methods of assessments and ways in which students demonstrate understanding. Finally, engagement refers to inventive methods to inspire attentiveness, investment, and enthusiasm in learners. With these three basic tenants in mind, designers and teachers have a starting place for utilizing UDL in planning.

Rather than focusing on instruction, UDL has foundations in designing and planning. Shaw (2011) pointed out that UDL goes by various terms: “universal design for instruction, universal design for learning, and universal course design.” However interchangeable, these terms are still all about methods of making content available to all learners (pp. 21-22). UDL focuses on designing, rather than just instructing in the classroom. As a formative proponent regarding UDL in education, Bove (2000) explains that UDL differs from other design methods like Backwards Design and ADDIE because with UDL, teachers should ensure that materials are delivered via various methods, means of engagement with the course materials and objectives are diverse, there are alternative approaches to encourage learner relatability, interest, and self-engagement, and technology is used in constructive ways (Bowe, 2000). ADDIE and Backwards Design have both been ingrained elements in teacher education programs, but there is now a call to bring UDL into the teacher education preparatory program. Jiménez, Graf, and Rose (2007) encouraged cooperation between departments in colleges and universities to instruct upon the principles of UDL as a foundation for future expansion. This is novel in the way that it truly embraces putting instructors in the role of instructional designers, as well as aids them in maintaining their position as the

classroom teacher. Many instructors would traditionally enroll in an instructional design course to receive thorough in-depth training on course designing. But UDL is different because its focus is not just on design but also on the course materials and actual lessons themselves.

Pioneers Rose and Meyer (2002) explain that validation and justification for UDL can be associated with the findings from brain research. Like learning styles, disabilities, and other issues that increase diversity amongst students, brain development and brain functionality also differs from person to person, which may impact learning differences. Rose and Meyer (2002) explained that Positron Emission Tomography (PET) Scans show that when many individuals "...recognize an object visually, [it] show[s] increased activity in the back part of their brains; however, the exact magnitude, location, and distribution of that increased activity varies quite a bit" (p. 18). In fact, the authors insisted that while one might assume brain configuration would be identical between two people if they executed identical learning activities, in fact, the brain sequences are totally individualized (the authors compare them to fingerprints). This indicates there is an actual physical need for diversified learning because if all brains do not process the information in the same way, then instructors cannot possibly present information the same way and expect all students to understand it. And as Bowe (2000) pointed out, we can incidentally benefit the education of a larger fraction of students by planning for those that are unlike what educators often refer to as *traditional* students (p. 7). However, it is worth noting that if brain activity can differ from student to student, then perhaps there is no such thing as a *traditional* student to begin with. And if we accept that as truth, then instructors should consider for whom they are developing lessons.

This is the question that many school and university administrators are asking of their teachers. And so, school faculty are embracing Universal Design for Learning. Before further discussing UDL, it is important to know what expectations are fundamental to UDL.

Universal Design for Learning has guidelines for practice of varied instruction and UDL in the classroom. As previously mentioned, UDL for education requires that there be multiple and diverse means of *engagement*, *action and expression*, and *representation* (CAST, 2018). The engagement element focuses primarily on motivating students to interact with the class and material. While there are many checkpoints for engagement, this area could involve elements like working alone versus working in groups or allowing students to use different tools to interact with the material. The central focus is choice because the element of choice can encourage confidence, will, involvement with education, and motivation (CAST, 2011). Engagement also includes the use of different forms of assessment (CAST, 2018). Action and expression implies reevaluating traditional forms of assessment. CAST (2018) explained that, defined as the *how of learning*, action and expression is about offering students diverse methods to interact with course material and to show what they know. But again, as with all sections in UDL, offering choices is paramount (CAST, 2011). The third area, representation, focuses on multiple ways to learn the information in the class. Because learners can be identified as auditory, visual, or kinesthetic, multiple representations can encourage learning and connections between ideas (CAST, 2011). This area directly relates to addressing learning disabilities because some students need assistive technologies, larger letters, or even closed captioning in order to access curriculum. Although UDL

comprises a wide variety of design areas, proximal to a classroom that is engaged in UDL principals are these three elements.

Accessibility as it Relates to UDL

As it is a vital component in UDL, it is necessary to understand how this study, as well as others, are affected by accessibility. Recent laws and lawsuits have mandated that college and schools initiate steps to make the classroom more accessible, mimicking Mace's original work on UDL. Because this study will take place in Tennessee, it is important to understand the initiatives that the Tennessee Board of Regents, the governing board for community colleges, is currently encouraging. The TBR's website, *Accessibility Initiative*, discusses resources for TN goals for accessibility and how campuses have been involved with various activities and training opportunities to encourage overall educational accessibility. Also included on this site is a timeline for achieving these accessibility goals (The Tennessee Board of Regents, n.d.a).

The *Accessibility Initiative* further lists official Recommendations of the *Higher Education Accessibility Task Force*. In this document are nine initiatives to increase accessibility with regards to *Instructional Materials* in postsecondary courses under TBR control (The Tennessee Board of Regents, n.d.b). While UDL may not address every initiative established by this Task Force, it is conceivable that if information is presented in a variety of ways, UDL could play a central role in achieving these current goals TBR has established for its colleges.

UDL has already shown promising results regarding accessibility. Kumar and Wideman (2014) conducted a case study at Ontario University looking at how students

and instructors perceive UDL in a first-year undergraduate course. The course was designed around UDL principles, and then students were interviewed regarding their overall perceptions. Findings were largely positive, but perhaps the most noteworthy result of this study was that because the course material was presented in a variety of ways and methods, the authors stated that there was a reduction in the utilization of the department of disability services. This implies that UDL can not only have a positive impact on students who do not need disability services, but that UDL could actually lessen the need for accommodations. Hartmann (2015) agreed that UDL could be a game-changer for students with disabilities and other learning barriers. The author stated that teachers should expect that diversity in ability is part of education, and designing classes with all populations in mind, including those with disabilities, allows the students to continue to access material and activities. This encourages course design to align with the students' needs rather than forcing the students to align with the course. UDL could be conducive to a barrier-free classroom for many students who struggle with learning disabilities. However, other students will also benefit under the broad umbrella of accessibility.

Wilson (2017) experienced encouraging results first-hand. This professor found that after applying UDL to the curriculum and course design, the results were overwhelmingly positive. The author added that the hypothesis for this is that UDL is far more flexible and inclusive than a traditional curriculum modeled around a *traditional* student. The author concluded that UDL recognizes that the various issues students face outside of disabilities such as language barriers, approaches to learning, and even educational history, are often the same issues students with disabilities confront.

Regarding languages, ESL (English as Second Language) students who often need additional assistance due to language barriers may also benefit from UDL regarding accessibility and course design. Doran (2015) explored how to use UDL to aid culturally and linguistically diverse and exceptional (CLD/E) and culturally linguistically diverse learners (CLD). The author suggested that UDL is one way to specifically reach these learners because of the choice element, as well as multiple methods of presenting information and varying options of student expression; CLD and CLD/E learners may be especially benefitted from UDL. Accessibility is an issue that every college and school must now face, and UDL could be one way of making that path more manageable.

Learning Styles as a Component of UDL

Another imperative element of UDL is learning styles, and as they were considered as part of the training in the community college used in this study. Learning styles are the individual ways of how we learn and process information, and while they have been controversial and divisive, Landrum and Mcduffie (2010) contend that regardless of which camp one falls in regarding incorporating learning styles into planning, diverse instruction is needed. Of historical relevance, Silver, Strong, and Perini (1997) explained the differences between multiple intelligences and learning styles:

In the 20th century, two great theories have been put forward in an attempt to interpret human differences and to design educational models around these differences. Learning-style theory has its roots in the psychoanalytic community; multiple intelligences theory is the fruit of cognitive science and reflects an effort

to rethink the theory of measurable intelligence embodied in intelligence testing.
(para. 2)

And while Gardner's theory of multiple intelligences has been used for many studies in instructional design, UDL may have a firm footing in Learning Styles. There are many learning style theories, but the Felder-Silverman model was used in the pilot program in which this study is grounded.

Felder and Silverman (1988) pioneered Learning Styles in Engineering Education. The authors suggested that instructors should do their best to teach to the majority of students by making small additions to instructional methods and a majority of students can be taught, even though there could be an abundance of styles and ways in which students learn. The authors explained that their model utilizes a multidimensional scale-based system to categorize students according to assigned style. The authors also proposed that there are 32 distinct learning styles. However, again, the authors suggested that a teacher can address most of these styles by the addition of small changes in teaching strategy. In a handout based on the Felder-Silverman model, the styles and areas addressed are *Active and Reflective* learners, *Sensing and Intuitive* learners, *Visual and Verbal* learners, and *Sequential and Global* Learners (Felder & Soloman, n.d.). As these are the learning styles used at the college in this study, it is necessary to elaborate on the different facets of these learning styles. Felder and Soloman explained that an active learner wants to jump in and try out the new skill, whereas a reflective learner would rather think through the task at hand before tackling it. Sensing learners, unlike intuitive learners, are comfortable with memorization, patterns, repetition, routines, and practical/physical tasks. Intuitive learners prefer to

work with more abstract concepts, as well as exploring connections. Visual learners prefer to incorporate visual representation to aid them in learning, but verbal learners prefer a more verbal delivery. Sequential learners prefer to learn in sequence, with clear chronology. Global learners see “the big picture” and do not need a sequential breakdown. The important thing to remember with learning styles is that these are often on a range, and thus, one person may be more visual than verbal, for example, but there is not an absolute cutoff line for a learning style. The handout further pointed out that for each learning style, everyone experiences both styles in this range because the more well-rounded we are, the better students we are. Understanding these learning styles can help develop deeper understanding for using UDL as a means to diversify teaching to learning styles. This is why every participant in the training program completed a quiz to see what learning styles they exhibited. This would also be considered when designing their URL modules.

Current Studies on Implementing UDL

Many K-12 schools have already integrated UDL, with mostly positive results. The Project Forum at National Association of State Directors of Special Education (NASDSE) polled Local Education Associations who were actively implementing UDL programs. Participants were interviewed, and the results showed that the participants were happy with the decision to integrate UDL, and they concurred that it has helped their students. They also noted increased scores, engagement, and a stronger overall student interest in their education (Sopko, 2008). But positive outcomes are not unique just to American schools. Katz (2013) also presented a study working with 631 students

in grades 1-12 in Manitoba, Canada. The instructors were asked to utilize the Three Block Model of Universal Design for Learning as part of planning, designing, and their implementing lessons. Katz explained that the Three Block Model includes: “Social and Emotional Learning,” “Inclusive Instructional Practice,” and “Systems and Structures” (p. 192). The results of this quantitative study found that by implementing the Three Block Model of UDL, student engagement increased and that overall, there was a significant increase in student engagement for those exposed to UDL when compared to the control groups. And while studies like these are encouraging, it is not limited just to K-12 classrooms because UDL is also making its way into many college and postsecondary environments.

Postsecondary Programs Embracing UDL

Some colleges are implementing UDL. While positively perceived, there is currently a limited number of studies focusing on UDL and higher education (Scott, Temple, & Marshall, 2015); however, what studies are available regarding postsecondary settings have also shown positive results by executing UDL programs. Dalton, Gronseth, and Anderson (2017) agree that UDL is an instructional design construction that can reach a large number of students in the higher education classroom. Postsecondary students are anything but traditional. And Bowe (2000) pointed out that postsecondary also includes adult learners. Forerunners Scott, McGuire, and Shaw (2003) further clarified by saying that various demographic characteristics aligned with low socioeconomic status, as well as increasing college attendance, have altered the genetic makeup of postsecondary education. By using

UDL to address diverse learners, Shaw (2011) said that it is not just students who benefit from a Universally Designed program; even administrators and faculty see the positive impacts. Another element worthy of consideration in many postsecondary schools is the offering of online classes, which Morra and Reynolds (2010) suggested can be enhanced using UDL principles.

Archambault (2016) published a dissertation that explored the buy-in of UDL in a college environment: UDL enhanced the learning process, as attested by faculty and staff, even though there was some resistance. However, ultimately, the author agreed that UDL could be an accessibility game changer for postsecondary institutions. McGuire and Scott (2006) looked at how UDL might affect college students and found that students were optimistic regarding their college education and they discussed what constitutes as productive college instruction, regardless of obstacles they may have faced. These are qualities that could be enhanced with a Universally Designed Curriculum. Shaw and Van Leuven (2019) aimed to discover more about faculty and student perceptions at a public northeastern university. The developed survey was emailed to students and faculty in Communication Studies. The results showed that while both faculty and students believed in the principles governing UDL, they did not necessarily see it in constant practice. But at some schools, UDL is being observed in practice. One such college, Greensboro College, has a unique goal of utilizing Universal Design as part of their strategic vision: “One of the core academic missions of The Strategic Plan of Greensboro College is: Greensboro College will become a UDL institution” (Bodgan & Pass, 2018, p. 120). Though they are a small private university,

their commitment to UDL is remarkable. With a five-phase program in place that started in 2018, the college may be acclaimed as a UDL example in postsecondary education.

In the quest to embrace UDL, different colleges are trying different programs. Kennette and Wilson (2019) explored how UDL elements were being implemented in classes and perceived by students enrolled in a certificate program at Durham College in Ontario, Canada. While there were over 600 students enrolled in the program, total survey response was 17. The survey created used checkpoints generated by CAST to explore how students were seeing UDL elements in their courses. Overall, students found that they did encounter most UDL elements in class, and the students found them helpful in their learning. In a second experiment, the faculty members in the program were also invited to respond to a modified survey. 11 faculty members responded with similar results. The faculty members reported using many UDL elements and placing value on them. Buckland Parker (2012) interviewed four faculty members involved in a UDL grant program at a New England university. The study focused on faculty with large enrollment classes of 65 students or more. The themes that emerged were that these instructors were finding students more engaged, despite the high student teacher ratio. The faculty also mentioned engaging technology and great results for students with disabilities. Rodesiler and McGuire (2015) presented a case study exploring a grant-funded workshop for learning how to incorporate UDL in Developmental Courses. This grant-funded two-day workshop included mostly adjuncts. This is significant because even part-time faculty appeared to be invested in the possibilities of UDL. Pace and Schwartz (2008) offered a study particularly looking at how integrating clickers into a special education teacher preparatory program utilized technology and UDL. While

the professors in this study were open to the ideas of UDL and technology integration, they reported several obstacles utilizing the clickers. Overall, the conclusions of the study were that while challenges may arise when transitioning postsecondary programs to UDL, there is potential for such programs. Lightfoot and Gibson (2005) made a strong argument for integrating Universal Instructional Design in a Social Work classroom. The authors suggested that while new and lacking in time-tested research, UDL could be a great way to engage a broader range of diverse students during their education. They also said that it would not only benefit social work students, but also instructors because teachers often have to provide and create accommodations for learners as needed; large amounts of time can be saved by planning for the adjustments during the actual lesson plan creation, as a result of implementing Universal Design for Learning.

Leichliter (2010) offered a case study looking at two biology courses at a college in West Virginia, and through observations and interviews, the author determined that the biology instructor was already utilizing UDL principles, even though she was not aware of UDL. The students also positively responded to the class and the class activities based on UDL principles. At the University of Tennessee at Knoxville, the FUTURE program is a program that offers postsecondary education to students with disabilities that may otherwise keep them from college credits. The program faculty recognize that many classes at the college are lecture and handbook heavy, but they contend that UDL could benefit numerous learners. While embracing UDL, "One FUTURE program goal is to promote UDL among UT Knoxville faculty through training, in-class support, and communication" (McMahon & Smith, 2012, p.2). The University of North Carolina system has also fully embraced UDL with College STAR. This grant-

initiated program was put in place to try and use UDL principles to better serve North Carolina postsecondary students (College Star, n.d.).

Even graduate courses are engaging in UDL research. Scott, Temple, and Marshall (2015) looked at three online graduate classes and explored whether designing online courses with UDL principles in mind led to more prepared students. After designing three courses with UDL principles in Spring 2014, the research team designed an online survey using a Likert scale. The survey was then administered to 37 participants. The results indicated that the participants believed that the UDL design positively impacted their learning experience in the course. They do note, however, that the participants' perceptions and actual performance could differ; however, overall, the study suggested future research on UDL in postsecondary classrooms is warranted. Parra et al. (2018) found that in an online learners technology course that used UDL to teach the principles of UDL, graduate students found that incorporating UDL was very difficult. They also reported that they enjoyed UDL, but wanted even more choice and option built into the course. Overall, the researchers argue UDL would be a lucrative option for many teachers and students. Thus, UDL is being tested and researched in a variety of postsecondary settings.

Community Colleges and UDL Studies

Community Colleges deserve a special discussion because unlike universities, many community colleges have an open admission policy. Community Colleges educate a unique populace, and because of open admission policies, they often see much more diverse students in one class. Schuck and Larson (2003) looked at what

makes community colleges exceptional, as well as what challenges and obstacles they may face when utilizing UDL. The article explained that defining an average community college attendee is just not plausible. The author asserted that UDL is an excellent path for community colleges, but there are special obstacles that community college instructors face such as diversity, the high number of adjuncts, and a lack of resources. But Schuck and Larson (2003) claimed that even though these obstacles exist, UDL is a path that will allow community colleges to continue serving their population, while also providing a strong educational experience. Gawronski (2014) measured faculty and student perceptions of integrating UDL into a community college. The study found that both faculty and students had positive reactions to UDL; however, they did not see it consistently executed in their classrooms. The author contends that UDL holds excellent promise for community colleges to continue to address their unique learners. However, studies are still limited concerning community college and UDL instruction.

Motivation in Education

It is vital to discuss motivation and current research available. Motivation is certainly not a novel concept in educational psychology, and it has been widely researched and explored. In an early study on motivation, Hunter (1967) explained that motivation is described “as a state of need or desire that activates the person to do something that will satisfy that need or desire” (p. 4). While it seems simple enough, there are many theories related to motivation. Hunter added, for example, that motivation involves “interest,” “success,” “difficulty,” “knowledge of results,” and “relation of the activity to an internalized goal” (p. 7). Motivation falls into two broad categories:

intrinsic and extrinsic. Intrinsic motivation has several debated definitions, but one proposed definition defines it simply working towards an objective and just being driven by self-goals or directives (Petty, 2014). Contrastingly, extrinsic motivation is derived from receiving rewards, averting negative penalties, or for acceptance or approval (Bear et al., 2017). Because college students choose to go to school, intrinsic motivation must certainly be present, but because grades are given, there is also an element of extrinsic motivation. However, innovators in the field, Ryan and Deci (2000) found that extrinsic motivators can harm intrinsic motivation if they hurt a person's perceived self-worth, but they can also encourage if used to grow confidence. However, intrinsic and extrinsic motivation does not translate as simply good and bad, when it comes to measuring motivation. Hunter (1967) asserted that while both can be positive, intrinsically motivated activities involve an obvious path to a desired outcome; therefore, the task has a clear incentive. Additionally, the details of the objective required to achieve the goal can be deduced ahead of time and will remain as expected throughout. However, a characteristic of extrinsically motivated errands is that this may not be the case and, whenever the task is performed, an examination of the situation must be enacted to ensure the task still aligns with the goal. Knowing about general motivation is not enough, however. Much can be learned from understanding what specifically motivates students.

Many theories on motivation and education have been published, but some studies have greatly contributed to educational psychology and our understanding of student motivation. Ray (1992) explored the history of psychological theories on motivation, including looking at theories by Freud and Jung. The author also discussed

locus of control, attribution theory, and intrinsic and extrinsic motivation. Finally, the article looked at the role teachers and parents play in motivating students. Ames (1990) took a thorough look at self-worth, attributions, and achievement goals. Ames (1990) also looked at how educators can enhance motivation. Ames stated that teachers have a responsibility to explore theoretical knowledge about motivation, and then use that information when building lesson plans and curriculum. Unlike secondary and elementary students, college students are independent learners, and therefore, could be motivated differently. When it comes to college students, Rugutt and Chemosit (2009) looked at how faculty and peer interaction, as well as critical thinking in schools, affected student motivation. The study found that all three variables did seem to have an impact on student motivation in higher education. One could classify these three areas as elements of intrinsic motivation. According to Lei (2010), the intrinsically motivated college student has several advantages over those students who are mainly extrinsically motivated. Lei added, "Apparently, intrinsic interests and satisfactions are the ideal sources of motivation in the college classroom" (p. 159). Williams and Williams (2011) theorize that there are five key ingredients to improve student motivation. The first element is the Student. The authors explain that the Student area relays that the student is an essential component in the learning process and thus needs to be considered. Areas to discuss could include intrinsic and extrinsic motivation, which has already been described above, individual and social influences, and various other areas that would encourage or discourage student investment. Teacher is the second ingredient for motivation, as the teacher's interest level and knowledge, for example, can affect students' motivation. The third ingredient is content, as the content should be

relevant and purposeful. The fourth ingredient is method or process. This area explores how delivery of content can affect student investment. And finally, the fifth ingredient is environment. While the authors do admit that all five ingredients may not be achievable at once, even attempting to combine as many as possible will lead to greater conceivable motivation for students (Williams & Williams, 2011). An important study by Tinto (1999) contends that just because colleges explore the reasons students do not persist in their education is not the same as learning how to actively keep them. The author adds that faculty plays a large role in maintaining student persistence. Komarraju et al. (2010) found that faculty interaction is also instrumental in student motivation in the college classroom. They add that professional development designed to impart to faculty how vital these interactions can be would be prudent. Austin and Sorcinelli (2013) also argue that the future of professional development with college faculty will be essential due to the increasingly diverse college population. This role of faculty in maintaining retention is echoed by O’Keeffe (2013), and Tinto (1999) stated that unlike K-12 teachers, college faculty tend to lack training in a formal education program, which adds to the ongoing need of professional development.

Testing in motivation in education has declined over the years (Lazowski & Hulleman, 2016). However, the argument is made that intervention testing is missing from current educational research, as it offers tremendous value in knowing what works and what does not in the classroom. After completing a meta-analytic review of 74 published and unpublished works spanning across 92 fields (with a total 38,377 participants), Lazowski and Hulleman (2016) found that intervention testing grounded in motivation theory was overall very successful in increasing student motivation in the

classroom. The researchers also found that motivation is very much a key component to successful completion of educational outcomes. The authors added that intervention testing is a strong testament to what can actually work in the classroom. Similar results were found in a study on nursing students at a Florida college. In this qualitative study, motivation was shown to be a large factor in degree persistence (Saith et al., 2017). Another study was done with the students at Al-Ain University in United Arab Emirates to see what most encouraged students' motivation from the student's point of view. A Likert scale survey was used for the 5 random classes at the university. The results yielded three factors that were more significant. The first was the qualities of the teacher. The teaching methods was the second factor in increasing motivation. And the third factor was classroom management (Halawah, 2011). Martin, Galentono, and Townsend (2014) completed a qualitative study that explored the characteristics of community college students who continue to pursue their degree. This study took place at a large community college in the southeastern United States. The themes that emerged were self-encouragement, managing responsibilities, self-motivated and driven, and solid objectives. Thus, while studies are currently limited, there is hope that motivating college students is certainly an attainable goal.

First-Year College Students

Retention of first-year college students is necessary to understanding potential perceptions of motivation within this group. The first year of college can be a very stressful time. Bowman (2010) found that first-year college students face a great many obstacles, both academically and personally. Because this first year is wrought with so

many new experiences, attrition is very important. But when evaluating first-year students' psychological well-being (PWB), Bowman found that experiences during that first year can leave major impacts on these learners. Deangelo (2014) found that because first-year retention is so vital, that further study into what works and what does not is imperative, and the author did find that participation in a first-year program or orientation cohort did positively affect retention in the way that it encourages students to interact outside of class. The key is that these first-year programs must maintain quality and be ingrained in part of the overall college experience. Just being offered is simply not enough. Siegel (2011) observes that despite the long history of attempts to solve the issue of student retention, and although universities and colleges typically produce schemes to increase student retention, no matter the novelty, these schemes unfortunately do not often transfer into effective means of affecting retention rate. Thus, there are no shortcuts or one-size-fits-all solutions to the problem of increasing retention. However, not all retention efforts are in vain.

Many studies, including that of Strayhorn (2018) concluded that a sense of belonging is critical in student success. O'Keeffe (2013) found that a sense of connectedness and belonging is vital for student retention. Factors that influence this connectedness are faculty and student concern, the life the student has outside of school, and even student support services. Krumrei-Mancuso et al. (2013) deemed that, while acknowledging that such factors are only a small component of the overall, internal characteristics of the student should be considered as an important aspect in positive academic attainment. As opposed to inherent academic or general ability, the psychology of a student is not a constant throughout a university or college experience.

Thus, gradual progress can be made by offering an environment to encourage, motivate, and guide a student towards thoughts and behaviors, which have been shown to align with effective educational results. Kuh et al. (2008) conducted a study that concluded that "...student engagement in educationally purposeful activities is positively related to academic outcomes as represented by first-year student grades and by persistence between the first and second year of college" (p. 555). The researchers added that motivation and interest is directly related to a successful first year and second year return. Hu (2011) concludes that there is not a simple relationship between academic engagement and student persistence from the first to second year. In fact, without additional social engagement there is a negative relationship. And research conducted by Stupnisky et al. (2008) offered a study demonstrating "...creating a high control environment during the first-year of college fosters a critical thinking disposition and bolsters academic success. Also, by fostering students use of critical thinking their perceptions of control may also increase" (p. 527). The researchers further add that while this study may demonstrate small effects, due to the nature of grade boundaries, small changes can result in major accomplishments such as being recognized for academic achievements, academically rewarded financial aid, and building relationships with faculty. Thus, small changes can result in significant student success. Latham and Gross (2013) used a focus group to garner more information on how first-year college students learn best. These students had lower-proficient skills, and they identified many factors that increase learning, but when it came to instructional preferences, the focus group pointed out that besides teacher characteristics, relevance, variety, and choice all increased engagement with the course and material. Similarly, 13 at risk students

(based on receiving English intervention in high school) students who completed at least one year of community college level courses in Southern California were interviewed to find out what motivated them to continue past their at-risk label. Many themes emerged regarding what decreased and increased their motivation to persist in their studies. One theme that was elaborated on was that students preferred assignments and material that appealed to their interests. The students also found that the college environment offered students more choices, and these choices were motivating (Kawai, 2014). As offering choice is an essential element in UDL, this information could be relevant.

First-Year Community College Students

For community college, retention is especially important. In foundational studies, Fike and Fike (2008) found that retention and graduation numbers can mean financial support, and numbers can be a measure of success. Because of that, it is necessary to explore the strongest means to retain community college students. Mertes and Hoover (2014) highlighted several significant items towards student retention: Although a small effect, a significant correlation was found between high school GPA and student retention; significance related to lower minority retention was found in some data when sample sizes were sufficient; age differences yielded significant but inconsistent results, so the authors proposed further study; and in one group studied, significantly lower retention was found for part-time versus full-time students – expected due to conflicting outside issues and responsibilities that are common for part-time community college students.

Heller and Cassady (2017) examined what issues or obstacles first-year community college students might face and what might prevent them from continuing their studies beyond that first-year, and they found that earlier evaluation and collaborating intermediation are paramount for postsecondary institutions. However, Chen (2018) explained that "...even when support is available, students who take remedial classes are far less likely to graduate – after five years, only about 25 percent obtain a degree" ("The Misconception About 'Students,'" para. 2). It is important, therefore, to aim to understand characteristics of first-year community college students, so retention can be more attainable. Not only do these students deal with typical amounts of adjustment and stress for the first year of college, but community college students do have unique experiences and struggles during their first-year of college instruction.

Again, it is vital to understand that community college students are different from university or four-year college students. For one, community college students often enroll adult or nontraditional students, and they are often more senior than a typical university attendee (Fike & Fike, 2008). Fike and Fike also added that community colleges see more minority students, part-time students, and learners less academically ready for college. When looking at developmental students at the community college, Pruett (2015) found that besides GPA, the amount of academic investment and engagement was the largest indicator of continued success. But the role of the student as a learner is also important. Crisp and Mina (2012) state that the community college is at a severe disadvantage when it comes to student outreach due to students living off

campus and the fact that community college students have many obstacles to face that the college cannot address.

Liao et al. (2014), found when studying 310 community college students in urban New York, that having extrinsic motivation and possessing the ability to effectively learn independently were significantly and positively aligned with student persistence. However, Liao et al. also found that there was not a direct relationship between academic effectiveness and persistence; the effect was produced via an equivalent increase in extrinsic motivation by ways of improving a student's attitude to the educational process. For example, the potential for societal and financial progression as a result of educational achievement are important extrinsic motivational factors and, as such, contribute to a student successfully progressing through an academic program.

One reason graduation rates may be less than satisfactory currently could be because of how students take and pace classes. Belfield et al. (2016) found that when it comes to Tennessee community colleges, encouraging full-time students to take one more class per semester, or maintaining a 15-credit hour load rather than the standard 12-credit hour load, can actually lead to higher rates of graduation. The number of students currently taking a 15-credit hour load was only 28%. Thus, the study recommended that community colleges should implement policies to encourage students to take the higher number of classes per semester in order to see higher graduation rates. The study also found that this was particularly beneficial to minority students. Neal (2009) looked at first-year community college students at the 7th largest community college in California, American River College. Using the Community College Survey of Student Engagement, the researcher aimed to discover what students

perceived as the most valuable elements in continuing to pursue their degree passed that first year. Surprisingly, the students appeared to place higher value on campus engagement with clubs and student services, whereas the faculty thought they would more value active learning and group work, among many other valuations. However, the study did support the notion that active learning can impact student engagement, even if students are not aware of the connection. This was especially evident in the qualitative part of the study. Ultimately, this study does show that how students perceive their engagement can be different from how faculty perceive the students' engagement. While all students are unique, first-year community college students often face challenges and even have goals that may differ from four-year university students. As previously mentioned, another thing worth noting is that community colleges often see adult or nontraditional students.

Characteristics of Adult Learners

“Nontraditional student” or “adult learner” is often defined in several ways, but according to Hess (2011), “We've historically defined ‘nontraditional’ students as those over the age of twenty-four, those enrolled part time, and those who are financially independent. But today, the ‘typical’ student is the exception” (para. 1). The National Center for Education Statistics (NCES) (2018) explained that NCES (2018) compared the national rate of increase in enrollment of older (25 and over) against younger (under 25) university and college students. The younger student enrollment rate of increase was higher between 2007 and 2017 than the rate of increase in older student enrollment. This comparison was predicted to hold in the future. However, of the new

students who enrolled in 2017, 39.9% (7,879,000) were older students. The NCES further added that “Enrollment in degree-granting postsecondary institutions of students who are 25 to 34 years old increased 35 percent between 2001 and 2015; and is projected to increase 11 percent between 2015 and 2026” (Hussar & Bailey, 2018, p. 25). Thus, adult learners should not be overlooked when analyzing learners in postsecondary institutions, including at community colleges because keeping these nontraditional learners in mind could be instrumental to reducing attrition and encouraging graduation and completion (Smith-Barrow, 2018). Anderson (2016) agreed that because these student enrollments are increasing, colleges have a responsibility to develop methods of academic care and financial bolstering. But before colleges can determine how to best meet the needs of adult learners, it is essential to recognize how motivation in adult learners differs from motivation in traditional students.

Wlodkowski and Ginsberg (2017) stated that motivation in adult learners has a foundation in personal accountability. Motivation is important for any student, but unlike traditional students, adult students are most likely returning to school after being out of school for several years or more. And because of this separation from formal schooling, adult students will experience motivation in different ways. In this bulleted item list,

Wlodkowski and Ginsberg (2017) go on to say,

What these differences in experience mean motivationally is that adults are more likely than children to have these characteristics:

- To use relevance (what matters rather than what is playful or stimulating) as the ultimate criteria for sustaining their interest

- To be more critical and more self-assured about their judgement of the value of what they are learning
- To be reluctant to learn what they cannot endorse by virtue of its value, usefulness, or contribution to their goals
- To be sensitive to and require respect from their teachers as a condition for learning
- To want to actively test what they are learning in real work and life settings
- To want to use their experience and prior learning as consciously and as directly as possible while learning
- To want to integrate new learning with their life roles as parents, workers, and so forth (p. 85)

Bye et al. (2007) found that the analysis of motivation shows that due to the fact that nontraditional students, or adult students, are usually far more intrinsically motivated, patterns reveal that these students tend to show marginally higher overall motivation levels than that of traditional undergraduate students. Malone (2014) confirmed this by saying that adults will be more motivated by intrinsic forces if they find interest and meaning in the content, and if they see direct relation and applicability to their overall objectives.

Adult Learning Theory often begins with Malcolm Knowles, who is heralded as a foundational leader in adult learning, and his *Theory of Andragogy*. This theory states that unlike younger learners, adults require special consideration because they take a more active role in the learning process. The want to know why something is being taught and specifically how it connects to their goals. The theory offers that "(1) Adults

need to know why they need to learn something (2) Adults need to learn experientially, (3) Adults approach learning as problem-solving, and (4) Adults learn best when the topic is of immediate value” (Kearsley & Culatta, n.d., para. 2). Also attributed to Knowles is Self-Directed Learning. According to the Teaching Excellence of Adult Learning (TEAL), self-directed learning “... is an informal process that primarily takes place outside the classroom. What qualifies learning as ‘self-directed’ is who (the learner) makes decisions about content, methods, resources, and evaluation of the learning” (TEAL, 2011, p. 2). Concerning self-directed learning, by evaluating requirements, objectives, available support or tools, assessing results, and devising strategies for accomplishment, learners can take ownership of the process of their education.

TEAL also described Transformative Learning as a strong element in adult learner theory: “Transformative learning (TL) is often described as learning that changes the way individuals think about themselves and their world, and that involves a shift of consciousness” (TEAL, 2011, p. 2). But there are many more theories applicable to adult learning. TEAL did add that without evaluating theory and current research about the adult learner, one cannot be as effective in instruction without application of this knowledge, and as evidenced earlier, an understanding of theory and what motivates adults to learn are essential elements in retention of nontraditional students in postsecondary education. And as first-year community college students could very well include adult or nontraditional students, it is also important for the purposes of this study.

Rural Students and Technology

Part of creating a Universally Designed Curriculum means incorporating technology to continue to offer choice in presentation of content (Rose & Meyer, 2002). Rural students, unlike more urban settings, face unique challenges with technology. One issue is that actual internet connection can be unreliable in certain rural areas.

However, the research does seem to imply that rural students are embracing distance education just as much as urban students. Hannum et al. (2009) completed a study that examined how distance education was currently being used and perceived in rural high schools. By way of a telephone interview, the researchers discovered that 85% of districts in rural areas had engaged some sort of “distance education” (p. 4). This could show that technology in rural areas is not necessarily a barrier, and this agrees with a study by Scott et al. (2016), who despite noticing this potential barrier discussed in literature, found no evidence of it in their research.

There is also evidence that rural areas are satisfied with distance learning, which would affect motivation. Trabuc (2015) conducted a qualitative study that focused on exploring the perceptions students and staff have about distance education at very rural schools. This study concerned high school seniors in Kansas schools with less than 200 current students. The results indicated that both staff and students found distance education to be a positive and beneficial experience. This does not mean, however, that rural schools are without struggles. Ball (2014) surveyed 302 faculty members about their perceptions of implemented mobile learning in their rural community college classroom, using a tool called the Stages of Concern Questionnaire. The study presented evidence that faculty struggled most with Stage 1, which revolved around

knowledge and comfort with the technology. A project was then implemented to provide more professional development for faculty. In conclusion, with proper faculty support and professional development, faculty preparedness and technology does not have to be a roadblock for rural students. Rural students may need additional considerations when planning technology heavy lessons, which can be an element of Universal Design for Learning.

Tennessee Initiatives that Affect Community Colleges

Because this study will take place in Tennessee, it is critical to be aware of current legislature that may affect UDL curriculum in Tennessee college classrooms. The state of Tennessee currently offers several financial incentives and academic initiatives to educate more of Tennessee's residents. The Drive to 55 initiative was created by Governor Bill Haslam and aims that by 2025, at least 55% of Tennessee residents will hold a certificate or degree (Drive to 55 Alliance, 2018a). This goal has also spawned two new initiatives called the TN Promise and the TN Reconnect, both of which directly affect first-year community college students. Tennessee Promise is a program directly targeted at high school seniors. The goal of the financially assisted program is to encourage more recent secondary graduates to enroll at college (Drive to 55 Alliance, 2018b). Since 2015, when TN Promise was introduced as the first program of its kind in the country, the state has witnessed unparalleled numbers of applicants and an increase in both enrollment and retention, due to the fact that it provides two years of college free to graduating high school seniors (Drive to 55 Alliance, 2018b). With the promise of the first two years of college for free, high school students are

encouraged to attend a community college. This not only increases enrollment, but the community college is also enrolling students who would have considered going to a four-year university instead of a two-year college. But another program has also been developed in Tennessee to encourage community college enrollment. Beginning in Fall 2018 was TN Reconnect. This program offered adults, who had never obtained a university or college degree, the opportunity to pursue the completion of a degree without having to worry about tuition fees at any TN technical or community college. (Drive to 55 Alliance, 2018c). Because of this program, adult students are returning to school to complete degrees, and for colleges, this mean an influx of adult or nontraditional students (Drive to 55 Alliance, 2018c). This is a new and exciting program that offers nontraditional students and adult learners the opportunity to complete a college degree, and for many, this is a goal that may never have been achieved without this new initiative.

Chapter Summary

The review of literature shows that Universal Design for Learning is making its way through schools and postsecondary institutions, with promising results. By also investigating motivation, first-year college students, adult learners, rural colleges and challenges, and new Tennessee initiatives, a study investigating the UDL impacts of motivation at first-year community colleges students should yield interesting results.

CHAPTER 3

METHODOLOGY

The purpose of this quantitative study was to identify the perceptions of how Universal Design for Learning impacts motivation in first-year community college students in rural East Tennessee. Research is abundant on investigating how UDL impacts accessibility, low performing students, and other diverse learners, but there is limited research available on how UDL may affect the motivation of first-year community college students. The first year of college can be instrumental in the long-term success of obtaining a college degree, and since UDL will be a central element of course design at this community college, it is important to establish early whether or not it could have a positive impact on students' motivation. Additionally, as retention and graduation rates are vital in maintaining state financial support and federal student aid, completing this study will provide readers and the school valuable data about how to proceed with regards to funding future UDL programs.

Research Questions and Null Hypotheses

The following research questions and corresponding null hypotheses guided this study.

Research Question 1: Is there a significant difference in perceived content effectiveness between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module?

H₀1: There is no significant difference in perceived content effectiveness between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module.

Research Question 2: Is there a significant difference in interactivity between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module?

H₀2: There is no significant difference in interactivity between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module.

Research Question 3: Is there a significant difference in motivation to learn between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module?

H₀3: There is no significant difference in motivation to learn between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module.

Research Question 4: Is there a significant difference in perceived content effectiveness between English students and Education students who have completed a UDL designed module?

H₀4: There is no significant difference in perceived content effectiveness between English students and Education students who have completed a UDL designed module.

Research Question 5: Is there a significant difference in interactivity between English students and Education students who have completed a UDL designed module?

H₀5: There is no significant difference in interactivity between English students and Education students who have completed a UDL designed module.

Research Question 6: Is there a significant difference in motivation to learn between English students and Education students who have completed a UDL designed module?

H₀6: There is no significant difference in motivation to learn between English students and Education students who have completed a UDL designed module?

Research Question 7: Is there a significant difference in motivation to learn between students who have completed a UDL designed module and identifying as being from a rural area and the test value of 3.66, the average motivation to learn of students identifying as non-rural, who have completed a UDL designed module?

H₀7: There is no significant difference in motivation to learn between students who have completed a UDL designed module and identifying as being from a rural area and the test value of 3.66, the average motivation to learn of students identifying as non-rural, who have completed a UDL designed module.

Research Question 8: Is there a significant difference in motivation to learn between students who have completed a UDL designed module and are traditional students

younger than 24, and the test value of 4.37, the average motivation to learn of nontraditional students over 24 who have completed a UDL designed module?

H₀8: There is no significant difference in motivation to learn between students who have completed a UDL designed module and are traditional students younger than 24, and the test value of 4.37, the average motivation to learn of nontraditional students over 24 who have completed a UDL designed module.

Research Question 9: Is there a significant relationship between predicted grades of first-year community college students who have completed a UDL designed module and whether or not they have completed the standard curriculum module?

H₀9: There is no significant relationship between predicted grades of first-year community college students who have completed a UDL designed module and whether or not they have completed the standard curriculum module.

Sample

Of the entry level classes in the second UDL training program, an Education and an English course were chosen for this study. These courses were chosen because they are considered “entry level” courses, as they are taken early in most degree programs. Other courses in the latest training program offered at the college were higher level courses. Three sections of the Education course, The College Experience, were offered on-ground, and two sections of the Composition I course were also offered on-ground. Also surveyed were three other Education sections designed around a standard curriculum, or Master Course, and two sections of a Composition I class that followed the traditional, standard curriculum. The courses may or may not have been

tied to a co-requisite learning support class, as these Education and English classes are often tied to a Math remedial course or an English remedial course, respectively. Regardless of attached co-requisite courses, all students have the option to take either of these classes, and they could be required as part of a general degree or major. These courses were chosen on advice of the Director of Instructional Design, whom chose them based on the parameters of the study and instructors available who had successfully completed the offered UDL pilot. The enrolled number of students also varied in each course.

Instrumentation

The researcher modified, with permission, a survey instrument created by Zaharias (2004). The was selected and shortened to four sections that focused on content effectiveness, interactivity, motivation, and demographics. As this study is based on student reflection and response, the questions allow students to self-reflect and respond on a Likert scale. Universal Design for Learning involves the student to some degree because of the principle that students should be offered choices in assignments and expression. Thus, it is appropriate to allow students to respond to questions designed to encourage an introspective response that allows the researcher to see reported differences.

Validity and reliability are important in terms of designing and using a survey instrument. With regards to validity, Zaharias and Poylymenakou (2009) state,

Regarding content validity, the usability attributes were thoroughly examined and chosen based on the HCI and more specifically on Web usability literature

and instructional design literature. An extensive literature review was conducted in order to select the appropriate usability attributes; items for inclusion within the questionnaire were selected from a wide range of Web course design guidelines, checklists, and questionnaires. The factor analyses that were performed on data collected during trial 1 and trial 2 support the content validity, since meaningful unitary constructs emerged. (p.86)

Regarding reliability, the Cronbach's alpha for the areas of the survey had reliability measures of .707 to .901. The survey was modified for on-ground classes; Content Effectiveness returned at .835, and Motivation to Learn was .897. The area of Interactivity, a section of only 4 questions, produced a .621. Hair, et al. (2014) explained that .60 is acceptable with exploratory research, and reliability is usually higher with more items. Malhotra et al. (2017) echoed that anything less than .6 is generally not reliable, but that this could be a result of having a lower number of items.

Survey items measure content effectiveness, overall interactivity, motivation to learn, subject interest, and predicted grades. The survey is broken up into four main areas for these measurements: content, interactivity, motivation to learn, and demographics. However, there is some overlap in the various sections, as content is part of interactivity and interactivity is part of content. Both areas could affect motivation to learn. And finally, the survey asks demographic questions for further analysis. Section numbers will be used to identify whether or not students are enrolled in a UDL course or a Standard Curriculum course. And demographic information will be used to identify if students are first-year students and what subject they are enrolled in during

administration of this survey. Age will also be collected to determine whether or not students are identified as traditional or nontraditional.

Data Collection

With approval from the dissertation committee, the East Tennessee State University IRB, and the IRB approval from the Community College involved in the study, the survey was conducted using Survey Monkey, a survey hosting website. The survey was available for two weeks from the date that the instructor posted the survey in the course, and students from the classes accessed the surveys in their courses in D2L. Students were not offered compensation for their participation. Instructors read a script reminding students that participation offered no benefit to the student. The survey was also limited to students over the age of 18. All results were stored on an account and computer protected by a password. Student names and email addresses were not collected. The only identifying information collected was the course and section number to distinguish UDL courses from non-UDL participating courses.

Data Analysis

For analysis, the researcher used the Statistical Package for Social Sciences for analysis of the collected data. For Research Questions 1-3, I used a series of independent t tests to compare the means of UDL and Standard Curriculum groups with regards to reported motivation levels, content effectiveness, and interactivity. Research Questions 4, 5, and 6 used independent t tests to compare motivation to learn, interactivity, and perceived content effectiveness between the two subjects in the UDL

group. Research Questions 7 and 8 used single sample t tests to examine student demographics of age, location type, and motivation to learn. Research Question 9 analyzed anticipated grades using a chi square.

CHAPTER 4

FINDINGS

While UDL may be a popular option for many instructional designers and educators, this study aims to discover if motivation is affected after one module of a UDL-designed curriculum. The purpose of this quantitative study was to identify the perceptions of how Universal Design for Learning impacts motivation in first-year community college students in rural East Tennessee.

The sample included in this study consisted of 109 first-year community college students in East Tennessee. The college is set in a rural environment; however, a major urban area is within driving distance, and the community college does have students who come from surrounding counties. This study involved two subjects, English/Composition and Education (multiple sections in each), and four total instructors. All English sections took place on-ground on the same campus, which was a campus separate from the main campus. One instructor had gone through the UDL pilot training program and received approval to teach the UDL module in several sections this semester. The other instructor taught the standard course developed by the department, with some changes to content. However, all sections, UDL and Standard Curriculum Courses, had the same pre and post-tests, as well as the same course outcomes. All sections in the study may have contained developmental students, as the college uses a co-requisite system. Both instructors are full-time faculty. The Education courses, which is essentially a freshmen orientation course, were on-ground main campus classes. These sections may also have contained learning support students. While both instructors were adjuncts, one instructor completed the UDL pilot

program and received permission to pilot the UDL-approved module in multiple sections. As with the English courses, the other education instructor taught the standard course developed by the department, with some changes to content. Once again however, all sections had the same pre and post-tests, as well as the same course outcomes. Of all the sections offered by these instructors that qualified for this study, 109 students voluntarily completed the survey, which utilized a Likert scale to measure content effectiveness, interactivity, and motivation to learn, along with demographic information. Chapter 4 will look at these findings and provide statistical analysis.

Analysis of Research Questions

Research Question 1

Research Question 1: Is there a significant difference in perceived content effectiveness between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module?

H₀1: There is no significant difference in perceived content effectiveness between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module.

An independent-samples t test was conducted to evaluate whether the means of perceived content effectiveness differ significantly between first-year community college students who have completed a UDL designed module and first-year community college students who have completed a standard curriculum module. The perceived content effectiveness was the test variable and the grouping variable was UDL or standard

curriculum. The test was not significant, $t(106) = 1.14$, $p = .259$. Therefore, the null hypothesis was retained. The η^2 index was .22, which indicated a small effect size. Students in the UDL designed module ($M = 3.94$, $SD = .49$) exhibited approximately the same perceived content effectiveness as those in the standard curriculum module ($M = 3.83$, $SD = .49$). The 95% confidence interval for the difference in means was -.08 to .30. In summary, there is no significant difference in perceived content effectiveness between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module. Figure 1 and Table 1 show the distributions for the two groups.

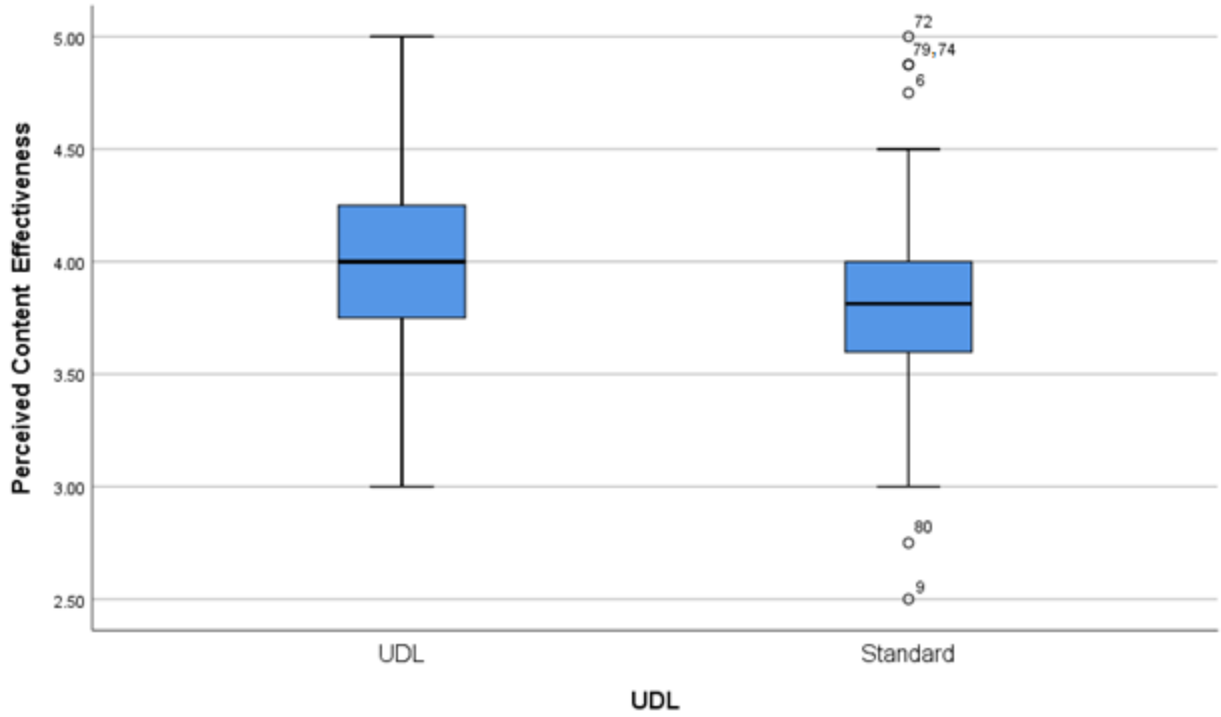


Figure 1. Perceived Content Effectiveness for UDL Module and Standard Curriculum Module Groups

Table 1.

Means of Perceived Content Effectiveness for UDL Module and Standard Curriculum Module Groups

Module Type	N	M	SD
UDL	60	3.94	.49
Standard Curriculum	48	3.83	.49

Research Question 2

Research Question 2: Is there a significant difference in interactivity between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module?

H₀2: There is no significant difference in interactivity between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module.

An independent-samples t test was conducted to evaluate whether the means of interactivity differ significantly between first-year community college students who have completed a UDL designed module and first-year community college students who have completed a standard curriculum module. The interactivity was the test variable and the grouping variable was UDL or standard curriculum. The test was not significant, $t(105) = .73$, $p = .469$. Therefore, the null hypothesis was retained. The η^2 index was .14, which indicated a small effect size. Students in the UDL designed module ($M = 3.71$, $SD = .62$) exhibited approximately the same interactivity as those in the standard curriculum module ($M = 3.80$, $SD = .50$). The 95% confidence interval for the difference in means was -.3 to .14. In summary, there is no significant difference in interactivity between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module. Figure 2 and Table 2 show the distributions for the two groups.

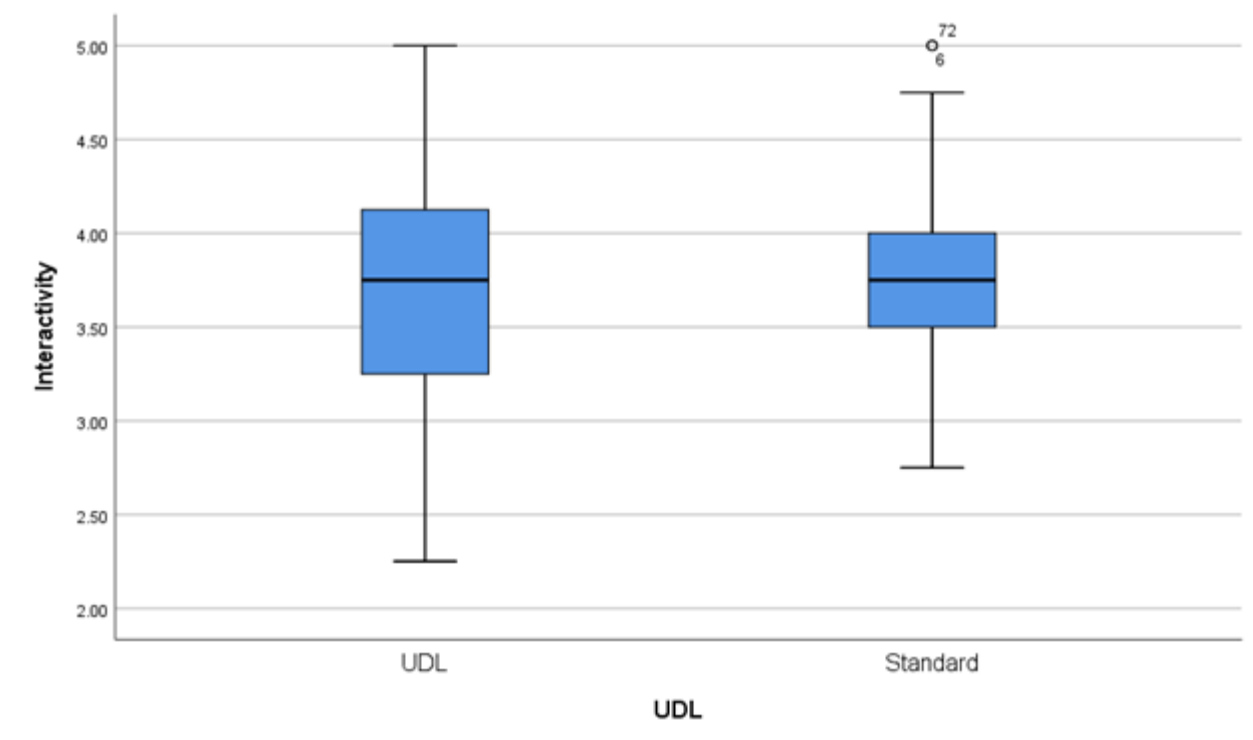


Figure 2. Interactivity for UDL Module and Standard Curriculum Module Groups

Table 2.

Means of Interactivity for UDL Module and Standard Curriculum Module Groups

Module Type	N	M	SD
UDL	59	3.71	.62
Standard Curriculum	48	3.80	.50

Research Question 3

Research Question 3: Is there a significant difference in motivation to learn between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module?

H₀3: There is no significant difference in motivation to learn between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module.

An independent-samples t test was conducted to evaluate whether the means of motivation to learn differ significantly between first-year community college students who have completed a UDL designed module and first-year community college students who have completed a standard curriculum module. The motivation to learn was the test variable and the grouping variable was UDL or standard curriculum. The test was not significant, $t(104) = .56$, $p = .578$. Therefore, the null hypothesis was retained. The η^2 index was .019763, which indicated a small effect size. Students in the UDL designed module ($M = 3.79$, $SD = .58$) exhibited approximately the same motivation to learn as those in the standard curriculum module ($M = 3.73$, $SD = .51$). The 95% confidence interval for the difference in means was $-.15$ to $.27$. In summary, there is no significant difference in motivation to learn between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module. Figure 3 and Table 3 show the distributions for the two groups.

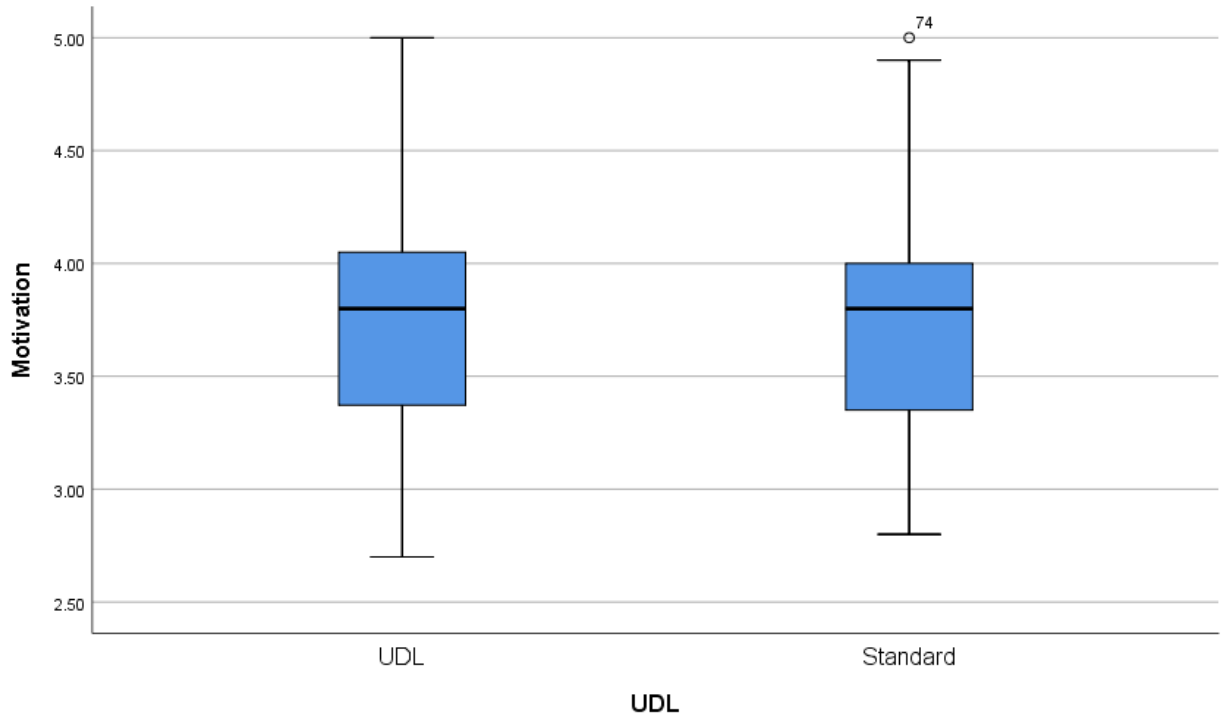


Figure 3. Motivation to Learn for UDL Module and Standard Curriculum Module Groups

Table 3.

Means of Motivation to Learn for UDL Module and Standard Curriculum Module Groups

Module Type	N	M	SD
UDL	59	3.79	.58
Standard Curriculum	47	3.73	.51

Research Question 4

Research Question 4: Is there a significant difference in perceived content effectiveness between English students and Education students who have completed a UDL designed module?

H₀4: There is no significant difference in perceived content effectiveness between English students and Education students who have completed a UDL designed module.

An independent-samples t test was conducted to evaluate whether the means of perceived content effectiveness differ significantly between English students who have completed a UDL designed module and Education students who have completed a UDL designed module. The perceived content effectiveness was the test variable and the grouping variable was subject. The test was not significant, $t(58) = 1.43, p = .542$. Therefore, the null hypothesis was retained. The η^2 index was .38, which indicated a small effect size. Students English UDL course ($M = 4.06, SD = .54$) exhibited approximately the same perceived content effectiveness as those in the Education UDL course ($M = 3.87, SD = .46$). The 95% confidence interval for the difference in means was -.07 to .45. In summary, there is no significant difference in perceived content effectiveness between English students and Education students who have completed a UDL designed module. Figure 4 and Table 4 show the distributions for the two groups.

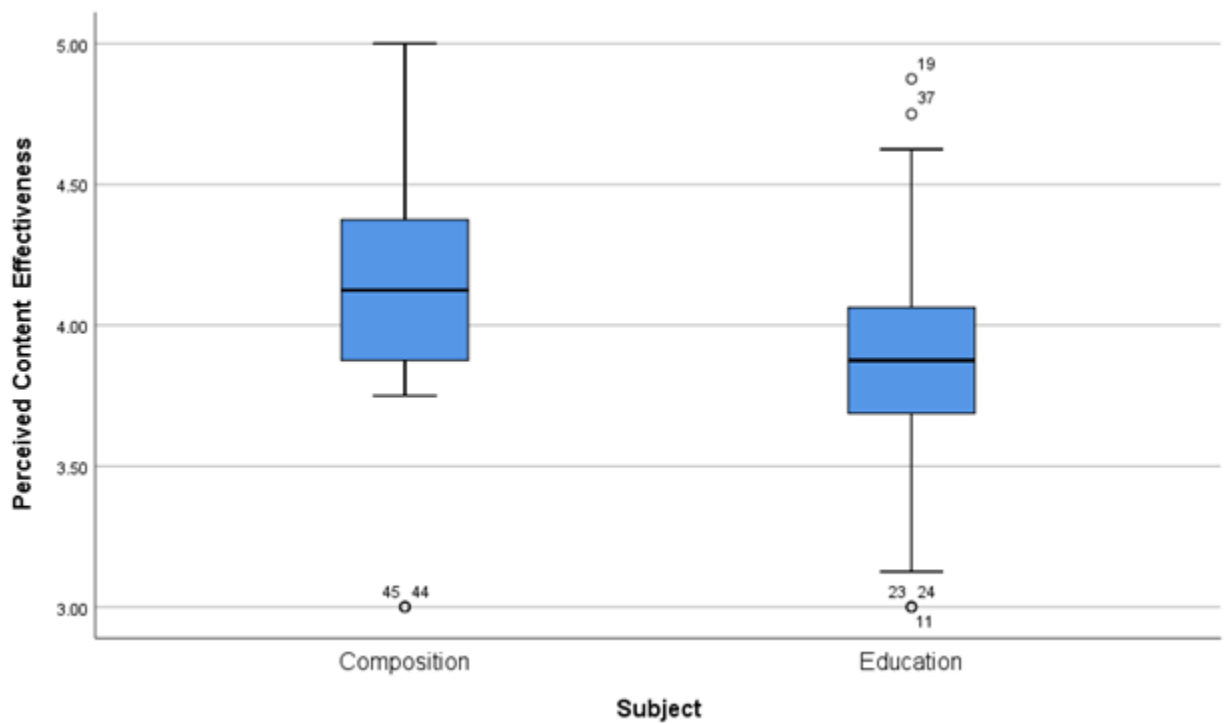


Figure 4. Perceived Content Effectiveness to Learn for English and Education UDL Groups

Table 4.

Means of Content Effectiveness for English and Education UDL Groups

Subject in UDL	N	M	SD
English/Composition	21	4.06	.54
Education	39	3.87	.46

Research Question 5

Research Question 5: Is there a significant difference in interactivity between English students and Education students who have completed a UDL designed module?

H₀₅: There is no significant difference in interactivity between English students and Education students who have completed a UDL designed module.

An independent-samples t test was conducted to evaluate whether the means of interactivity differ significantly between English students who have completed a UDL designed module and Education students who have completed a UDL designed module. The interactivity was the test variable and the grouping variable was subject. The test was significant, $t(57) = 2.86$, $p = .006$. Therefore, the null hypothesis was rejected. Students in the English UDL course ($M = 4.01$, $SD = .59$) expressed significantly higher levels of interactivity than students in the Education UDL course ($M = 3.55$, $SD = .58$). The 95% confidence interval for the difference in means was .14 to .77. The η^2 index was .77, which indicated a large effect size. In summary, the interactivity of the English students was significantly higher than the Education students who have completed a UDL designed module. Figure 5 and Table 5 show the distributions for the two groups.

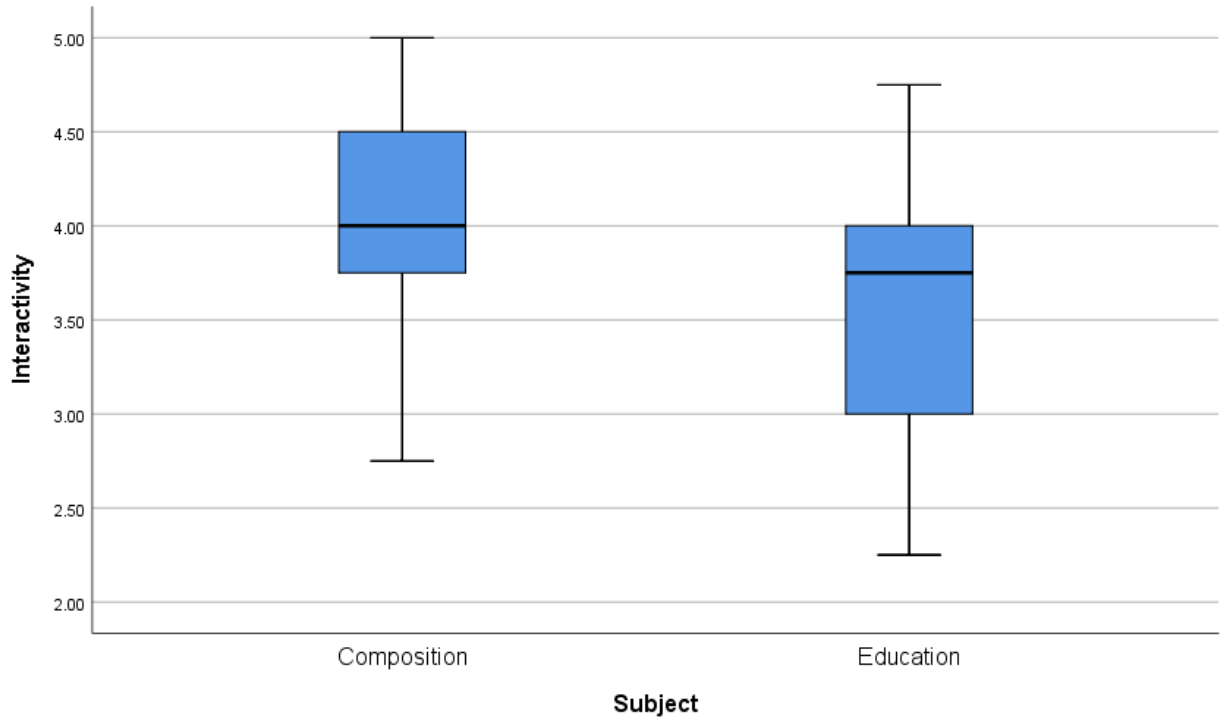


Figure 5. Interactivity for English and Education UDL Groups

Table 5.

Means of Interactivity for English and Education UDL Groups

Subject in UDL	N	M	SD
English/Composition	21	4.01	.59
Education	38	3.55	.58

Research Question 6

Research Question 6: Is there a significant difference in motivation to learn between English students and Education students who have completed a UDL designed module?

H₀6: There is no significant difference in motivation to learn between English students and Education students who have completed a UDL designed module.

An independent-samples t test was conducted to evaluate whether the means of motivation to learn differ significantly between English students who have completed a UDL designed module and Education students who have completed a UDL designed module. The motivation to learn was the test variable and the grouping variable was subject. The test was not significant, $t(57) = .75$, $p = .455$. Therefore, the null hypothesis was retained. The η^2 index was .20, which indicated a small effect size. Students English UDL course ($M = 3.87$, $SD = .63$) exhibited approximately the same motivation to learn as those in the Education UDL course ($M = 3.75$, $SD = .55$). The 95% confidence interval for the difference in means was -.20 to .43. In summary, there is no significant difference in motivation to learn between English students and Education students who have completed a UDL designed module. Figure 6 and Table 6 show the distributions for the two groups.

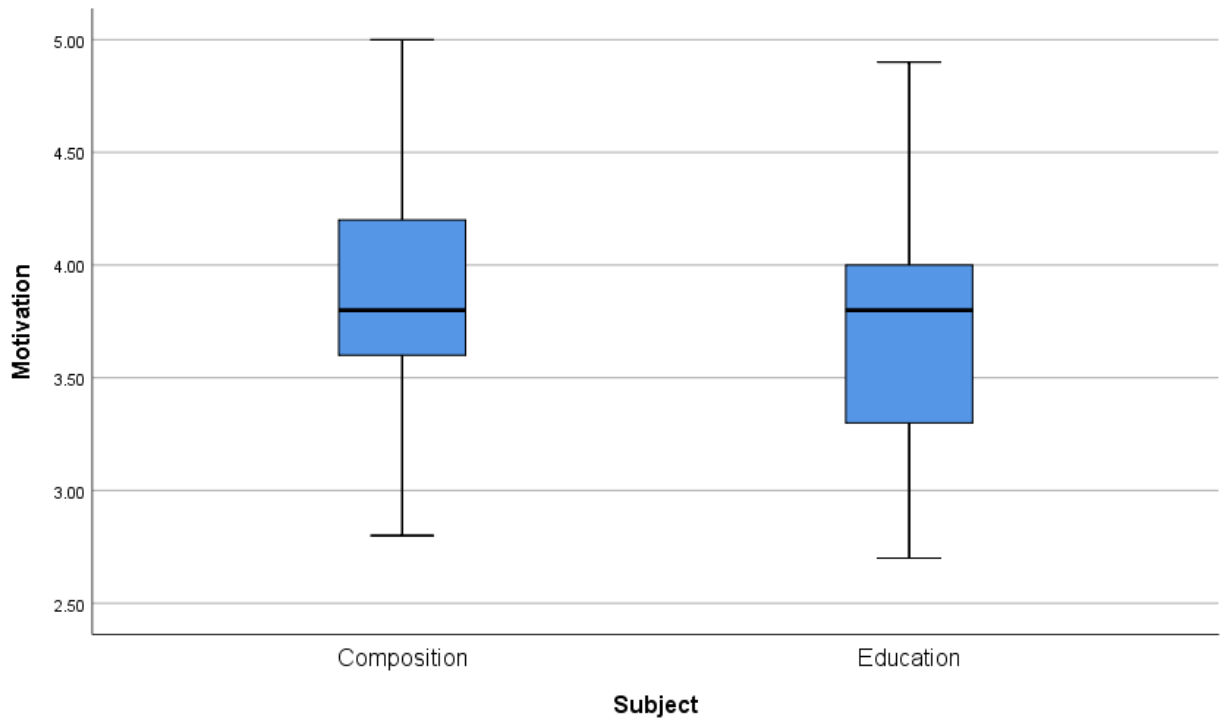


Figure 6. Motivation to Learn for English and Education UDL Groups

Table 6.

Means of Motivation to Learn for English and Education UDL Groups

Subject in UDL	N	M	SD
English/Composition	21	3.87	.63
Education	38	3.75	.55

Research Question 7

Research Question 7: Is there a significant difference in motivation to learn between students who have completed a UDL designed module and identifying as being from a rural area and the test value of 3.66, the average motivation to learn of students identifying as non-rural, who have completed a UDL designed module?

H₀₇: There is no significant difference in motivation to learn between students who have completed a UDL designed module and identifying as being from a rural area and the test value of 3.66, the average motivation to learn of students identifying as non-rural, who have completed a UDL designed module.

A single-sample t test was conducted to evaluate whether the mean of motivation to learn differs significantly between students who identified as being from a rural area who have completed a UDL designed module and the average motivation to learn of students who identified as being from a non-rural area who have completed a UDL designed module. The motivation to learn was the test variable and the grouping variable was rural or non-rural. The test was significant, $t(45) = 2.15$, $p = .037$.

Therefore, the null hypothesis was rejected. Students in the Rural group ($M = 3.83$, $SD = .52$) were significantly more motivated to learn than those as those in the non-rural group ($M = 3.66$). The 95% confidence interval for the difference in means was .01 to .32. The η^2 index was .25, which indicated a small effect size. In summary, motivation to learn was significantly higher for students who have completed a UDL designed module who identify as being from a rural area compared to the test value of 3.66, the average

motivation to learn of students identifying as non-rural, who have completed a UDL designed module. Figure 7 shows the distributions for the two groups.

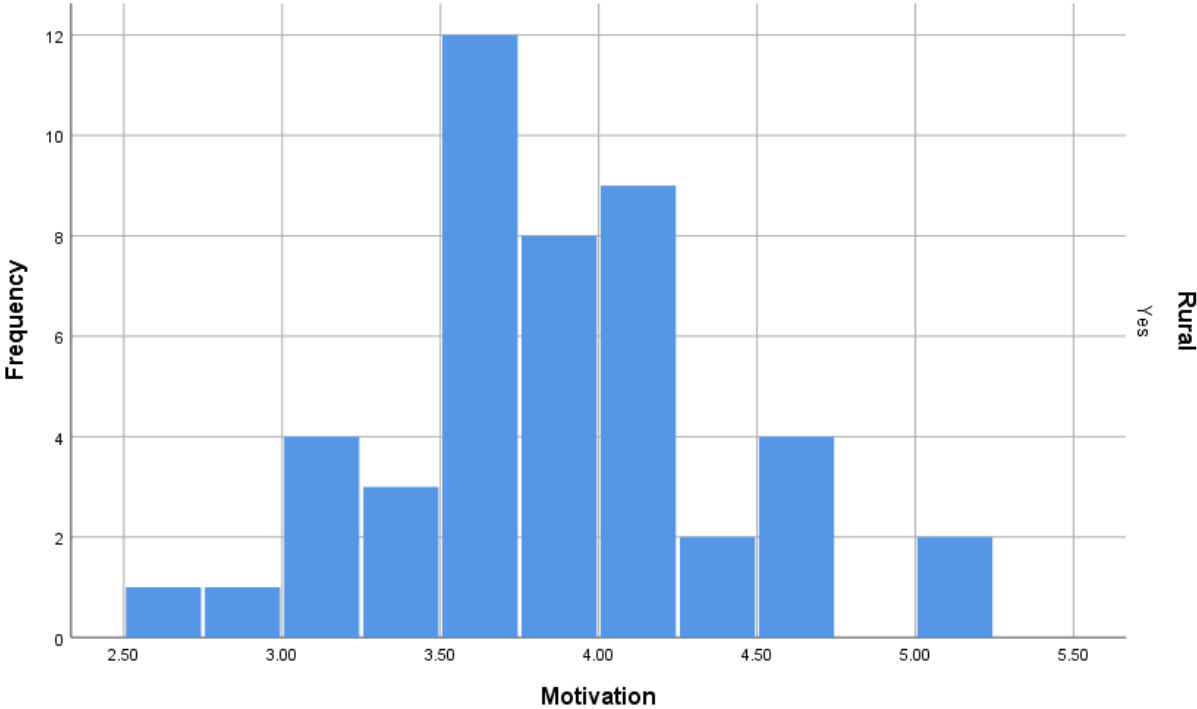


Figure 7. Motivation to Learn for Rural UDL Groups

Research Question 8

Research Question 8: Is there a significant difference in motivation to learn between students who have completed a UDL designed module and are traditional students younger than 24, and the test value of 4.37, the average motivation to learn of nontraditional students over 24 who have completed a UDL designed module?

H₀8: There is no significant difference in motivation to learn between students who have completed a UDL designed module and are traditional students younger than 24, and the test value of 4.37, the average motivation to learn of nontraditional students over 24 who have completed a UDL designed module.

A single-sample t test was conducted to evaluate whether the mean of motivation to learn differs significantly between students under 24 who have completed a UDL designed module and the average motivation to learn of students over 24 who have completed a UDL designed module. The motivation to learn was the test variable and the grouping variable was age under 24. The test was significant, $t(45) = -8.27, p < .001$. Therefore, the null hypothesis was rejected. Students under 24 ($M = 3.73, SD = .53$) showed significantly less motivation to learn as those students over 24 ($M = 4.37$). The 95% confidence interval for the difference in means was -.80 to -.49 The η^2 index was 1.29, which indicated a large effect size. In summary, motivation to learn was significant lower for students who have completed a UDL designed module and are traditional students younger than 24, compared to the test value of 4.37, the average motivation to learn of nontraditional students over 24 who have completed a UDL designed module. Figure 8 shows the distributions for the two groups.

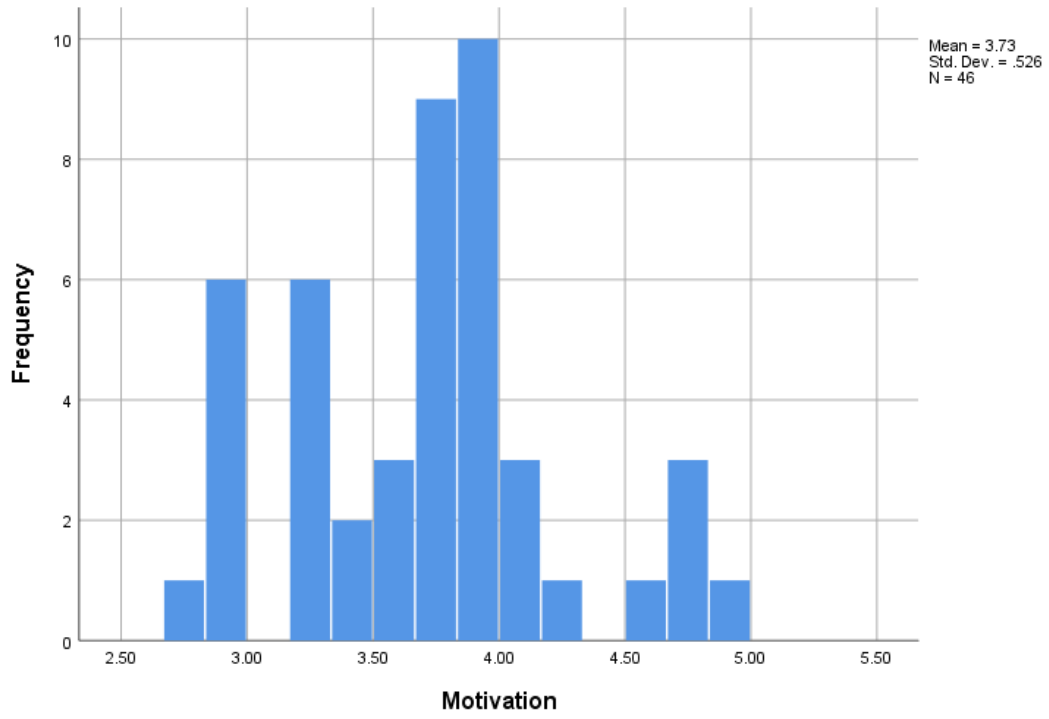


Figure 8. Motivation to Learn for Age Group Less Than 24 in the UDL Groups

Research Question 9

Research Question 9: Is there a significant relationship between predicted grades of first-year community college students who have completed a UDL designed module and whether or not they have completed the standard curriculum module?

H₀9: There is no significant relationship between predicted grades of first-year community college students who have completed a UDL designed module and whether or not they have completed the standard curriculum module.

A two-way contingency table analysis was conducted to evaluate whether there is a significant relationship between predicted grades depending on whether the students completed the UDL module or the Standard Curriculum Module. The two variables were UDL Module with predicted grades (A, B, C, D, or F) and whether students had completed a UDL module or Standard Curriculum Module. The analysis was not significant, Pearson $\chi^2 (1, N = 3) = 4.46, p = .216$, Cramer's V = .216.

Therefore, the null hypothesis is retained. However, it is noteworthy that the predicted As were somewhat, but not significantly, higher than the expected frequencies in the UDL group. In summary, there is no significant relationship between predicted grades of first-year community college students who have completed a UDL designed module and the grades of students who have completed the standard curriculum module. Figure 9 and Table 7 display the predicted grades in the UDL group compared to the predicted grades in the Standard Curriculum Group.

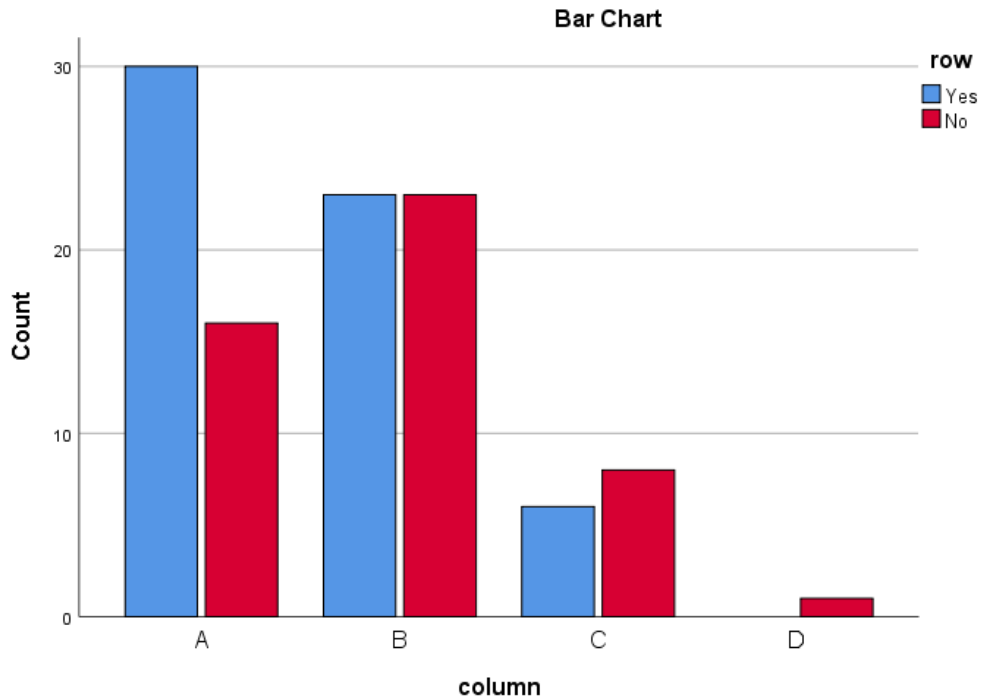


Figure 9. Predicted Grades in the UDL Group Compared to the Predicted Grades in the Standard Curriculum Group

Table 7.

Occurrence of Grades in the UDL Group Compared to the Occurrence of Grades in the Standard Curriculum Group

Module Type	A	B	C	D	F
UDL	30	23	6	0	0
Standard Curriculum	16	23	8	1	0

Chapter Summary

A survey was completed by 109 first-year community college students to analyze content effectiveness, interactivity, and motivation to learn. Other demographic information was collected such as age, whether or not the student was from a rural background, and predicted grades. All students either completed an UDL approved module or a standard curriculum module in either Education or English class. 9 research questions were analyzed with statistical analysis using independent t test, single sample t test, or chi square. English UDL courses were significantly higher than Education UDL courses. Motivation to learn was also significantly higher amongst rural students in the UDL class as opposed to non-rural students in the UDL courses, and motivation to learn was significantly higher in students over 24 in the UDL courses as opposed to students under 24 in these classes. In summary, there is no significant difference between predicted grades and whether or not they completed a UDL module or the standard curriculum.

CHAPTER 5

SUMMARY, CONCLUSIONS, and RECOMMENDATIONS

Whether UDL is a worthy investment for a college relies on many factors. However, this study may provide valuable insight into the ongoing conversation regarding adopting UDL principles. The purpose of this quantitative study was to identify the perceptions of how Universal Design for Learning impacts motivation in first-year community college students in rural East Tennessee.

Summary

This study included a sample of 109 first-year community college students, either enrolled in a Composition I or and Education Freshman Experience course. Some of the students were part of a UDL pilot program that required that one module in their course break from the standard curriculum and be taught and designed using UDL principles. Six Education sections and four English sections were part of this group. For a control group, three Education classes utilizing the standard curriculum, or Master course with small changes, were surveyed, as well as two English courses with the standard curriculum. The community college is set in rural East Tennessee. The survey used a Likert scale and measure for three main areas, motivation to learn, content effectiveness, and interactivity, as well as basic demographic information. Results showed the English UDL classes were significantly more interactive than the Education UDL classes. Rural students were significantly more motivated to learn compared to

students who identified as non-rural. And nontraditional students were significantly more motivated to learn compared to the traditional students in the UDL courses.

Key Findings

This study consisted of 9 research questions and null hypotheses. Research Question 1 asked if there was a significant difference in perceived content effectiveness between first-year community college students who have completed a UDL designed module and students who have completed a standard curriculum module, and based on an independent t test, the results were not significant and the null hypothesis was retained. This question was based on the UDL principal of offering multiple means of representation or ways of presenting information to students. Asking students to evaluate how effective the content was demonstrates whether or not the students felt that content was effective for different types of learners to some degree, unless students said Strongly Disagree to all content questions. However, even the standard curriculum class could already embrace multiple methods of representation, as Kennette and Wilson (2019) found in their study that many students are already seeing UDL in courses. Leichter (2010) also discovered that a biology instructor involved in the case study was already using UDL principals in class, even though she was not aware of UDL by name. Thus, it may not be surprising to not see significant differences in these groups.

Research Question 2 asked if there was a significant difference in interactivity between first-year community college students who have gone through a UDL designed module and students who have completed a standard curriculum module. This section

aimed to address UDL's principal of multiple means of engagement, action, and expression. While these are distinct areas in UDL, "interactivity" on this survey did address how students interacted with the course and content. While engagement focuses on assessment, action and expression looks at how students interact with content and instruction (CAST, 2011). While current research implies very positive results with UDL implementation (Wilson, 2017; Kumar & Wideman, 2014; Sopko, 2008; Katz, 2013), this study did not align. However, it is important to note that these studies looked at how UDL effective overall course design and not just a single module in the course.

Research Question 3 asked if there was a significant difference in motivation to learn between first-year community college students who have gone through a UDL designed module and students who have completed a standard curriculum module. While Schuck and Larson (2003) found that UDL was positively received by community college students, according to the results of this question, it seemed to have little effect on overall motivation. It is important to note that UDL was only implemented in one module. Another important factor is that the students could have shown an increase in motivation after the module, but because there was no pre-module measurement, there is no way to see a post-module increase via this survey. An additional observation is that 4 different instructors were used in this study. Williams and Williams (2011) found that the teacher is the second most important element in motivating college students, aside from the actual student and his or her role in learning. Because Williams and Williams put content as third most important in motivation, it is possible that teacher plays such a large role that UDL would not be enough to make a significant difference

over the actual instructor of the course. Several sources have found that the role of teacher plays a vital role in student motivation and retention (Austin & Sorcinelli, 2013; Komarraju et al., 2010; O’Keeffe, 2013;Tinto, 1999). Halawah (2011) agreed that the qualities of the teacher were significant in increasing motivation at Al-Ain University in United Arab Emirates. Thus, this study supports the notion that the teacher may make a larger difference in motivation than UDL, and the effects of UDL may not be strong enough to overcome differences due to individual instructor.

Research Question 4 asked if there was a significant difference in perceived content effectiveness between English students and Education students who have completed a UDL designed module. No significance was found. This is not an overall surprising result, and one point of UDL is to ensure content is being delivered to support various learners, and these two courses are piloting a UDL course. Thus, it would be expected that both courses have varied content, and one would not necessarily expect one course to be more effective in content delivery than the other.

Research Question 5 asked if there was a significant difference in interactivity between English students and Education students who have completed a UDL designed module. This research question was posed to explore whether or not one course might be more successful with UDL and interactivity than the other course subject. What is very interesting about this question is that the Composition class had a mean of 4.01 compared to the mean 3.55 in Education. Composition courses are traditionally reliant on creating written essays as a means of assessment, so it is interesting that the Composition class appears to be significantly more interactive than the Freshman Experience Course, from the students’ perceptions. This could mean big

outcomes for students, as adding varied and engaging activities, along with social interaction, does seem to be positively correlated with persistence (Hu, 2011). Latham and Gross (2013) concur that based on their study, engagement increases with variety and choice. And because English is often a difficult course (as evidenced by the college's developmental program), this could mean strong outcomes (again, one module may not be enough to see long term gains).

Research Question 6 asked if there was a significant difference in motivation to learn between English students and Education students who have gone through a UDL designed module. Martin, Galentono, and Townsend (2014) explored motivation and community college students and found themes such as clear goals, strong motivation, handling external demands, and self-empowerment. Thus, subject type or class was not listed as being a strong indicator of what pushed these students to pursue their degree, and thus the results of no significance being found is not startling. And again, due to the design of the study, pre and post scores were not obtained.

Research Question 7 asked if the motivation to learn score for UDL was significantly different for students identifying as being from a rural area from test value of 3.66, the average motivation to learn score of students identifying as non-rural. There does seem to be a significant difference in motivation between the two groups. The rural group seemed to express overall higher motivation to learn numbers than the non-rural group. This is important because rural students experience unique challenges. However, studies show that overall technology-based learning does not seem to hinder rural students (Hannum, Irvin, Banks, & Farmer, 2009; Scott et al., 2016; Trabuc, 2015). This finding supports that, and it even suggests that rural students could see success

with UDL. Because these were on-ground classes, and not online, technology barriers may have not existed to the same degree that a rural student may see in an online course. However, all of these classes do use technology, and the courses themselves are housed and accessible to students by means of a Learning Management Platform.

Research Question 8 asked if motivation to learn score for UDL students younger than 24 was significantly different from test value of 4.37, the average motivation to learn score of UDL students over 24. As nontraditional students are often defined as being over 24, this question provides insight into how UDL may affect nontraditional first-year community college students. Like the previous question, because the sample of 24 was so small in the UDL groups, a single sample t test was used to compare with the mean of the over 24 group. This indicates that the adults over 24 were significantly more motivated over those under 24 in the UDL groups. Bye et al. (2007) found that "...motivation levels in traditional and nontraditional undergraduate students reveals a trend for nontraditional students to report slightly more motivation overall than traditional students, primarily due to nontraditional students' reporting significantly higher levels of intrinsic motivation than traditional students" (p. 152). Thus, this finding supports the research that nontraditional students do tend to show higher levels of motivation. This is not necessarily a direct result of the UDL module, but UDL may support the motivation that nontraditional students tend to show. This also shows, again, that one module of UDL may not be enough to go against any pre-existing notions supported by research regarding nontraditional or traditional first-year community college students.

Finally, Research Question 9 asks if there was a significant relationship between predicted grades and whether or not students had completed a UDL designed module

or the standard curriculum module. It is worth noting, however, that while the relationship was not significant, the UDL groups predicted almost double the As as the standard curriculum groups. Sopko (2008) found via interviews that implementing UDL did increase scores, according to students. However, Scott, Temple, and Marshall (2015) found that while participants in their UDL study expressed great positivity when discussing how impactful UDL was in their course, the researchers noted that one should be aware that perceptions and actual performance could differ. This seems to be worth noting in this study, as well. All questions, including predicted grades, were reliant on student perceptions. But it does seem that the UDL module did not have an overall significant outcome on actual predicted grades post-module.

Recommendations for Practice

This study can be very helpful to the community college where it was completed because it shows that one module of a UDL designed curriculum may not be enough to observe increases in motivation. It will also be beneficial for any community colleges considering adopting a similar training or pilot program. The following suggestions could be gleaned from the findings:

1. The pilot program should be implemented with instructors hoping to increase interactivity in their courses.
2. Instructors should consider use of UDL should include more than one module to assure that the impact of UDL is significant within the course.

3. UDL may really benefit or support adult and nontraditional learner. If this is a population of concern, a community college should look towards implementing UDL for class improvement.
4. Rural students may also benefit from UDL. While this is not exclusive, administrators and instructors should consider implementing a UDL-based program if the college has a high population of rural learners.

Recommendations for Further Research

The following are recommendations for further research related to this study:

1. This study be replicated using a pre and post-test design, which could provide greater understanding of the specific effect of UDL on student motivation. Measuring motivation before the UDL module and again after can offer new information on whether or not there is an increase in motivation due to interacting with a UDL module.
2. This study be replicated with the same teacher for all courses, as well as across other community colleges. This would mean one instructor teaches the UDL and the Standard Curriculum. This would remove any question of teacher influence on motivation. And duplicating at other community colleges would increase sample size and strengthen results generalizability.
3. Researchers should consider a qualitative design to accompany this. This would strengthen understanding of why or why not students find UDL implementation to be motivational in a classroom setting.

4. Measuring actual final grades post UDL is recommended, as this study measures student perception only, and as Scott, Temple, and Marshall (2015) pointed out, student perception and actual course performance can be different. Thus, measuring actual student performance could be useful.

Conclusions

While significant differences were not found in every question in this study, it is important to state that instructors who have completed this pilot program, including this author, have seen great results and changes in their classes and overall teaching by utilizing UDL in their course design. Thus, while one module may not present “miracle” results, it has changed teaching and learning for many at this community college, and future research and study will continue.

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[com.iris.etsu.edu:3443/login.aspx?direct=true&AuthType=ip,shib&db=nlebk&AN=168312&site=ehost-live&scope=site](https://search-ebscohost-com.iris.etsu.edu:3443/login.aspx?direct=true&AuthType=ip,shib&db=nlebk&AN=168312&site=ehost-live&scope=site)

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APPENDICES

Appendix A

Permission to Use and Modify Survey


E-Learning Usability Evaluation Questionnaire Report message · Block user

 **Jennifer Mayes** 5 minutes ago

Greetings; I hope this email finds you well!

I am currently working on my dissertation at East Tennessee State University (Educational Leadership), and I have been looking for an instrument to measure motivation after instruction involving UDL principles. I came across your survey, and I think it might be exactly what I am looking for. Could I have your permission to use this survey for my dissertation? And may I modify it to fit my specific research questions? Thank you!


Jennifer Mayes

 **Panagiotis Zaharias** to you Just now

Hello Jennifer

thanks for your message, you can certainly use my survey given that you make the proper citations. I will be happy if you could send me a copy of your work (after using the survey etc.), to see how my survey fits in your research work. Please note that if you change some items etc. you have to be careful with measuring the reliability of the instrument.

best regards
Panagiotis Zaharias

 **Jennifer Mayes** Just now

Wonderful! Thank you so much, and I will heed this advice, as well as keep you posted on my research!

Jennifer Mayes

Reply

Mark as unread

Archive conversation

Appendix B

Script for Instructors

Instructor: Students, I have posted a News Announcement regarding a research study being conducted in a few classes here at the college. If you would like to participate, please read the consent form before beginning the survey, as it is important to know that you must be 18 years of age or older to participate. Participating in this survey is completely voluntary, anonymous, and your participation will in no way affect your performance or participation in this course. Again, this is totally voluntary, and deciding to participate or refusing to participate will not affect your performance or standing in this or any other class here on campus. I will not even have knowledge in whether or not you completed the survey. If you have any questions, please contact the researcher directly.

Appendix C

Instrument

ELearning Usability Evaluation Questionnaire

Welcome!

Thank you for participating in our survey. Your feedback is important.

The questionnaire was modified from a questionnaire developed by Dr. Panagiotis Zaharias during his doctoral research.

Zaharias, P. (2004). A Usability Evaluation Method for E-Learning Courses, Unpublished PhD Dissertation, Department of Management Science and Technology, Athens University of Economics and Business.

* 1. Clicking the AGREE button below indicates

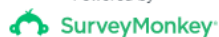
- I have read the letter of Informed Consent
- I agree to volunteer
- I am 18 of age or older

I Agree

I Disagree

Next

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E-Learning Usability Evaluation Questionnaire

Content

Please, rate the usability of your completed module. Browse around the different sections and mark the number, which you feel the course deserves for each parameter. If an item does not apply, mark the Not Applicable box (N/A). Note that this evaluation is subjective in nature and there is no “right” or “wrong” answer.

2. The courses enable learners to practice new knowledge and skills.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3. The courses offer tools (taking notes, job-aids, recourses, glossary etc.) that support learning.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4. Wherever appropriate, higher-order assessments (for example case studies, business simulations, discussion topics etc.) are provided rather than lower-order assessments (simple quizzes and tests).

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

5. The course provides learning activities that allow working within existing competence while encountering meaningful chunks of knowledge.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

6. The courses provide opportunities and support for learning through interaction with others (discussion or other collaborative activities).

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

7. The courses include activities that are both individual-based and group-based.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

8. It is clear to learners what is to be accomplished and what will be gained from its use.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9. The courses provide opportunities for self-assessments (post tests and other assessments) that advance learners' achievements according to the learning objectives.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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ELearning Usability Evaluation Questionnaire

Interactivity

Please, rate the usability of your completed module. Browse around the different sections and mark the number, which you feel the course deserves for each parameter. If an item does not apply, mark the Not Applicable box (N/A). Note that this evaluation is subjective in nature and there is no “right” or “wrong” answer.

10. The courses use games, simulations, role-playing activities, and case studies to gain the attention, and maintain motivation of learners.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. The courses provide access to a range of resources (web links, case studies, simulations, problems, examples) appropriate to the learning context and for use in the real world.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>


12. The courses engage learners in tasks that are closely aligned with the learning goals and objectives.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

13. Media are used appropriately so as to assist in highlighting and learning critical concepts rather than merely entertaining or possibly distracting learners.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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E-Learning Usability Evaluation Questionnaire

Motivation to learn

Please, rate the usability of your completed module. Browse around the different sections and mark the number, which you feel the course deserves for each parameter. If an item does not apply, mark the Not Applicable box (N/A). Note that this evaluation is subjective in nature and there is no “right” or “wrong” answer.

14. The course incorporates novel characteristics.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

15. The course stimulates further inquiry.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

16. The course is enjoyable and interesting.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

17. The course provides instruction/training that matches with learners' experience.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

18. The course meets learners' needs.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. The course provides learner chances to make decisions.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

20. The course provides learner with frequent and varied learning activities that increase learning success.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

21. Learning requirements, criteria for learning success are clear within the course.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

22. The course provides learners opportunities to use new skills in authentic situations.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

23. The course assists learners to have positive feelings about their accomplishments.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	N/A
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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ELearning Usability Evaluation Questionnaire

Demographics

24. I am from a rural area.

- Yes
- No

25. What is your age?

26. What is your anticipated or earned grade in this course?

- A
- B
- C
- D
- F

27. Select your yearly household income.

- Under \$15,000
- Between \$15,000 and \$25,000
- Between \$25,000 and \$35,000
- Between \$35,000 and \$45,000
- Between \$45,000 and \$55,000
- Between \$55,000 and \$65,000
- Between \$65,000 and \$75,000
- Over \$75,000

28. In which course are you taking this survey?

- English 1010
- Education 1030

29. Which of these categories apply to you?

- Dual Enrollment
- Transfer
- First time student
- Readmitted student

30. What is your academic class category?

- Freshman
- Sophomore
- Junior
- Senior

31. Please state your course and section number.

Prev

Done

VITA

JENNIFER MAYES

Education:

Public Schools, Bakersville, NC

B.A. English, University of North Carolina at Charlotte,
Charlotte, North Carolina 2007

M.A. English, East Carolina University, Greenville,
North Carolina 2011

Ed.D. Educational Leadership, East Tennessee State
University, Johnson City, Tennessee 2020

Professional Experience:

Teacher, Richmond Transitional School, Rockingham,
NC 2009 – 2011

Instructor, Fayetteville Technical Community College,
Fayetteville, NC 2011 – 2014

Instructor, Walters State Community College,
Morristown, TN 2014 – 2017

Technology Development Coordinator, East
Tennessee State University, Johnson City, TN
2007 – 2018

English Learning Lab Technician, Walters State
Community College, Morristown, TN 2019

Publications and Presentations: Author, Representations of Native American Characters in Stephenie Meyer's *Twilight*. M.A. Thesis, East Carolina University, 2007. Ann Arbor: ProQuest/UMI, 2011. (Publication No. 1493566.)

Author, Review of the book *Unrelenting Change, Innovation, and Risk: Forging the Next Generation of Community Colleges*, by Dr. Daniel J. Phelan, 2016. *The Community College Enterprise*, Vol. 22. No 2, 52-54.

Conference Presentation, presented at East Tennessee Technological Association, 2016
Instructional Technology Academy *Incorporate Supplemental Course Materials with iBook*, June 2016.

Honors and Awards: North Carolina Teaching Fellow, 2004
Cum Laude, 2007
Awarded the Margaret B. Bryan Award at UNC Charlotte for Academic Excellence in English, 2006
East Carolina University Nominee for Outstanding M.A. student in English, 2011