ACTIVE LEARNING ENGAGEMENT CLASSROOMS
AT THE UNIVERSITY OF CENTRAL MISSOURI:
PRACTICAL STRATEGIES TO IMPLEMENT
AND SUSTAIN UTILIZATION OF ACTIVE LEARNING
IN HIGHER EDUCATION USING TECHNOLOGY

A Dissertation

presented to

the Faculty of the Graduate School

at the University of Missouri

In Partial Fulfillment

of the Requirements for the Degree

Doctor of Education

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by

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JULY 2020

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The undersigned, appointed by the dean of the Graduate School, have examined the dissertation entitled

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Presented by Elmer N. Ragus, a candidate for the degree of Doctor of Education, and hereby certify that, in their opinion, it is worthy of acceptance.

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Dedications

I would like to dedicate this work to my family. You have supported me throughout my doctoral journey, experiencing many things with me from staying up late as I studied to keeping me company in the computer lab or the library as I worked on my papers to visiting me in Columbia in the summers. To my wife, Danyale, you have been my source of encouragement as you cheered me on every step of the way. Thank you for your support and sacrifices. To my children, Eidan and Evrette, thank you for love and patience. We did it, everybody!

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List of Abbreviations

ALEC:	Active Learning Engagement Classroom
BYOD:	Bring Your Own Device
CoPAL:	Community of Practice – Active Learning
CTL:	Center for Teaching and Learning
LSIDT:	Learning Space Instructional Design Team
LSRS:	Learner Space Rating System
SCALE-UP:	Student-Centered Active Learning Environments with Upside-Down Pedagogies
SIP:	Strengthening Institutions Program
UCM:	University of Central Missouri

Abstract

The tradition of lecturing in higher education is synonymous to teaching (Morrison, 2014). Fortunately, those in higher education today are pushing for viable alternatives such as active learning because several studies have shown the positive impact on student performance, student achievement, and other learning goals (Auerbach & Andrews, 2018; Beichner, 2014; Cattaneo, 2017; Eddy, Converse, Wenderoth, & Schinske, 2015; Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt, & Wenderoth, 2014; Heim & Holt, 2018; Lumpkin, Achen, & Dodd, 2015; Morrison, 2014). Additional research should therefore focus on topics besides whether active learning works. This qualitative study aims to add to the literature of the next generation of active learning research by exploring faculty and student perceptions of active learning engagement classrooms (ALECs), actions that a university can take to encourage the use of active learning engagement classrooms, and support for faculty transitioning from traditional lecturing to active learning using technology. Focus group meetings and interviews were conducted with 44 faculty, staff, and student participants at the University of Central Missouri. While mostly positive, faculty and students had mixed reviews about the ALEC experience. Also, most participants pointed to the need for training to support the sustained utilization of the ALECs. The qualitative findings are discussed and connected to the theoretical frameworks guiding this study. The paper concludes with three phases of recommendations for practice and ideas for future research.

SECTION ONE

INTRODUCTION TO THE DISSERTATION-IN-PRACTICE

Background

The tradition of lecturing in higher education has been around for over 900 years. In fact, the traditional lecture has been used for so long that many individuals regard lecturing as synonymous to teaching (Morrison, 2014). The lecture had its purpose back in medieval times because books were rare (Park & Choi, 2014). Students, therefore, relied on instructors to read from the source. A fourteenth-century painting by Laurentius de Voltolina of a classroom at the University of Bologna in Italy illustrates such a lecture scene (see Figure A1). The painting shows rows of desks with the instructor at the front lecturing behind a lectern. Jump forward 700 years to the 21st century, and one can see that this depiction in de Voltolina's painting seems to still resemble many of today's college classrooms.

Need for Change: Active Learning vs. the Traditional Lecture

The traditional lecture is a passive form of learning (Cattaeno, 2017; Coorey, 2016; Morrison, 2014). Fortunately, those in higher education today are pushing for viable alternatives such as active learning (Beichner, 2014; Cattaneo, 2017; Lumpkin, Achen, & Dodd, 2015; Morrison, 2014). While the definition of active learning is something researchers have been grappling with for several decades, active learning is generally regarded as any instructional activity that engages the student with the content, each other, and the instructor (Arthurs & Kreager, 2017; Bonwell & Eison, 1991; Prince, 2004; Ryan & Martens, 1989; TeKippe, 2017).

Active learning using technology. The most basic form of active learning is the introduction of simple activities to the traditional lecture such as giving students the time to clarify notes with a partner (Prince, 2004). However, the 21st century classroom offers

numerous possibilities for enhancing active learning activities with the availability of electronic technologies (Johnson & Johnson, 2008; Kemp, Preston, Page, Harper, Dillard, Flynn, & Yamaguchi, 2014; Onyema & Daniil, 2017). These electronic technologies can already be built into the classroom, such as interactive multi-touch displays mounted on classroom walls and hardware and software for wireless presentation systems.

Additionally, students can bring their own personal devices such as laptops, tablets, and smartphones that they can use during active learning activities.

Constructivism. Active learning is a constructivist active pedagogy (Cattaneo, 2017; Jonassen, 1991). In constructivism, reality is determined by individuals who are the ones creating meaning from experiences. Because the focus is on the interactions of individual learners, active learning can expose these learners to multiple perspectives. Part of an instructor's job, then, is to create learning experiences to guide these learners as they decide for themselves what to make of all the content.

Active Learning Research

Research has shown that active learning has a positive impact on student performance, student achievement, and other learning goals (Auerbach & Andrews, 2018; Cattaneo, 2017; Eddy, Converse, Wenderoth, & Schinske, 2015; Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt, & Wenderoth, 2014; Heim & Holt, 2018). Given the number of studies that have connected active learning to numerous advantages, many educational researchers have suggested the time had come to implement active learning rather than continue to study whether active learning worked or not (Auerbach, Schussler, & Stains, 2017; Bernstein, 2018). Freeman et. al (2014) went further in their recommendation after a meta-analysis of 225 studies on active learning. If the

experiments on active learning had been controlled like biomedical trials of medical interventions, the researchers would have discontinued enrolling people in the control condition, the traditional lecture, because the treatment, active learning, was clearly more beneficial to participants.

Statement of the Problem

Problem of Practice

A search of recent academic literature reveals a push for the promotion of active learning pedagogies to increase student achievement (Cattaneo, 2017). The Active Learning Engagement Classroom (ALEC) at the James C. Kirkpatrick Library at the University of Central Missouri (UCM) is available for all faculty to use to gain experience in active learning strategies using technology and to collaborate with fellow faculty. However, this ALEC at the library remains largely unused every semester. From the fall semester of 2017 to the fall semester of 2018, a total of 20 faculty teaching 21 courses have utilized the ALEC (Center for Teaching and Learning, 2019a; Center for Teaching and Learning, 2019b). The problem is UCM has completed and is also in the process of completing eight additional ALECS throughout the Warrensburg campus. The lack of participation or interest with the ALEC at the library may indicate faculty do not know how to use the equipment, are held back by various barriers to implementation, or simply do not know about the existence of this type of learning space. Consequently, if UCM does not address the reasons behind the underutilization of its original ALEC at the library, then the same thing might happen to the newly completed and in-progress ALECs on campus.

Despite what educators recognize about the benefits of active learning, neither the creation of active learning spaces nor training and familiarity with best practices automatically led to increased faculty use of active learning pedagogies (Park & Choi, 2014; Sunal, Hodges, Sunal, Whitaker, Freeman, Edwards, Johnston, & Odell, 2001). After all, the transformation of a course for active learning can require a significant investment in time and effort, especially upfront (Hedden, Worthy, Akins, Slinger-Friedman, & Paul, 2017). The switch from a lecture-based approach to an active learning approach, or any differing approach for that matter, is inherently risky (Hedden et al., 2017). Bonwell and Eison (1991) described this type of risk as “perhaps the single greatest barrier of all” (p. v) for faculty to be open to a new way of teaching. Complicating matters is students and faculty have different ideas about what being learner-centered, or maximizing student learning, means (Heim & Holt, 2018). For instance, in a study by Watters and Watters (2007), students understood learner-centered teaching to be lecture-style presentations. As a result, some students found active learning engagement classrooms (i.e., learner-centered classrooms) to be an unwelcome burden rather than a benefit because of perceived extra expectations such as small group discussions and flipped instruction activities out-of-class (Heim & Holt, 2018). Faculty, on the other hand, can “undergo a cognitive shift after pedagogical development that is not necessarily transferred to their actual classroom practices” (Heim & Holt, 2018, p. 3). Faculty may, therefore, be prone to holding inaccurate definitions of learner-centeredness as well. For example, in a survey by Ebert-May, Derting, Hodder, Momsen, Long, and Jardeleza (2011), 75% of 211 faculty participants claimed they used learner-centered practices when, in fact, the approaches were more teacher-driven.

Existing Gap in the Literature

Because of differences in definitions and perceptions of learner-centeredness in the classroom, results and opinions regarding the efficacy of active learning strategies vary (Auerbach, Higgins, Brickman, Andrews, & Labov, 2018; Heim & Holt, 2018). New research in active learning using technology, then, should ask “which specific new methods, implemented in what particular ways, are likely to have the most significant incremental benefits for...students?” (Bernstein, 2018, p. 299). Freeman et al. (2014) described these new studies in active learning as second-generation research. Second-generation studies could also investigate instructor characteristics responsible for enhancing the active learning environment, as well as explore further what active learning can do for underprepared and underrepresented students. While a search of the current literature did not yield second-generation studies of active learning labeled as such, new research studies on active learning should no longer be about investigating whether active learning works.

Purpose of the Study

Barriers to the implementation of active learning exist (Tharayil, Borrego, Prince, Nguyen, Shekhar, Finelli, & Waters, 2018) so this study sought to determine how to minimize or eliminate these barriers. Sources of barriers originate from students, the institution, oneself, and the education literature (Eddy et al., 2015; Sunal et al., 2001). The purpose of this study, then, was to discover approaches to assist faculty at UCM in learning best how to apply active learning strategies using technology despite barriers to implementation. Knowledge of these best practices could, in turn, be utilized to both increase and sustain the use of active learning strategies using technology in the

classroom. Additionally, UCM could identify from faculty and student experiences in existing active learning engagement classrooms the best approaches to implement additional ALECs on campus.

Research Questions

The research questions guiding this study are the following:

1. What are the perceptions of faculty who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?
2. What are the perceptions students who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?
3. What can the University of Central Missouri do to encourage faculty utilization of one or more of the Active Learning Engagement Classrooms (ALECs)?
4. What can the University of Central Missouri do to support faculty transition from traditional lecturing to active learning using technology?

The first two research questions address the context in which active learning using technology occurs by acknowledging faculty and student experiences at UCM. By using participants' voices, the researcher will paint a clear and relatable image of what being learner-centered looks like in higher education. This study could spark an interest in UCM faculty to imagine themselves engaging in the application of active learning strategies using technology in the classroom. The last two research questions inform UCM faculty, staff, and leadership regarding what can be done to overcome barriers to implementation of active learning using technology in the classroom. Ironically, the education research literature could sometimes serve as a barrier because of insufficient detail about how to practice the reported educational innovations (Eddy et al., 2015). The

discussions from the findings reflect the realities of faculty life, such as their views on teaching expectations versus teaching realities and the barriers encountered. Ultimately, this study offered a clear set of recommendations such that a beginner all the way to an expert in active learning using technology could readily make use of a support system.

Conceptual/Theoretical Frameworks

A theory under the umbrella of Adult Learning Theories is transformative learning (Merriam & Bierema, 2014). Additionally, a foundational concept of adult learning is that transformative learning leads to personal development via challenging one's long-standing beliefs (Chen, 2014). Mezirow's (1981) transformative learning theory further explains how adults make sense of experiences and how influences affect the transformative learning process. Every person holds a worldview that essentially guides the formation of habits of mind and frames of reference, thus making it difficult to navigate through disorienting events such as learning a new concept (Christie, Carey, Robertson, & Grainger, 2015). Faculty at UCM, as adult learners, will need to be transformed in their ways of thinking regarding expectations of how learning should take place in the classroom. For example, an instructor may feel from experience that students should be told what to do and learn instead of having these students navigate their way through a lesson with their peers (Sunal et al., 2001) as is the case in active learning activities using technology. In this study's context, evidence of change will come in the form of reformations in faculty teaching practices.

According to a study by Sunal et al. (2001), there were nine conditions necessary for successful teaching reforms to occur. Most of the conditions were about working with others. Examples included interdisciplinary collaboration among different colleges in the

same institution, connections with faculty and administrators who were actively seeking the same changes within the same institution, and networks of faculty either within or outside the institution. Through a purposeful collaborative effort, faculty and education experts can develop new and optimized classroom interventions. Successful transformative learning also occurs through partnerships between students and teachers (Zanchetta, Bailey, Kolisynk, Baku, Schwind, Osino, Aksenchuk-Metersky, Mehari, Babalola, Christopher, Hassan, Leong, Mohamed, Nemhbard-Wedderbrun, Rodrigues, Sales, Salvador-Watts, Santiago, Sizto, Stevenson, & Yu, 2017). To bring about and sustain transformative learning, UCM faculty will need to coordinate efforts with various stakeholders throughout the university and perhaps other institutions as well.

Design of the Study

Setting

The site of this study was the University of Central Missouri (UCM), a public institution established at Warrensburg in 1871 (University of Central Missouri, 2019a, About section, para. 6). The Center for Teaching and Learning (CTL), which designed the first ALEC in the fall of 2017, is housed within the UCM library. This space in the library provides faculty a place for testing ideas in active learning using technology (Center for Teaching and Learning, n.d., Overview and purpose of ALEC section, para. 1) with hopes for expanding the number of ALECs throughout the campus. Currently, eight ALECs in five other buildings are at the Warrensburg campus. With the receipt of the Title III Strengthening Institutions Program (SIP) grant for the fall of 2018 (Murphy, 2019), UCM received funding to be used by September 2019 to create one ALEC for

each of the four colleges (S. Montgomery, personal communication, March 1, 2019). As a result, there will be a total of nine ALECs at UCM by the fall semester of 2020.

Participants

Purposive sampling emphasizes the need for an in-depth understanding of a specific case (Merriam & Tisdell, 2016). Individuals with direct experience work best for effectively answering the research questions. Therefore, the researcher contacted faculty who have taught in one or more of the ALECs and students who have taken classes with these instructors starting from August 2017. Additionally, administrators, faculty, and staff engaged in the design of the classroom spaces and the curriculum were asked to participate. For another perspective, the researcher also sought faculty participants who have not taught in any of the ALECs.

There were 12 participants who were college deans, associate deans, an assistant chair, managers, program coordinators, a director, one faculty member, and staff members from the Office of Technology. These individuals were involved in various aspects of the design of and decision-making for the ALECs. Another staff member interviewed was the office professional from one of the schools represented by the faculty who teach at one of the ALECs. A total of 20 faculty members and 7 students participated in focus groups or one-on-one interviews. Lastly, six faculty who have never used any of the ALECs were approached. All these faculty members taught online courses, as well as face-to-face classes. Access to the research site and all these participants resulted from the researcher first reaching out to each of the college deans and the university librarian.

With help from the Center for Teaching and Learning and other offices at UCM that had access to ALEC information, the researcher identified and reached out to faculty, staff, and student participants via email. Emails of UCM faculty and staff are publicly available so the researcher did not need help gathering this information. However, the Center for Teaching and Learning provided email addresses of student participants. With all this email information on-hand, the researcher was able to recruit participants electronically. The researcher, when present on location during class observations, also spoke directly to student participants with the instructor's permission. For a breakdown of participants and the rooms these participants represented, see Appendix B.

Data Collection Tools

When the goal of a study is to understand a phenomenon in its natural setting, as can be gathered from this study's research questions, Creswell (2014) recommended a qualitative study as the appropriate method. The researcher in a qualitative study is the key instrument in collecting data from multiple sources. The qualitative researcher conducted one-on-one interviews and focus group interviews, observations, and a review of relevant artifacts and documents. Interviews, whether individually or in a focus group, rely on questions to find out what is on a person's mind, so the interview was the most prevalent source of data for this study. The interviews were semi-structured, as this format permitted the researcher to have predefined questions while allowing for flexibility and responsiveness to the emerging views of the interviewees. Also, because of participants' busy schedules, one-on-one interviews averaged approximately 45 minutes while the faculty focus group meetings were approximately one hour long and the student

focus group meeting was 45 minutes. Focus groups, with their interactive discussions, generated a different type of data than what was possible in individual interviews.

The researcher conducted data collection efforts before and during the disruptions caused by the COVID-19 pandemic. As such, interviews and focus group meetings were both conducted in person and electronically via video conferencing software. The researcher interviewed administrators and staff members individually. There were three focus group sessions consisting of four individuals each session. Two of these focus groups were with faculty members, while the third focus group was with students. Also, 12 faculty participants and three student participants could not attend the scheduled focus group sessions, so they were interviewed individually.

As for observations, the researcher was an observer rather than a participant in order to have firsthand experience with the phenomenon of interest without disrupting class activities. Unfortunately, the difficult situation with the pandemic cut short the researcher's ability to do observations on the eight ALECs available during the spring semester of 2020. The researcher observed four class sessions in only three of the ALECs—James C. Kirkpatrick Library 1268, Lovinger 4170, and Martin 230. The class sessions lasted from 50 minutes to three hours. However, the researcher stayed for 75 minutes at the longest.

Finally, data came from artifacts and documents. Artifacts included the various technologies and other objects used in the nine ALECs. Documents were physical or digital in form, such as course schedules, class rosters, job quotations, room layouts, building maps, web pages, pictures, rubrics, and instructors' lessons. Qualitative data

from these various preexisting physical or digital sources allowed for triangulation of data with interviews and observations.

All data collection efforts adhered to the University of Missouri and UCM Institutional Review Board ethical requirements. Participants were aware that their participation was voluntary and confidential. Also, participants knew they could withdraw at any time during the study. Additionally, names of participants and collected data remained confidential. Observation notes and audio recordings of interviews were stored electronically and could be accessed only with the researcher's login credentials. Pseudonyms were used in written transcripts of audio recordings, and audio recordings will be deleted seven years after the completion of this study.

Data Analysis

The focus of a qualitative study is for the researcher to allow what participants make of the phenomenon being studied to emerge from the collected data (Creswell, 2014). The researcher thus used the participants' voices rather than his voice or other researchers' voices from the literature. However, data collection and data analysis should occur at the same time in qualitative research (Merriam & Tisdell, 2016). Each interview, observation, artifact, or document collected allowed the researcher to be more focused, noting things to look for in the next round of data collection. Additionally, strategies such as triangulation and rich, thick descriptions from the interviews served to promote validity, reliability, and transferability (Merriam & Tisdell, 2016).

The researcher transcribed all interviews for accuracy in descriptions of the phenomenon. From the transcripts, categories and themes were constructed as a result of recurring patterns from the participants' words. The researcher knew there was a pattern

when what was gathered from individual and focus group interviews corresponded with data from observations, artifacts, and documents. Following Creswell's (2014) guidelines, the goal was to reach 25 to 30 categories during the early stages of data analysis and then narrow down to four themes when discussing research findings. The researcher used MAXQDA Analytics Pro 2020 (Release 20.0.7), a qualitative data analysis software, to assist in keeping the categories and themes organized.

Limitations, Assumptions, and Design Controls

Limitations of this research study included the setting, transferability to other colleges and universities, and researcher bias. The setting was about participants' experiences with the ALECs at UCM. While the researcher had an extensive understanding of the phenomenon after data collection and analysis, the goal was to "not find out what is generally true of the many" (Merriam & Tisdell, 2016, p. 253). The researcher was not looking for generalizability but rather transferability. Thus, persons interested in applying the findings of this research study will need to extrapolate or apply the narrow confines of this research study's data to other contexts. As Lincoln and Guba (1985) put it, "the burden of proof lies less with the original investigator than with the person seeking to make an application elsewhere" (p. 298). Finally, because of the researcher's role as the main instrument for collecting data, he was cognizant of how his background may impact data analysis, an aspect of qualitative research Creswell (2014) described as reflexivity. More specifically, the researcher's position as Instructor, Faculty Liaison, and Instructional Designer for the College of Health, Science, and Technology (CHST) at UCM, as well as personal experience teaching a class at the ALEC in the library prior to this study, may have introduced potential biases in the design of the study

and interpretation of results. To control for these potential biases, the researcher used strategies as suggested by Merriam and Tisdell (2016). These strategies were to provide vivid details of findings, to triangulate using multiple sources of data, and to keep a log of qualitative research processes used in the study.

Definitions of Key Terms

Active Learning: An educational experience designed to engage learners with each other, the course material, and the teacher. The teacher acts as the expert, guide, or facilitator as needed, based on student characteristics such as familiarity with active learning techniques and previous background experience or knowledge of the content.

Active Learning Engagement Classroom (ALEC): At UCM, ALEC primarily refers to the classroom developed by the Center for Teaching and Learning in 2017. The ALEC is located on the first floor of the library at UCM. However, in 2019, ALEC is starting to be used to describe similar spaces in other buildings throughout the UCM campus. These rooms feature furniture and technology specifically designed to facilitate active learning using technology.

Active Learning Using Technology: The main distinction between active learning and active learning using technology is the utilization of high technology during learning activities.

Adult Learning Theory: Holds that adults learn differently than children. Adult learning is situation motivated. In adult life, whether work-related, personal, or social in nature, adults are motivated to learn in order to address these various situations. Additionally, adult learning is experience centered. Adults use their reservoir of experience as a resource when participating in learning activities.

Andragogy: The art and science of adult learning. In providing assumptions and sets of principles to guide instruction of adult learners, andragogy is considered a foundational pillar of Adult Learning Theory.

Authentic Leadership: A theory of leadership that focuses on a leader forming honest relationships with followers. Authentic leaders lead with their hearts and are consistent in demonstrating their core values. Authentic leaders also understand how best to use their gifts to serve their followers.

Bring Your Own Device (BYOD): In this study's context, BYOD means that college students bring to classrooms the technologies they enjoy such as laptops, tablets, and smartphones to utilize during learning activities.

Center for Teaching and Learning (CTL): The office at UCM that provides academic support for faculty and staff via development, training, and funding opportunities.

Community of Practice – Active Learning (CoPAL): A group of faculty and staff at UCM that shares an interest in active learning. Through monthly interactions, the group discusses experiences in active learning and walks through demonstrations of active learning in the classroom. In doing so, the members learn how to be better in implementing active learning strategies and techniques.

Constructivism: A learning theory that focuses on individuals creating meaning or mental models from their experiences and understanding. Constructivism promotes active learning pedagogies as learners confront multiple perspectives of the world.

Digital Natives: In this study, the researcher is assuming that today's typical traditional college student has an intuitive ability to use a variety of electronic devices, having been immersed in these technologies since birth.

Disorienting Dilemma: Serves as the impetus for critical reflection when an experience does not make sense or is at odds with one's worldview.

Faculty: In this study, all persons who teach college courses at UCM, whether full-time, part-time, or temporary, are considered faculty. This definition includes full professors, tenure-track professors, non-tenure track professors, instructors, and adjunct faculty. Additionally, the words *teachers* and *instructors* are used to indicate faculty.

Flipped Classroom Model: An instructional strategy that reverses, or flips, the traditional learning environment. Instructional content is delivered outside the classroom so that instructors can focus on more in-depth and active learning activities during class.

Graduation Rate: The percentage of a college or university's first time, first year undergraduate students who complete their program within six years.

High-Technology: The term used for new technology with advanced features and capabilities. High-technology is sometimes considered complex, costly, and difficult for intended end users to use.

Learner-Centered Practices: Methods of teaching that allow students to choose what to learn, how to learn, and how to assess learning. The instructor recognizes individual differences in learners and thus is a facilitator of individual learning rather than whole class learning with no differentiation. Active learning is an example of a learner-centered practice.

Learner Space Rating System (LSRS): Measures classrooms designed for face-to-face meeting on the degree to which these spaces support active learning.

Low-Technology: Could refer to old technology but also describes technology designed to be as simple as possible.

Objectivism: A learning theory that separates knowledge from learners. That is, objective reality exists, and learners accept this reality. The traditional lecture facilitates the goal of objectivism as learners passively accept knowledge passed down from the instructor.

Pedagogy: The art and science of educating. Pedagogy literally means “the art of teaching children.” Pedagogy refers to the method in how instructors present curriculum to students.

SCALE-UP: Stands for “Student-Centered Active Learning Environment with Upside-down Pedagogies”. These types of classrooms, from the technologies available to the arrangement of furniture, are especially designed to promote face-to-face interaction in large enrollment courses during learning activities. Instructors make use of the flipped classroom model to facilitate active learning.

Second-Generation Studies of Active Learning: Refers to the latest round of research on active learning. The focus is no longer on determining whether active learning works but rather on identifying the methods most beneficial to students.

Student Retention: The continued enrollment of a college student from the first year to the second year.

Teacher-driven Practices: Methods of teaching where students focus on the teacher. Examples include the traditional lecture and students working individually rather than collaboratively.

Title III Strengthening Institutions Program (SIP) grant: This five-year grant awarded to UCM has a goal of strengthening academic and educational support services for student success in achieving educational goals, especially for low income students. The first-year initiative was for establishing integrative first year experience programs and for creating active learning engagement classrooms for gateway courses.

Traditional Lecture: The transfer of information from teacher to student via passive learning strategies, such as listening and taking notes. Typically, passive learning strategies do not involve very much student interaction with the teacher, with classmates, and with the content being learned.

Transformative Learning Theory: A theory of adult learning where disorienting dilemmas serve as the catalyst for learners to challenge or reflect on assumptions, values, and beliefs.

Significance of the Study

Although the literature clearly establishes the benefits of active learning, instructors still face many barriers that may prevent the implementation of such learner-centered pedagogies. Surprisingly, one barrier is the education literature which is largely written for education researchers (Borrego, Cutler, Prince, Henderson, & Froyd, 2013; Eddy et al., 2015; Fraser, Tinman, Miller, Dowd, Tucker, & Mazur, 2014). As a result, those who are interested in using active learning strategies but may not necessarily be

education researchers are expected to read the methods and readily identify the critical elements to consider or apply in practice.

The study addressed the above-mentioned barrier as well as gaps found in the literature. The first gap was the need for more studies addressing the role of student resistance in the process of faculty transformations in pedagogical approaches (Auerbach et al., 2018; Tharayil et al. 2018). The second gap was about the lack of studies exploring faculty transition from uninterested novice to heavily invested expert in active learning pedagogies (Heim & Holt, 2018). The last gap was the call for additional second generation active learning research with more rigor and precision, going beyond the claims that active learning is beneficial (Bernstein, 2018; Freeman et al., 2014).

The answers to this study's research questions paint a vivid picture of what faculty and students think about the various ALECs at UCM. Additionally, the researcher was able to compile a list of strategies for encouraging and supporting faculty in their use of the ALECs, including tips on how to overcome barriers to implementation. Ultimately, the research findings help institutions like UCM make informed decisions about implementing proven active learning practices and investing in classroom renovations and curriculum redesigns.

Summary

Given what we already know about the positive aspects, as well as the challenges, of active learning practices (Auerbach & Andrews, 2018; Eddy et al., 2015; Freeman et al., 2014; Heim & Holt, 2018), this qualitative study was meant to fill the gap in the literature regarding what is known as second-generation studies of active learning. These second-generation studies seek answers to what works best for the implementation and

sustained use of active learning using technology rather than continue to debate whether active learning is beneficial or not. Another area of interest is the transformation of faculty from uninterested novices to heavily invested, expert practitioners of active learning using technology. Guided by the lenses of adult learning theory and transformative learning theory, the researcher observed and/or interviewed these practitioners of active learning strategies using technology to see how they negotiated through student resistance and other barriers through collaboration with others within and outside of UCM. As such, the study examined the experiences of participants with the various ALECs at UCM. These participants included not only faculty but also both students who took classes in the various ALECs and UCM administrators and staff involved in the design of these learning spaces. Data were analyzed using qualitative research methods which, according to Creswell (2014), is appropriate when the goal is to understand a phenomenon. More specifically, by exploring what we can learn from UCM's experience, the researcher offered practical implications to phasing in active learning strategies using technology and solutions to supporting and sustaining the use of these classrooms.

SECTION TWO
PRACTITIONER SETTING FOR THE STUDY

Introduction

Higher education institutions can be described as bureaucracies, or even as jungles (Bolman & Gallos, 2011; Manning, 2013). As bureaucracies, division of labor results in precision, efficiency, and stability. However, uncertainty forces organizations to deal with unexpected events (Bolman & Deal, 2013), thus revealing competitive behavior reminiscent of ecosystems found in jungles, as constituents in higher education institutions contend for limited resources (Bolman & Gallos, 2011). The structural frame and political frame by Bolman and Deal (2013) offer a glimpse into the kind of dynamics that educational leaders face in the world of higher education which is characterized by unpredictability and vulnerability (Manning, 2013). UCM administrators utilized adaptive leadership to help followers navigate through what Bolman and Gallos (2011) described as political complexities inherent in higher education institutions.

History of Organization

University of Central Missouri

The University of Central Missouri (UCM) sits on 1,561 acres in Warrensburg, Missouri, located 35 miles from the Kansas City metro area (University of Central Missouri, 2018; University of Central Missouri, 2019h, Historic and beautiful section, para. 1). Founded in 1871 as Normal School No. 2, and then Warrensburg Teachers College later, the institution has since gone through four additional name changes (University of Central Missouri, 2019i, Rich heritage section, para. 1). In 1919, the school became Central Missouri State Teachers College followed by Central Missouri State College in 1945. The last two name changes, Central Missouri State University and University of Central Missouri, occurred in 1972 and 2006 respectively.

The institution started as a school for teachers (University of Central Missouri, 2019b, History section, para. 1). Today, UCM is accredited by the Higher Learning Commission and is composed of the College of Arts, Humanities, and Social Sciences; College of Education; College of Health, Science, and Technology; and Harmon College of Business and Professional Studies (University of Central Missouri, 2018). These four colleges offer more than 150 programs of study in a variety of disciplines through bachelor's, master's, education specialist, and cooperative doctoral degrees (Missouri Department of Higher Education, 2018). From 2017 to 2018, the total number of degrees awarded was 3,482 (University of Central Missouri, 2018).

Fall 2018 enrollment totaled 11,487 students consisting of 9,300 undergraduate students and 2,187 graduate students. The undergraduate population was 45% male, 55% female, 21% minority, and 2.5% international students. The graduate population, on the other hand, was 37% male, 63% female, 13% minority, and 19% international students. During the 2018-2019 academic year, the university had 463 full-time faculty, 72.1% of whom hold a doctorate or terminal degree (University of Central Missouri, 2018). With 463 full-time faculty, the student-to-faculty ratio is 17:1.

For almost 150 years, the institution has served students and the state of Missouri, providing alumni with the skills to enrich and support their communities and families. In August 2018, UCM refreshed its commitment to excellence by changing its campaign from "Choose Red" to "Opportunity in Action" (University of Central Missouri, 2019c, Opportunity in action section, para. 1). The principle behind this campaign is opportunity encompasses everything UCM provides, such as student support and scholarships, in order to lead to advancement for students.

Center for Teaching & Learning

An office at UCM that supports the “Opportunity in Action” campaign is the Center for Teaching and Learning (CTL), which is located on the first floor of the James C. Kirkpatrick Library. More specifically, CTL provides opportunities for the UCM community through this office’s efforts in augmenting the skills of the university’s faculty. “CTL offers many new development opportunities for faculty and administrators geared toward pedagogical advancement and educational innovation” (Center for Teaching & Learning, n.d., Welcome to the Center for Teaching & Learning section, para. 1). Two examples of initiatives headed by CTL for assisting faculty in educational technology innovation are the Active Learning Engagement Classroom (ALEC) and the Community of Practice--Active Learning (CoPAL).

The ALEC, located on the first floor of the library, became available for use by faculty in the fall semester of 2017 (Center for Teaching & Learning, n.d., Overview and purpose of ALEC section, para. 1). Most notable about the ALEC is the intentionality in designing and equipping the space to support active learning using technology. The ALEC contains an 80-inch multi-touch display, three 55-inch displays, and hardware/software that allows for screen sharing of students’ devices on any or all four displays. This type of implementation of educational technology reinforces the university’s “statewide mission in professional applied sciences and technology” (Missouri Department of Higher Education, 2018, p. 69). Additionally, the tables and chairs can easily be moved around to accommodate multiple room arrangements. The space is open for use for an entire semester by all faculty on a first come, first serve basis. Additionally, there are guidelines to follow such as the completion of technology training

before classes start, the use of active learning techniques throughout the semester, and participation in a brief online survey at the conclusion of the semester (Center for Teaching & Learning, n.d., ALEC use guidelines section, para. 1-8).

The Community of Practice--Active Learning (CoPAL) at UCM started in the fall semester of 2019. An invitation to attend the inaugural meeting on September 19, 2019, was sent to all faculty at UCM who are “looking to expand their repertoire of active learning strategies for their courses” (M. Jeffries, personal communication, September 13, 2019). The CoPAL group meets every third Thursday of each month to discuss different active learning strategies and these strategies’ implementation and adaptation in different contexts, including technology-centric spaces such as the various ALECs on campus.

Title III Strengthening Institutions Program (SIP) Grant

In the fall semester of 2018, UCM received \$2.7 million through a Title III Strengthening Institutions Grant from the U.S. Department of Education (Murphy, 2019). This five-year grant awarded to UCM has a goal of strengthening academic and educational support services for student success in achieving educational goals, especially for low income students (University of Central Missouri, 2019e, Project title section, para. 1). The following were projects completed during the first year of using the Title III grant: Mental Health First Aid Training, Central Summer Academy, Advising Case Management, Peer Mentoring, Embedded Tutoring, External Program Evaluation, and Freshman Seminar. Another first-year initiative was the creation of ALECs for gateway courses for each of the four colleges at UCM. The updates to the ALEC spaces are currently in progress with implementation planned for the spring semester of 2020 or

fall semester of 2020 (University of Central Missouri, 2019e, Ongoing projects section, para. 1).

Organizational Analysis

Bolman and Deal (2013) offered a glimpse at the constant pressures influencing the structure and restructuring of organizations. The form the organization takes is essentially a tradeoff from various structural dilemmas. For instance, in the spring semester of 2018, as UCM faced severe budget constraints for Fiscal Year 2019, UCM administration considered restructuring UCM from four colleges down to three colleges (M. Godard, personal communication, April 20, 2018). However, after welcoming faculty and student input, UCM decided to stay with four colleges. The academic departments within each college would still be affected as the restructure called for using a school model instead of a departmental model. The school model allowed for the combination of discipline areas into a school, thus eliminating several department chair positions. The restructuring plan was estimated to generate \$500,000 to \$600,000 in annual administrative savings.

From Bolman and Deal's (2013) political frame, one can identify the struggles among internal stakeholders--UCM administration, faculty, and students--and an external stakeholder, the Missouri legislature. The interaction among these stakeholders was an illustration of how various individuals use their power to shape organizations according to their interests. UCM administration was interested in creating a sustainable operating platform, but faculty and students were concerned about keeping intact the integrity of the various discipline areas they represent. The Missouri legislature, on the other hand, desires to keep taxes down and to have a sensible budget. From a structural frame lens,

the final form an organization settles on during restructuring is whatever balance is necessary to continue operating efficiently. Otherwise, employees could end up underutilized or overworked depending on the new interactions among the various functions found in organizations.

Bolman and Deal (2013) used Mintzberg's (1979/2005) five-sector model to illustrate different possibilities of how the various functions within an organization could interact. As an organization grows, a complex division of labor occurs where a manager is needed to coordinate the work of people directly producing products and services. With even more elaboration of work, a need arises for managers of managers as well. Ultimately, various job assignments form from the division of labor, causing stability and efficiency within an organization as the final form of the organizational structure takes place. For UCM, the final form of its structure is a traditional hierarchy where the flow starts from the top with the president followed by the provost, or chief learning officer (see Appendix C). Next, the hierarchy moves to the college deans, each with the various school chairs. Lastly, the school chairs supervise faculty and staff within the various discipline areas in a school.

Manning (2013) explained that structure is very much related to what is thought of as a bureaucracy. Bureaucracies, in turn, are about precision and efficiency via divisions of labor. Thus, the dominant form of institutions in higher education is the bureaucracy (Manning, 2013). A characteristic of bureaucracy in higher education is the existence of multiple purposes and goals and, thus, silos, among colleges and academic offices within the same institution (Bolman & Gallos, 2011; Manning, 2013). Such multiplicity makes the creation and administration of projects like the various ALECs at

UCM a decentralized activity. The ALEC in the library is headed by the University Librarian and managed by CTL staff. The design of the other ALECs in each of the four colleges at UCM, on the other hand, is driven by faculty needs with suggestions by CTL taken into consideration. Additionally, the Title III Project Manager and the Executive Director, both from Academic Support Services, are involved with four of the current projects for creating the ALECs due to Title III Grant terms. However, final decisions regarding choices for furniture, technology, and necessary renovations on these ALECs are ultimately governed by the deans of each college.

Leadership Analysis

Higher education institutions are paradoxical in nature (Manning, 2013). Cohen and March (1986) elaborated:

It does not know what it is doing. Its goals are either vague or in dispute. Its technology is familiar but not understood. Its major participants wander in and out of the organization. These factors do not make a university a bad organization or a disorganized one; but they do make it a problem to describe, understand, and lead.
(p. 3)

For instance, faculty members are “quasi-independent power centers” (Bolman & Gallos, 2011, p. 79) who work independently of their colleagues as loosely coupled systems--connected but concurrently able to retain separateness (Manning, 2013; Weick, 1978/1983). Such autonomy and loose coupling are necessary as the work of transforming students into learners is an ambiguous task (Bolman & Gallos, 2011; Weick, 1978/1983).

Additionally, the world of higher education can be a very uncertain place due to environmental vulnerability (Manning, 2013). A university depends on tuition dollars from a transient population of students and on funding from the government. When UCM faced an uncertain budget reality for Fiscal Year 2019, administration looked to restructuring from four colleges to three colleges as a solution to meet budget shortfalls.

However, the restructure effort set forth by UCM administrators for the fall semester of 2018 failed because of the “political complexities of academic leadership” (Bolman & Gallos, 2011, p. 71). Just because UCM administration wanted the change, this desire did not equate to change because of competing interests voiced by faculty, staff, and students. In addition to thinking of colleges and universities as paradoxical, then, another accurate description is that of being like jungles (Bolman & Gallos, 2011; Cohen & March, 1986; Manning, 2013). Higher education institutions, like jungles, house “a variety of different species or groups, each with its own specific characteristics, capabilities, interests, needs, and lifestyles” (Bolman & Gallos, 2011, pg. 71). Academic leadership thus requires the ability to be both an advocate and a negotiator. An academic leader as advocate/negotiator persuades followers to promote the interests that benefit the institution while simultaneously building agreements with groups of people that could offer help or resources.

Ultimately, UCM administrators pulled the university through Fiscal Year 2019 and continues to prepare and encourage the entire UCM community to deal with uncertainty and transitions. Northouse (2016) would describe these actions as characteristic of adaptive leadership. The adaptive leader demonstrates six dimensions in varying degrees. The first dimension, get on the balcony, is about finding perspective to

really see the situation. The second dimension, identify the adaptive challenge, is the process of analysis and diagnosis. The third dimension is regulating distress because followers have a psychological need for consistency. The fourth dimension is maintaining disciplined attention, constantly encouraging followers to keep doing whatever it takes to continue doing good work. The fifth dimension of giving the work back to people is about allowing people to be creative in providing solutions for the organization. Lastly, protecting the leadership voices from below means that all ideas are valued regardless of position within the organization.

The university president has demonstrated many of the dimensions of adaptive leadership through the work of his commissioned Strategic Planning Committee. This committee's goal is to develop a plan for the university for the next three to five years (University of Central Missouri, 2019f, Purpose and direction section, para. 2). The committee got on the balcony and protected leadership voices from below with the first phase of constituent input completed by March 2019, via SWOT, forums, and surveys (University of Central Missouri, 2019g, UCM strategic plan – timeline section, para. 1). By April 2019, the committee identified the adaptive challenge by completing an analysis of feedback from the first phase and formulating goals and objectives from the gathered data. Next, the committee gave the work back to people by vetting goals and objectives with constituents and then communicating the final strategic/university level goals and objectives from May 2019 to June 2019. To regulate distress and to give the work back to the people, the university president used the state of the university address to update the UCM community on the strategic plan and to encourage everyone to do his or her part to meet the objectives and goals (R. Best, personal communication, August 29, 2019). For

example, one of the objectives is for faculty and staff to directly affect the increase of student outcomes through development. The committee maintains disciplined attention by developing operational level goals from the university level down to the college, school, and unit levels by December 2019 (University of Central Missouri, 2019g, UCM strategic plan – timeline section, para. 1). Lastly, the university president protects leadership voices from below by providing a link on his page called “Presidential Communication and Feedback Form” (University of Central Missouri, 2019d, Sidebar section, para. 1) where the UCM community can anonymously provide information, ideas, and suggestions.

Implications for Research in the Practitioner Setting

In finding answers to the research questions, the researcher created new knowledge and knowledge application that is beneficial to the practitioner setting. Knowing about UCM’s history and commitment to the success of its students, this research study provided insight into faculty and student experiences with active learning using technology. The first two research questions are about faculty and student perceptions of active learning engagement classrooms at UCM. Because classroom design is integral to student learning (Park & Choi, 2014), knowing what faculty and students think about several aspects of the various ALECs is useful. From the successes and failures in faculty and student experiences, the researcher answered the third and fourth research questions on ways to encourage faculty utilization of the various ALECs on campus to support faculty transition from the traditional lecture to active learning using technology. The answers to these last two research questions are important considering the way decisions are made in higher education institutions. Also, the

development of three items--active learning using technology, active learning engagement classrooms, and redesigned curriculums to allow for more active learning--could be key to helping UCM reach many of its strategic plan's themes. These themes include Student Access and Success, Academic Excellence, Organizational Excellence, Inclusive and Diverse Community, and Institutional Excellence and Reputation (University of Central Missouri, 2019f, Purpose and direction section, para. 3).

Summary

One constant in UCM's almost 150 years of history is serving students who then go back to enrich their communities and families. The Center for Teaching and Learning (CTL) at UCM, as well as the use of the Title III Strengthening Institutions Program (SIP) grant, are examples of UCM's commitment to success via academic excellence. However, another part of UCM's history is change. The institution has gone through several name changes since its founding in 1871 and has continued to evolve as well. The institution underwent restructuring within its colleges in 2018 to better handle the budget realities born from uncertainty and vulnerability. Fortunately for UCM, its administrators have exhibited adaptive leadership behavior to help followers deal with transitions in order to continue the important work of turning students into learners. One of the ways UCM is accomplishing this task is through the creation of active learning engagement classrooms throughout its Warrensburg campus. This research study has the potential to guide how UCM administrators, faculty, staff, and students go about implementing and using these redesigned learning spaces.

SECTION THREE
SCHOLARLY REVIEW FOR THE STUDY

Introduction

The traditional lecture is the transfer of information from teacher to student via passive learning strategies, such as listening and taking notes (Cattaneo, 2017; Coorey, 2016; Morrison, 2014). Since the founding of universities over 900 years ago, lecturing has been and continues to be the choice for teaching college students (Baytiyeh, 2017; Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt, & Wenderoth, 2014). Fortunately, those in higher education are also continuously in search of interventions for increasing student learning, along with challenging current methods and pedagogies (Cattaneo, 2017), including the traditional classroom layout and the traditional lecture.

For example, instructors are finding ways to incorporate into learning activities the technologies the current generation of college students enjoy and expect. Part of the justification for using electronic technologies in the classroom has to do with the notion that these learners born after 1983 are digital natives (Lai & Hong, 2015). Digital natives are “able to use intuitively a variety of IT devices” (p. 727) and “prefer to learn by doing rather than being told what to do” (p. 727) among other things. As a result, groups such as the American Association for the Advancement of Science recommended the increased use of student-centered activities such as active learning (Auerbach et al., 2017) which could include the use of technology available in the classroom and of BYOD, or bring your own device. Concurrently, there is a paradigm shift toward these active learning activities implemented by higher education faculty (Cattaneo, 2017; Lumpkin et al., 2015).

Active learning belongs to the constructivist epistemology with a focus on the students’ behavior and learning processes (Cattaneo, 2017). More specifically, students

are expected to be self-directed, using prior knowledge and critical thinking skills, to solve problems on an individual basis or in small groups. The active involvement of students in this type of learning is opposite to the passive role taken by students when an instructor's main mode of instruction is the lecture. As such, the use of active learning strategies involves a change in the position of the instructor as the sole expert in the classroom. In active learning, instructors shift among the following roles: expert, guide, and facilitator. The instructor is thus responsible for designing educational experiences that engage learners not only with each other but with the material as well (Coorey, 2016). Active learning experiences can be categorized as case-based, problem-based, inquiry-based, project-based, or discovery-based (Cattaneo, 2017).

Regardless of the category, instructors can meet students' diverse needs through various techniques such as "problem-solving exercises, writing tasks, speaking activities, class discussion, simulations, peer teaching and fieldwork" (Coorey, 2016, p. 339). The addition of technology further enhances the active learning experience. According to Johnson and Johnson (2008), students are more likely to seek out partners when working cooperatively around technology, such as the computer.

The benefits of active learning found in the first generation of studies in the literature pointed to improved student outcomes, student performance, and analytic skills (Freeman et al., 2014). Additional advantages were student achievement, logic development, motivation, persistence, knowledge retention, content transferability, or other learning goals (Auerbach & Andrews, 2018; Cattaneo, 2017; Eddy et al., 2015; Heim & Holt, 2018). There are two significant outcomes from these various effects of active learning (Freeman et al., 2014). The first one is a lowering of failure rates among

students. Lower failure rates, in turn, translate to saved tuition dollars. The second one is improved grades. Better student performance increases student retention and may even positively impact graduation rates. The next phase of active learning research, then, is about discovering the design and implementations of active learning environments and pedagogies that best support instructors and provide the most benefits to learners (Bernstein, 2018; Freeman et al., 2014; Lee, Morrone, & Siering, 2018).

Definition of Active Learning

Constructivism

Jonassen (1991) said understanding any philosophy involves describing the metaphysics and epistemology behind the philosophy. Metaphysics relates to the assumptions one holds about the reality in which one lives while epistemology is about the nature of gaining knowledge and thought. Active learning pedagogies are difficult to grasp if relying on the education literature “as the term is used to describe methods and philosophies alike” (Cattaneo, 2017, p. 144). Active learning pedagogies, as a teaching philosophy, belong to the constructivist epistemology (Cattaneo, 2017) which holds that “knowing is a process of actively interpreting and constructing individual knowledge representations” (Jonassen, 1991, p. 5). The main concept in constructivism is the focus on individuals creating meaning or mental models from their experiences. From this constructivist view, reality is determined by the individual. Objectivism, on the other hand, is about learners mirroring objective reality. “Once having conveyed [...] information, lecturers feel they have fulfilled their responsibility to impart its meaning to the students” (Bonwell & Eison, 1991, p. xvii). An instructor’s job under objectivism is to merely tell learners about the world (Jonassen, 1991). The learners are under no

expectation to make their own interpretations. The traditional lecture approach fulfills the goal of objectivism.

In constructivist active pedagogies, learners encounter multiple perspectives of the world and eventually create for themselves their world view (Jonassen, 1991). The constructivist learning environment thus requires learners to be self-directed in order to be better consumers of knowledge and to simultaneously gain proficiency in learning (Cattaneo, 2017; Mayer, 2004). One way to help ensure self-directedness among learners is to provide student work that is intrinsically motivating. However, instructors should remain cognizant of student limitations based on prior knowledge and experience with the learning material and learner-centered pedagogies. Therefore, another ingredient is the instructor's willingness to play the role of expert, guide, or facilitator as needed during the learning process.

Active Learning vs. the Traditional Lecture

Bonwell and Eison (1991), in their seminal work on active learning strategies, suggested a good starting point for those who want to incorporate active learning is to first understand the strengths and weaknesses of the traditional lecture method. Among the lecture's strengths is the ability to reach many listeners at once, the minimum threat afforded to students who do not have to actively participate, and the satisfaction of learning by listening by those who enjoy this mode of delivery. However, the strengths associated with lectures are presumed to result from the work of "enthusiastic and knowledgeable scholar[s]" (p. 8). Additionally, the effectiveness of a lecture depends on the audience's educational level. Even if instructors were gifted orators speaking to students with above-average education, instructors would be no match to the typical

attention span. Ten to 20 minutes into a lecture, students begin to lose interest, negatively affecting assimilation of knowledge. However, the issue is not the fact that students are passive during a traditional lecture (Morrison, 2014). The real problem is what students receive during a lecture is simply information, not “knowledge-generating processes and activities” (p. 8). Therefore, even though “lecturing is virtually synonymous with teaching” (p. 7), faculty in higher education view active learning as a viable alternative to implement in the classroom.

A look at the education literature reveals that researchers have been grappling with defining active learning for several decades. In 1991, Bonwell and Eison said “the term ‘active learning’ seems to lack an identifiable origin or a common definition” (p. 1). However, as early as 1916, Dewey said “the nature of experience can be understood only by noting that it includes an active and a passive element peculiarly combined” (p. 139). In 2004, Prince found that “it is not possible to provide universally accepted definitions for all of the vocabulary of active learning since different authors in the field have interpreted some terms differently” (p. 223). A current search of the literature yields the same result. Active learning still carries multiple definitions and strategies in a variety of contexts (Arthurs & Kreager, 2017; TeKippe, 2017). Throughout the literature, active learning is not even explicitly defined, further adding to the confusion and lack of consensus (Arthurs & Kreager, 2017).

The simplest form of incorporating active learning is to introduce activities to the traditional lecture (Prince, 2004). For example, the instructor can take breaks from the lecture to allow students to clarify notes with a partner. Even a simple technique as pausing the lecture to discuss the subject matter with a partner works because, according

to Ryan and Martens (1989), students learn both passively and actively. Passive learning takes place when students take on “the role of ‘receptacles of knowledge’; that is, they do not directly participate in the learning process...Active learning is more likely to take place when students are doing something besides listening” (p. 20). Active learning is, therefore, generally defined as any instructional activity introduced and completed in the classroom to engage students with the content, each other, and the instructor (Prince, 2004).

There are five categories of active learning experiences (Cattaneo, 2017). First is case-based learning, the process of exploring, diagnosing, and problem-solving until the phenomenon under investigation is understood (Maudsley, 1999; Thistlethwaite, Davies, Ekeocha, Kidd, MacDougall, Matthews, Purkis, & Clay, 2012). Second is problem-based learning where students develop problem-solving skills via research of viable solutions to various types of problems. The third is inquiry-based learning which is about students using the scientific method to propose their questions and find answers. Fourth is project-based learning, an approach focused on students producing output relevant to the students and the students’ communities (Barron & Darling-Hammond, 2008). The fifth is discovery-based learning with its emphasis on students setting their boundaries as they explore through manipulation or experimentation. A basic understanding of the different categories of active learning can assist practitioners in assessing student needs to weigh the most appropriate method given the learning context.

Active Learning Using Technology

Any teaching strategy that enhances student interaction in the classroom can be considered active learning. However, “the world of the 21st century learner is full of

boundless possibilities for the use of multimedia and interactive technologies in the learning process” (Onyema & Daniil, 2017, p. 1). Therefore, an important aspect to consider when exploring active learning in higher education is the integration of electronic technology. “Technology and higher education have supported each other for centuries” (p. 4); and with digital natives, higher education institutions have even more reasons to incorporate into learning activities digital communications and interactivity tools such as tablet PCs, smartphones, and social media platforms used by today’s learners. As one participant mentioned in a study on faculty thoughts about the pros and cons of technology though, educators must be purposeful about the reasons for using technology (Kemp et al., 2014). The use of technology could otherwise become a hindrance. With proper reflection and consideration by instructors, technology can mediate student interaction by allowing focus on points of shared reference, thus promoting cooperative learning among students (Johnson & Johnson, 2008; Kemp et al., 2014).

High-technology active learning. Colleges and universities are refurbishing learning spaces in order to create high-technology active learning classrooms intentionally designed to facilitate group work centered around the use of electronic devices such as computers (Cotner, Loper, Walker, & Brooks, 2013; Nicol, Owens, Le Coze, MacIntyre, Eastwood, 2018). Electronic devices can typically connect to flat screen displays mounted throughout the classroom. The addition of mobile desks and chairs that allow learners to face each other further facilitate collaboration. Research has shown that students hold a favorable view of these technology-enhanced classrooms (DeBord, Aruguete, & Muhlig, 2004; Park & Choi, 2014). However, other studies

suggest unfavorable outcomes. For instance, learners could get distracted or disengaged, with the electronic screens acting as barriers between the instructor and learners (Nicol et al., 2018; White, Bradley, Martindale, Roy, Patel, & Worden, 2014).

Low-technology active learning. Low-technology active learning occurs in classrooms regarded as exhibiting the traditional arrangement of desks and chairs with a focal point on the instructor and screen at the front. In a study by Nicol et al. (2018), students were assigned to four different sections of the same course. Two sections were in a low-technology active learning classroom while the other two sections were in a high-technology active learning classroom. The authors found no grade differences between the high-technology and low-technology active learning classrooms. This finding suggests that perhaps “active learning itself is the key component to a successful course” (p. 256). As institutions such as UCM are embarking on creating active learning engagement classrooms, there might be conditions worth noting whereby visual distractions provided by high technology classrooms may not be the most ideal approach for student interactions.

Practical Strategies for Implementing Active Learning

While active learning can occur in a traditional layout classroom, the focus of this study will be on high-technology active learning. An instructor who wishes to implement active learning will find that there are two categories to address (Petersen & Gorman, 2014). The first has to do with challenges from the physical layout of the room being different from a traditional layout. The second concerns expectations about teaching.

An active learning engagement classroom will not have a focal point as desks and chairs will be arranged to accommodate student interaction. Additionally, because of

BYOD and the multiple screens in the room, there will be many opportunities for students to get distracted. There is also all the technology that goes into supporting active learning. For example, at UCM, the ALEC inside the library has a control panel for determining what will be displayed on the various screens, for managing the integrated speakers, and for shutting down the entire system. There is also hardware and software for allowing students to share their devices on any of the various screens. Lastly, there is an interactive display for electronic white boarding or for any activities that might require touchscreen capabilities. The point is that there is much more technology than what is typically found in a traditional layout classroom.

As for expectations about teaching in an active learning engagement classroom, students and instructors alike will have to adjust their behavior (Petersen & Gorman, 2014). Students will not be able to hide as easily as active learning typically involves group work. The instructor is no longer the focus. Lastly, predominantly relying on small group work might prevent interactions with the entire class.

The following are practical strategies gathered by Petersen and Gorman (2014) from instructors who have taught in active learning engagement classrooms. They address the various issues described in this section.

1. With no focal point, take advantage of the technologies and layout in the classroom. Display the same content on all screens, and then direct small group work or discussions based on the content. Explain your new role as a facilitator (p. 64).
2. To avoid or minimize distractions from so many screens and devices, direct students on where to focus attention. Also, ask students to temporarily close their devices if their full attention is necessary (p. 65).

3. To address feeling overwhelmed by all the technology available, decide upfront what will and will not be used. Then, plan lessons accordingly. Also, practice using the technology outside of class time to not waste time troubleshooting during class (p. 66).
4. To address feelings of losing control from not being the focal point anymore, make only a few changes to courses being taught for the first time in an active learning engagement classroom. For example, questions that used to be asked to the entire class during lectures can now be the subject of small group discussion work (p. 66).
5. To address students wanting to hide in the classroom, set expectations on interactions during the first day of class. Also, explain why these expectations are in place (p. 68).
6. To avoid feelings of not being able to interact with the entire class, set aside time for larger conversations. Also, introduce activities that make one group interact with other groups in the class (p. 68).

Barriers to Implementation

Students

In the literature, researchers mention student resistance the most often out of any of the barriers to the implementation of active learning (Finelli, DeMonbrun, Borrego, Prince, Husman, Henderson, Shekhar, & Waters, 2018). However, student resistance is also the least researched out of the many barriers. Proposed reasons for student resistance include perceptions of having to do more work, anxiety from unfamiliarity with active learning, and preferences for other modes of learning. Student resistance manifests itself in many ways such as through students failing to participate, distracting others, putting forth minimal effort, or complaining.

Institution

According to Eddy et al. (2015), the institution can act as a barrier in encouraging faculty to use active learning strategies. The reward and tenure system might provide more incentive to perform research compared to teaching. Additionally, students are more likely to provide negative course evaluations (Finelli et al., 2018) which could have an adverse impact on promotion and tenure (Ferrerri & O'Connor, 2013). Lastly, the institution might not provide much effort in training faculty on effective teaching.

Oneself

Redesigning a course for active learning can be time consuming and risky for the instructor (Bonwell & Eison, 1991; Hedden et al., 2017). An instructor must be willing to try something different, especially if the traditional lecture is what has been most familiar to the instructor. Faculty commitment can be impeded if they feel like the rewards do not outweigh the risks. Two ways to overcome one's resistance to try active learning are for the institution to reward innovative teaching and for academic freedom to be in place so that instructors can choose what they feel is most appropriate.

Education Literature

The education literature is written for education researchers and seldom provide enough detail for instructors who are expected to read the methods and identify the critical elements for implementation for practice (Borrego et al., 2013; Eddy et al., 2015; Fraser et al., 2014). For example, when evaluating research-based instructional strategies for the improvement of engineering science courses in undergraduate education, research publications target researchers, not practitioners. As a result, the education literature

provided a good deal of detail so researchers could replicate the studies. The practitioners do not get much information on the actual interventions.

Second-Generation Studies of Active Learning

Second-generation studies of active learning go beyond the researchers asking whether active learning is effective or not (Freeman et al., 2014). A search of the literature using the terms “active learning” and “second generation” did not yield many relevant results. However, when eliminating the words “second generation” and focusing on recent studies from 2016 to today, the search strategy yields more results that would be considered second-generation studies of active learning. For example, Ruder and Stanford (2018) explored training methods for effectively preparing undergraduate teaching assistants to help instructors in facilitating active learning pedagogies in large enrollment courses. Another study was about promoting active learning in a general chemistry class using internet sources to complete key word created class notes (Henry, 2017). One more interesting study compared a high-technology-based active learning classroom with a low-technology based active learning classroom for the same course (Nicol et al., 2018). However, “there is a dearth of research that compares the educational merits of one active learning technique versus another” (Bonnet, Herakova, & McAlexander, 2018, p. 4). Hence, there is room for many other types of research that may fall under the category of second-generation studies of active learning.

More studies exploring how inexperienced faculty become experts in active learning are needed (Auerbach et al., 2018). Additionally, the perspective of faculty new to active learning can augment previous studies that looked only at expert faculty overcoming student resistance (Tharayil et al., 2018). Lastly, more research is needed on

the process faculty undergo from dissatisfaction with current teaching practices to switching to active learning pedagogies. Therefore, second-generation studies may also focus on how teaching in active learning spaces affect instructors since, according to Phillipson, Riel, and Leger (2018), many researchers have already explored student experiences and various teaching methods in active learning.

Conceptual/Theoretical Frameworks

Adult Learning Theory

Humanistic psychology assumes that people can grow, develop, make informed choices, and decide on a course of behavior (Merriam & Bierema, 2014). These capabilities are especially important in today's high-speed globalized world where the key to survival is becoming a lifelong learner. The three major adult learning theories today--andragogy, self-directed learning, and transformative learning--are lodged in humanistic principles.

Andragogy. Knowles (1968) introduced the concept of andragogy to U.S. educators, laying the foundation for differentiating between children and adult learners. Pedagogy is about teaching children while andragogy is about adult education. Andragogy has six assumptions that form the basis for program design and instruction for adult learners (Merriam & Bierema, 2014).

The first assumption is self-directedness (Merriam & Bierema, 2014). Adults want to view themselves and to be viewed by others as capable of taking responsibility. Adults do not want to be treated like children. Thus, the approach to teaching adults should not evoke their conditioned expectation from childhood of being dependent when

in the role of student. The adult educator's task is to create an environment where adults can be respected as adults by collaborating as partners throughout the learning process.

The second assumption is experience (Merriam & Bierema, 2014). Adults' life experiences form the basis of their identities. Experience is also an adult's textbook. When considering a room full of adult learners, one is sure to find a variety of life experiences. Thus, an adult educator's job is to draw out these collective life experiences as the basis for instruction.

The third assumption is about the readiness of an adult to learn (Merriam & Bierema, 2014). The multiple roles adults have in life create a need for learning. Adults will want to know how to handle the different situations encountered in their professional and personal lives such as simultaneously being a spouse, a parent, and an employee. In fact, the most common reason why adults engage in formal learning relates to their social role of being a working adult. Because adults want to learn something practical to apply in their lives, adult education should be experiential in nature.

The fourth assumption is the change in time perspective (Merriam & Bierema, 2014). Unlike younger students, adults are not taking classes in order to apply what is learned in the distant future. Instead, adults want to apply what is learned now. Thus, problem-centered learning is a good approach for engaging adult learners while allowing for immediate application of solutions at the same time.

The fifth assumption is internal motivation (Merriam & Bierema, 2014). Because adults are free to learn, they can choose what they want to learn. However, some adult learning might be mandatory. Even so, adult educators should still design training or courses that center around the adult learners' needs and interests.

The sixth assumption is about needing to know why something should be learned (Merriam & Bierema, 2014). This last assumption closely relates to the first five assumptions. The adult educator's role, in this case, is to help adult learners be aware of the reasons why there is a need to know. This is especially true in cases where learning is mandated or is for future application.

Self-directed learning. Given the pace at which the world changes, adults should not expect that they have learned everything they need to know from formal education (Merriam & Bierema, 2014). Concurrently, instructors of adult learners do not have the role of gatekeepers of knowledge but rather are facilitators and collaborators, creating an environment that fosters self-directed learning (Chen, 2014). Self-directed learning can be thought of as a personal attribute or as a process. Perhaps, some individuals are just predisposed to be self-directed. The process aspect, on the other hand, refers to the actions that must be taken to allow for self-directed learning. On the path to self-directedness, adult learners have three items that need to be addressed (Kitchenham, 2008). First, adult learners need to know the best way to go about learning the information. Second, adult learners should determine when and where learning should take place. Lastly, adult learners should know why they need to learn the information in the first place.

Mezirow's transformative learning theory. Mezirow (1991) is responsible for defining and theorizing transformative learning theory. A foundational concept of this theory is that learning can be transformative and can lead to personal development (Chen, 2014). However, an ironic consequence of the prominent role of transformative learning theory in adult education is that the theory's popularity has made it incoherent (Hoggan,

2016). In the literature, almost any kind of learning outcome is labeled as transformative, causing a movement away from transformative learning theory's foundations.

One of the reasons for the misguided use of transformative learning theory is the lack of parameters. This lack of parameters resulted from Mezirow (1978a) not insisting on the one he established in his seminal study of women's experiences going back to school. The ten phases of transformative learning in chronological order are the following: a disorienting dilemma, a self-examination with feelings of guilt or shame, a critical assessment of assumptions, recognition of one's discontent, exploration of options, planning of a course of action, acquisition of knowledge and skills for implementation, provisional trying of new roles, building of competence in new roles, and reintegration into one's life (Mezirow, 1978a; Mezirow, 1978b).

To demonstrate what can happen when courses are designed with adult learning theory principles in mind, Chen (2014) studied the experiences of ten adult students enrolled in a psychology course at a U.S. university. Five themes emerged from the study: personal reflective process, experiencing conflict, self-assessment, a learning Rubicon, and behavior change. The processes the participants experienced were like the transformative learning phases Mezirow (1978a & 1978b) listed except for the order in which transformations occurred (Chen, 2014). In Chen's (2014) study, the process started with recognition of and a willingness to make meaning of the content being presented to the adult learner. Because of this reflexivity, the participants experienced a personal conflict or, as Mezirow (1978a) would call it, a disorienting dilemma. To contrast, Mezirow's (1978a) study began with the disorienting event of women going back to school as the trigger. A disorienting dilemma occurs when a situation or observation does

not match a person's worldview (Chen, 2014). As for the Rubicon theme, facing and challenging one's long-held frames of reference can result in never going back to one's present life situation. Such a change of heart ultimately leads to a change in behavior. These findings from Chen's (2014) study suggested that there may be more than one path or that the phases on the journey to transformative learning are not linear.

In the context of this study, faculty in higher education, as adult learners, will have to transform their ways of thinking about what their role as educators in the classroom can be and about the nature of learning. The switch from a teacher-centered classroom to a learner-centered classroom will require an instructor to step aside as the sole source of knowledge and expertise in the classroom (Cattaneo, 2017; Morrison, 2014). This is an uncomfortable task for many instructors, as doing so would make them feel less in control over the content as well as the amount of information that is supposed to be covered (Bonwell & Eison, 1991). Evidence of transformative learning among faculty in higher education will be from "significant and irreversible changes in the way a person experiences, conceptualizes, and interacts with the world" (Hoggan, 2016, p. 71). In other words, reformations of an instructor's teaching practices and philosophy is going to be relatively stable.

Rethinking Current Practices

Partnering Students and Teachers

Students have traditionally been left out of many areas in higher education, such as curriculum design (Healey, Flint, Harrington, & van Dam, 2016). However, a review of the literature shows that many in higher education are embracing the idea of students as partners. In fact, a recent literature review took ideas from 65 sources in 28 research

journals and nine books to paint a picture of students-as-partner practices in higher education (Mercer-Mapstone, Dvarakova, Matthews, Abbot, Cheng, Felten, Knorr, Marquis, Shammass, & Swaim, 2017).

Healey et al. (2016) developed a model about student engagement. The concept of student engagement, in turn, relates to authenticity, honesty, and inclusivity among other things. A partnership occurs when faculty and staff allow students to be “co-learners, co-researchers, co-inquirers, co-developers, and co-designers” (p. 2). That is, there is a repositioning of the role played by students (Mercer-Mapstone et al., 2017). For example, many colleges and universities such as the University of Missouri, University of Stirling, and Duke University allow senior students to mentor younger students (Healey et al., 2016; Stevenson & Gordon, 2014). In other universities such as University of Western Australia, University of Exeter, Western Washington University, and North Carolina A&T State University, students are the investigators of research in teaching and learning reform rather than the subjects of this type of research. Lastly, at Bryn Mawr College and Oxford Brookes University, students develop resources for students and acts as pedagogical consultants. The active learning that occurs from partnering with students requires authentic leadership in teachers and a reform of teaching strategies (Soares & Lopes, 2017; Zanchetta et al., 2017).

Authentic leadership. When redesigning courses from lecture-based teaching to a more learner-centered approach, a corresponding change in the relationship between students and faculty occurs (Soares & Lopes, 2017). That is, students and faculty become partners in learning and teaching as instructors need to be more in tune with the needs of students (Soares & Lopes, 2017). The social interaction necessary to sustain this

partnership requires the creation of an environment conducive to psychological safety. One way for instructors to support this environment is using authentic leadership with its five dimensions--passion, behavior, connectedness, consistency, and compassion (Northouse, 2016; Soares & Lopes, 2017). Authentic leadership, when used in a learner-centered classroom, allows students to “feel free to make questions, discuss their doubts and ask for feedback without fearing negative consequences” (Soares & Lopes, 2017, p. 10). Additionally, the psychological safety that results from authentic leadership has a positive impact on academic performance.

Conditions for successful teaching reforms. Sunal et al. (2001) listed nine conditions necessary to be in place for successful teaching reforms to occur. Most of the conditions were about working with others. Examples included interdisciplinary collaboration among different colleges in the same institution, connections with faculty and administrators who were actively seeking the same changes within the same institution, and networks of faculty either within or outside the institution. Through a purposeful collaborative effort, faculty and education experts were able to develop new and optimized classroom interventions. Successful transformative learning also occurs through partnerships between students and instructors (Zanchetta et al., 2017). To bring about and sustain transformative learning, faculty will need to coordinate efforts with various stakeholders throughout the university and perhaps other institutions as well.

Bruffee (1999) can give insight as to why such coordinated efforts with various stakeholders are more likely to bring about transformative learning.

Collaborative learning makes the Kuhnian assumption that knowledge is a consensus: it is something people construct interdependently by talking

together...Education initiates us into conversation, and by virtue of that conversation initiates us into thought. (Bruffee, 1999, "Conversation as Education", para. 1-2)

The conversations that occur from collaboration open the adult learner to what Chen (2014) would describe as a multidisciplinary view of the world. Furthermore, a tenet of adult learning is critical reflection (Dewey, 1993). A multidisciplinary view of the world provides the adult learner with plenty of knowledge for challenging assumptions and, if necessary, developing alternative viewpoints.

Redesigning Classrooms

If one were to compare the amount of impact technology has had in higher education versus other areas such as agriculture, healthcare, and aerospace, one would find a stark contrast. To illustrate this point, Spence (2001) said:

For just a moment, assume that time travel is possible. Plop a medieval peasant down in a modern dairy farm, and he would recognize nothing but the cows. A physician of the 13th century would run screaming from a modern operating room; Galileo could only gape and mutter touring NASA's Johnson Space Center...But a 15th century teacher from the University of Paris would feel right at home in a Berkeley classroom. (p. 12-13)

The quote above is not meant to suggest that higher education classrooms do not make use of technology. After all, classrooms typically have one or more of the following: a computer with an internet connection for the instructor, a projector, and perhaps an electronic whiteboard (Bernard, 2019) or multi-touch display. However, what Spence (2001) said about the 15th century teacher speaks to how many of today's college

classroom layouts and methods of teaching are still reminiscent of medieval educational learning processes.

Fortunately, many higher education institutions, seeing the value of active learning, are redesigning traditional classroom spaces (Cotner et al., 2013). The traditional layout of having one focal point in the classroom is giving way to a room layout with furniture and technology that encourage student interaction. One example of purposeful use of technology to improve student outcomes documented in the literature is Student-Centered Active Learning Environment with Upside-down Pedagogies, or SCALE-UP (Foote, Knaub, Henderson, Dancy, & Beichner, 2016). Before traditional classroom spaces can be transformed, however, institutions need a benchmark and a way to measure how well progress is being made toward creating an environment that supports active learning and engagement (Brown, Cevetello, Dugdale, Finkelstein, Holeton, Long, & Meyers, 2017). At UCM, for example, the Center for Teaching and Learning (CTL) created the Learning Space Instructional Design Team (LSIDT) to perform room evaluations using the Learning Space Rating System (LSRS) from EDUCAUSE. Results from the LSRS evaluations help administrators, faculty, and staff assess classrooms before renovating or otherwise investing money on classroom upgrades in order to support active learning.

Learner space rating system (LSRS). LSRS version 2, released in 2017, is the latest iteration of the framework EDUCAUSE and a community of experts have developed to help institutions in remodeling or building learning spaces for active learning (EDUCAUSE, 2019b, About the development section, para. 1; EDUCAUSE, 2019b, History section, para. 1). EDUCAUSE is a nonprofit association of information

technology leaders and professionals in higher education (EDUCAUSE, 2019a, About EDUCAUSE section, para. 1). A look through the EDUCAUSE Member Directory on the EDUCAUSE website reveals members in higher educational institutions, organizations that serve higher education with technology needs, and other associations with the same interests.

The LSRS has two parts with three sections each (Brown et al., 2017). Part A explores the big picture—the institutional context in which the planned remodel or new construction is occurring. The first section in Part A has to do with how plans to create active learning spaces line up with the institution’s overall strategy. The second section in Part A is about the planning and design process itself. For example, Section 2.1 measures stakeholder engagement, the extent to which all those who have an interest in the success of the room are part of the planning and design processes. Lastly, the third section in Part A is a measure of the support system such as training on active learning, faculty development, and financial sustainability.

As for Part B, this portion is about the learning space itself--the environment, furnishings, layout, and technology (Brown et al., 2017). The environment pertains to the physical aspects of the room such as daylight availability, views to the outdoors, lighting control, thermal comfort, and accessibility. Furnishings and layout take into consideration many factors such as the extent to which desks and chairs facilitate student movement and interaction, as well as seating density. For active learning, the recommendation is a minimum of 25 square feet per person. An interesting aspect of the furnishings and layout sections is future proofing, the extent to which the learning space can adapt over time to changes in technology. Lastly, technology examines if the room can provide the basics

necessary for active learning using technology. These basics include electrical power for BYOD devices, network connectivity, and visual displays for all learners regardless of positioning in the learning space, and sound amplification.

At UCM, the Learning Space Instructional Design Team (LSIDT) uses a modified version of the Learner Space Rating System (LSRS). The LSIDT only measures classrooms on Part B. Members of the LSIDT give a classroom anywhere from 0 to 3 points based on different categories. The number of points differ depending on the category. For example, Section 5.2 Movement through Space only has 1 point possible while Section 5.4 Furniture Configuration Flexibility can have up to 3 points. As an example, see Appendix D to view a modified LSRS evaluation of WCM 422, a classroom on the fourth floor of the W.C. Morris Science Building at UCM. The LSIDT completed the evaluation May 2019 as part of the Title III initiative to transform this space into an active learning classroom for chemistry courses. UCM administrators and faculty used the information from the report as one of many considerations.

SCALE-UP. The first SCALE-UP classroom, created in 1997 by Dr. Robert Beichner, was at North Carolina State University (Foote, Neumeyer, Henderson, Dancy, & Beichner, 2014). Beichner's re-imagined classroom resulted from trends going back as far as the 1960s when collaborative learning was being explored to increase student learning (Caraher & Stanley, 2018). By the 1980s and 1990s, colleges and universities were experimenting with creating classroom layouts that encouraged student-centered learning. From this historical context, Beichner introduced a collaborative, highly interactive approach to teaching physics courses (Carahel & Stanley, 2018; Erol, Özcan, & Luft, 2016).

SCALE-UP stands for “Student-Centered Active Learning Environment with Upside-down Pedagogies” (Foote et al., 2016). The upside-down portion of the name refers to the flipped classroom model (SCALE-UP, 2011, Frequently asked questions section, para. 12) where students learn the material at their pace outside the classroom and engage with the learned material during class (Hacisalihoglu, Stephens, Johnson, & Edington, 2018). The first SCALE-UP classroom was for a physics class. However, there are now at least 189 higher education institutions in the United States and worldwide using SCALE-UP classrooms across multiple disciplines (Foote et al., 2014).

SCALE-UP is typically associated with large enrollment classes (Carleton College, 2018, Why adopt SCALE-UP section, para. 1). The SCALE-UP classroom is especially designed to promote face-to-face interaction as students go through “active learning and ponderable activities” (Hacisalihoglu et al., 2018, p. 2). Students, assigned in small teams, are seated in round or D-shaped tables with a computer provided for each team. Additionally, there are multiple whiteboards to serve as thinking spaces and multiple projection screens or display monitors to showcase student work. As for instructors, they interact with students throughout the classroom rather than spend time lecturing during the entire class period. The SCALE-UP model thus allows colleges and universities to maintain large enrollment courses while shifting away from traditional lectures to student-centered pedagogies (Caraher & Stanley, 2018).

Not surprisingly, the literature shows SCALE-UP classrooms produce the same benefits as active learning that occurs in other contexts. Students improve their abilities to problem solve, increase conceptual understanding of the course content, reduce failure rates, and allow for greater success in subsequent courses (Foote et al., 2014; SCALE-

UP, 2011, Frequently asked questions section, para. 8). Furthermore, students immediately see that it is “not business as usual” (Hanbury, 2016, para. 9). The classroom environment has a positive impact on students’ attitudes and motivation level, which may contribute to success (Cotner et al., 2013; Erol et al., 2016).

However, Soneral and Wyse (2017) reminded us that rapid changes in technology can make certain features obsolete quickly. The reality is, the cost to construct and then maintain SCALE-UP classrooms is high and can prove to be prohibitive for institutions already facing budget constraints. Then, there is also the cost of faculty development and of transitioning to active learning pedagogies using technology. Any institution thinking about updating learning spaces needs to consider the advantages relative to costs.

Redesigning Courses

The redesign of classroom spaces from the traditional format of rows of desks to one that facilitates interaction among students takes the focus away from the instructor (Cotner et al. 2013). As King (1993) first put it, “the professor, instead of being the ‘sage on the stage,’ functions as a ‘guide on the side,’ facilitating learning in less directive ways” (p. 30). A directive way to facilitate learning is the traditional lecture, as students are not required to participate (Bonwell & Eison, 1991). However, globalization has made it necessary for educational programs to revolutionize teaching methods in order to prepare students for future careers (Baytiyeh, 2017).

Course redesign is about redoing entire courses rather than individual classes or sections (Twigg, 2015). From the experiences of the National Center for Academic Transformation’s \$8.8 million Pew Grant Program in Course Redesign from 1999 to 2014, partner colleges and universities enhanced quality and reduced costs from course

redesign efforts. The methodology found the 156 redesigned courses have consistently shown improved student learning outcomes. For example, at UCM, a redesigned intermediate algebra course resulted in a significantly higher final exam score, 85%, compared to the traditional format's average score of 63%. Reduced costs stem from increasing course-completion rates and, thus, overall student retention.

A search of the literature reveals several examples of studies about course redesign to accommodate active learning. For example, in one study, a large lecture course changed to a small group learning course (Ferrerri & O'Connor, 2013). The students in this study reported improvements in verbal communication skills and ability to effectively work in teams. In another study of introductory public health students, the researchers noted an increased interest in the subject matter, an important factor in capturing students early on in their professional development (Yeatts, 2014). A last example was about the redesign of a pharmacy course which included the use of a flipped classroom format (Lichvar, Hedges, Benedict, Donihi, & Lichvar, 2016). Students enjoyed the personalized learning experience of learning at their own pace outside of class. Additionally, learning outside of class promoted more in-depth in-class activities compared to what occurred in the traditional format of the class.

However, course redesign for active learning is not without its issues. In the study by Lichvar et al. (2016), the design and development of the pharmacy course took 40 hours to complete. Another downside of active learning is the possibility of student dissatisfaction. Tabarok (2019) said, "Active learning is hard and makes the students feel stupid" (para. 1). Roberts and Sayer (2017) found that some students felt they have been abandoned by their instructor, left alone to tackle the subject matter on their own. Such

negative views of active learning by students may adversely impact course evaluations which may, in turn, affect promotion and tenure for faculty in some higher education institutions (Ferrerri & O'Connor, 2013).

Flipped classrooms. One type of instructional model used to support active learning experiences is the flipped classroom model (Long, Cummins, & Waugh, 2017). A move from a lecture-based approach to the flipped classroom model requires redesigning a course to include two phases of instruction (Bergmann & Sams, 2012). The first phase involves creating content for students to access outside of class in order to gain basic subject knowledge at the students' own pace (Bergmann & Sams, 2012; Lichvar et al., 2016). Examples of content are readings, whether digital or hard copy, and online videos. While these pre-class activities might be considered homework, students are still assigned what is generally regarded as homework assignments, albeit decreased in quantity (He, Holton, Gu, Warschauer, & Farkas, 2019). The pre-learning of content outside of the classroom gives the instructor the benefit of more time to lead student-centered active learning activities during class time, the second phase of the flipped classroom model (Bergmann & Sams, 2012; He et al., 2019; Long et al., 2017). This benefit is what makes the use of flipped instruction an advantageous companion to active learning, as limited class time is a typical barrier to the implementation of active learning (Bishop & Verleger, 2013).

Summary

Given what is already known about the positive aspects of active learning practices (Auerbach & Andrews, 2018; Cattaneo, 2017; Eddy et al., 2015; Freeman et al., 2014; Heim & Holt, 2018) as well as the challenges (Hedden et al., 2017; Park & Choi,

2014; Sunal et al., 2001; Watters & Watters, 2007), the present study is meant to fill the gap in the literature regarding the transformation of “educators [as] learners” (Cranton, 1996, p. 1). This transformation from uninterested novice to expert practitioner of active learning strategies using technology will be scrutinized under the lens of adult learning theories and of Mezirow’s transformative learning theory. More specifically, the study explored how faculty as adult learners navigated through deeply held personal beliefs about the nature of teaching and learning despite student resistance and other barriers. Lessons from the University of Central Missouri’s experience with active learning using technology offered practical implications for creating conditions conducive to phasing in active learning strategies to any course.

SECTION FOUR
CONTRIBUTION TO PRACTICE

Plan for Dissemination of Practitioner Contribution

The researcher will be presenting the findings of this research study to University of Central Missouri administrators, faculty, and staff as part of the many webinars and training sessions being offered during the summer semester or early fall semester. These training sessions are meant to help the university prepare for the possibility that the university might switch to online only due to the current situation with COVID-19. The plan is to broadcast from one of the ALECs so that attendees can see firsthand what the faculty, staff, and student participants shared in this study. Additionally, the technologies available in many of the ALECs, such as cameras, microphones, and screen sharing technologies, might be something faculty members can leverage as teachers look for creative ways to accommodate social distancing guidelines. The rest of this section are the slides with notes for the presentation and the executive summary that will be handed out to interested attendees.

Active Learning Engagement Classrooms
at the University of Central Missouri:
Practical Strategies to Implement and Sustain
Utilization of Active Learning
in Higher Education Using Technology

presented by
Elmer N. Ragus

Welcome guests

This presentation is about a research study on the nine active learning engagement classrooms, or ALECs, at the University of Central Missouri (UCM).

As the title suggests, I was looking for strategies that might help the university not only implement the utilization of these active learning spaces but also sustain utilization.

What can we learn from the UCM experience moving forward?

PRESENTATION OUTLINE

- ❖ Introduction
- ❖ Statement of the Problem
- ❖ Purpose of the Study
- ❖ Research Questions
- ❖ Definition of Key Terms
- ❖ Conceptual Framework
- ❖ Design of the Study
- ❖ Setting
- ❖ Participants
- ❖ Data Collection
- ❖ Qualitative Data Results
- ❖ Answers to the Research Questions
- ❖ Recommendations
- ❖ ALEC Utilization Model
- ❖ Limitations/Future Research

I will be going over the following items during this presentation.

INTRODUCTION

1500s

2020

Let's start with a quote from Spence (2001). He said, "For just a moment, assume that time travel is possible. Plop a medieval peasant down in a modern dairy farm, and he would recognize nothing but the cows. A physician of the 13th century would run screaming from a modern operating room. Galileo could only gape and mutter touring NASA's Johnson Space Center. But a 15th century teacher from the University of Paris would feel right at home in a Berkeley classroom (p. 12-13)."

Spence, L. D. (2001). The case against teaching. *Change: The Magazine of Higher Learning*, 33(6), 10-19.

If you compare the two typical classrooms from the 1500s and from 2020, you'll see that Spence may have a point. The one on the left is a 14th-century painting by Laurentius de Voltolina of a classroom lecture in progress at the University of Bologna in Italy. The one on the right is a classroom inside the W.C. Morris building taken in early 2020. The arrangement of both classrooms, even though separated by five centuries, are very similar with the seating arrangement and with the speaker at the front. You might also note that the students sitting closer to the back were not paying attention.

INTRODUCTION

- ❖ Active Learning vs. Traditional Lecture
- ❖ Active Learning Using Technology
- ❖ Constructivism
- ❖ Active Learning Research

The traditional lecture has been around for 900 years since the founding of universities. The traditional lecture, with its advantages and shortcomings compared to other teaching methods, is still widely used today.

However, those in higher education today are pushing for viable alternatives such as active learning. While a consistent definition of active learning is something researchers have grappled with for decades, a general consensus is that active learning is any instructional activity that engages the student with the content, each other, and the instructor. In other words, active learning is opposite the passive learning that occurs during the traditional lecture.

The 21st century classroom offers numerous possibilities for enhancing active learning with the availability of technologies either built into the classroom (e.g., interactive displays) or brought by students (e.g., tablets and smartphones).

Active learning is a constructivist active pedagogy. In constructivism, reality is determined by individuals who are the ones creating meaning from experiences such as interactions with other learners. This process of learners deciding for themselves what to make of the content learned is illustrated by the graphic of the head with the puzzle pieces coming together.

The first generation of active learning research has shown that active learning has a

positive impact on student performance, student achievement, and other learning goals. Therefore, many educational researchers have suggested that the time has come to implement active learning rather than continue to study whether active learning was effective. The second generation of active learning research, such as this research study, should go beyond by exploring other aspects such as facilitating active learning pedagogies in large enrollment courses, comparing the educational merits of one active learning technique versus another, and transforming inexperienced faculty to experts in active learning.

STATEMENT OF THE PROBLEM

- ❖ The original ALEC at the library is not utilized much since its launch in the fall semester of 2017.
- ❖ The problem is UCM has completed or is in the process of completing eight additional Active Learning Engagement Classrooms (ALECs) by the fall semester of 2020.

The original ALEC, which launched in the fall of 2017, remains largely unused every semester. From fall 2017 to fall 2018, a total of 20 faculty members teaching 21 courses have utilized the ALEC.

The problems is UCM has completed or is in the process of completing eight additional ALECs by fall 2020. The lack of participation or interest with the ALEC at the library may be because faculty members do not know how to use the equipment in the ALEC, are held back by various barriers, or simply do not know about this type of learning space.

PURPOSE OF THE STUDY

The purpose of this study is to discover approaches to assist faculty at UCM in learning best how to apply active learning strategies using technology despite barriers to implementation.

The purpose of the study can be summarized from the underlined words--discover approaches to apply active learning despite barriers. By investigating faculty, staff, and student experiences with the various ALECs at UCM's Warrensburg campus, I wanted to offer ideas for best practices on how to increase and sustain the practice of active learning strategies using technology and perhaps guide the creation of future ALECs or similar classrooms in the future.

RESEARCH QUESTIONS

The following research questions guided this study:

1. What are the perceptions of faculty who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?
2. What are the perceptions of students who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?

The first two research questions address the context in which active learning using technology occurs by acknowledging faculty and student experiences at UCM. By using the participants' voices, we can have a clear and relatable image of what being learner-centered looks like in higher education. Also, from faculty and student experiences, perhaps this could spark an interest in other UCM faculty members to imagine themselves engaging in the use of active learning techniques using technology in one or more of the ALECs on campus.

RESEARCH QUESTIONS (cont.)

3. What can the University of Central Missouri do to encourage faculty utilization of one or more of the Active Learning Engagement Classrooms (ALECs)?
4. What can the University of Central Missouri do to support faculty transition from traditional lecturing to active learning using technology?

The last two research questions inform UCM faculty, staff, and leadership regarding what can be done to overcome barriers to active learning using technology in the classroom. Barriers to implementation include students, the institution, oneself, and the education research literature. From the findings, I wanted to see what a support system could look like based on what the participants had to say.

DEFINITION OF KEY TERMS

Active learning is an educational experience designed to engage learners with each other, the course material, and the teacher.

Active Learning Engagement Classrooms (ALECs) are classrooms at UCM specifically designed with furniture and technology to facilitate the use of active learning strategies.

Faculty are, in this study, all persons who teach college courses whether full-time, part-time, or temporary.

I highlight the following three main terms to ensure that we are all on the same page when it comes to these words' definitions.

While there are many definitions that can be found in the literature, for this study, active learning is an educational experience designed to engage learners with each other, the course material, and the teacher. Active learning does not have to occur in an ALEC. However, active learning is being explored in the context of what it looks like in the various ALECs at UCM.

Active Learning Engagement Classrooms (ALECs) are classrooms at UCM specifically designed with furniture and technology to facilitate the use of active learning strategies. There are many other classrooms at UCM that have one or more of the same features found in one or more of the ALECs. However, as of the time of this research study, there are only nine ALECs as defined by the four colleges at UCM.

Faculty are all persons who teach college courses, whether full-time, part-time, or temporary. This definition includes tenured, tenure-track, and non-tenure faculty members. Also, for the purposes of this study, UCM staff members who teach one or two courses per academic year were counted as faculty. Lastly, adjunct faculty were also considered as faculty for this study.

CONCEPTUAL FRAMEWORK

- ❖ Adult Learning Theory (Merriam & Bierema, 2014).
  - ❖ Andragogy
  - ❖ Self-directed Learning
  - ❖ Transformative Learning
- ❖ Mezirow's (1991) Transformative Learning Theory
  - ❖ Results from a trigger
  - ❖ Ten phases of transformative learning

The three major adult learning theories today are andragogy, self-directed learning, and transformative learning.

Andragogy has six assumptions that form the basis for program design and instruction for adult learners. These six assumptions remind us that adults learn differently than children. The six assumptions are self-directedness, experience, readiness to learn, time perspective, internal motivation, and the need to know why something should be learned.

Self-directed learning means that adult learners are not looking to the instructor as the gatekeeper of knowledge but rather as facilitator/collaborator. Adult learners want to learn in a way that makes sense to them at a time that works for them for reasons that are relevant to their personal and/or professional lives.

Transformative learning, or more specifically, Mezirow's (1991) Transformative Learning Theory, tells us that learning can lead to personal development as demonstrated by a lasting change, or transformation, in behavior. This journey is triggered by what Mezirow called a disorienting dilemma, when an idea does not quite line up with an adult's previous experiences. Hence, this disorienting dilemma is the first one in the ten phases of transformative learning (next slide).

CONCEPTUAL FRAMEWORK (cont.)

1. Disorienting dilemma	6. Planning of a course of action
2. Self-examination with feelings of guilt or shame	7. Acquisition of knowledge and skills for implementation
3. A critical assessment of assumptions	8. Provisional trying of new roles
4. Recognition of one's discontent	9. Building of competence in new roles
5. Exploration of options	10. Reintegration into one's life

The following are the ten phases of transformative learning as determined by Mezirow. Subsequent studies exploring Mezirow's Transformative Learning Theory, such as the one by Chen (2014), suggested that there may be more than one path or that the phases on the journey to transformative learning were not linear.

DESIGN OF THE STUDY

The qualitative methodology lets the researcher allow what participants make of a phenomenon being studied to emerge from the collected data (Creswell, 2014).

As mentioned earlier while covering the research questions, this study is about using the voices of the participants. Thus, this is a qualitative research study. As Creswell said, the qualitative methodology lets the researcher allow what participants make of a phenomenon being studied to emerge from the collected data.

SETTING

- ❖ The site of this qualitative study was the Warrensburg campus of the University of Central Missouri.
- ❖ Founded in 1871 (University of Central Missouri, 2019)
- ❖ Nine ALECs
  - ❖ 1 – Grinstead / 1 – Library / 3 – Lovinger / 1 – Martin /
1 – Ward Edwards / 1 – WC Morris / 1 – Wood

This study took place at the Warrensburg campus of UCM.

In looking at UCM's history since its founding in 1871, one part of its history is change. The institution has gone through several name changes and continues to evolve, including how the classrooms look and function as can be seen in the nine ALECs.

These nine ALECs are spread out in seven different buildings with the most ALECs in Lovinger. Of these nine ALECs, the one in the library has been around the longest (fall 2017). Three came online just last spring 2020 (one in Lovinger and one each in Martin and Ward Edwards). The one in W.C. Morris will be ready in fall 2020. The rest came online in 2018 and 2019.

PARTICIPANTS

- ❖ Purposive sampling (Merriam & Tisdell, 2016)
- ❖ 44* unique participants
  - ❖ 13 – Deans, Associate Deans, Assistant Chair, Managers, Program Coordinators, Director, Associate Professor, and other staff members
  - ❖ 27 – 20 faculty / 7 students
  - ❖ 6 – faculty who have not used any of the ALECs
- Two individuals fit in two categories

Faculty, staff, and student participants who had direct experience with one or more of the ALECs were purposely contacted for participation in this study.

There were a total of 44 participants.

11 participants fell under the category of dean, associate dean, assistant chair, manager, program coordinator, director, associate professor, and other staff. 10 participants had a role in the design phase. 1 participant was not part of the design phase but was actively involved in supporting faculty and students in their use of one of the ALECs.

21 participants were direct users of the ALECs. 14 were faculty members while 7 were students.

Lastly, 6 faculty members who have not had a chance to use any of the nine ALECs for this study were interviewed.

DATA COLLECTION

- ❖ The researcher in a qualitative study is the key instrument in collecting data from multiple sources (Creswell, 2014).
- ❖ 32 one-on-one interviews (administrators, faculty, staff, and students)
- ❖ Three focus groups (four each)
  - ❖ Faculty (two focus groups)
  - ❖ Students (one focus group)

As a qualitative study, the main source of data was from interviews.

There were 32 one-on-one interviews with administrators, faculty, staff, and students.

As for focus groups, the intent was to hold two faculty focus group meetings and two student focus group meetings, all with four to six participants. However, there ended up being only three focus groups with four participants each. Two of the focus groups were with faculty while one was with students. Faculty and students who could not make it to the focus groups were interviewed individually and were counted in the 32 one-on-one interviews.

ADDITIONAL DATA COLLECTION

- ❖ 4 classroom observations in three of the nine ALECs
- ❖ Artifacts and documents
  - ❖ Technologies and other objects found in each ALEC
  - ❖ Web pages
  - ❖ Handouts
  - ❖ Quotes for furniture, technology, and renovation expenses
  - ❖ Classroom layouts

In addition to interviews, qualitative data also came from classroom observations, artifacts, and documents.

I was able to observe four classes in three of the nine ALECs. However, I was unable to do any more because UCM switched to online learning only during data collection due to COVID-19.

Artifacts included the technologies and other objects found in the various ALECs.

Documents included anything that had information about the various ALECs such as web pages, job quotes, and classroom layouts.

Lastly, another source were samples of handouts given to students during classes held at the various ALECs.

QUALITATIVE DATA ANALYSIS

- ❖ Data collection and data analysis occur at the same time (Merriam & Tisdell, 2016)
- ❖ Interviews were transcribed with four themes emerging from the data
- ❖ Used MAXQDA Analytics Pro 2020 (Release 20.0.7)

Even as I was collecting data, I was already analyzing data to ensure that each interview, observation, artifact, or document allowed me to be more focused, noting things to look for in the next round of data collection.

All interviews were transcribed and were then coded using MAXQDA Analytics Pro 2020 (Release 20.0.7).

From the various sources of qualitative data emerged four prominent themes that will be discussed in further detail.

QUALITATIVE DATA RESULTS

❖ Themes

- It's the Field of Dreams
- It's a Two-Edged Sword
- It's More Than Just the Bells and the Whistles
- It's News to Me

More details will be offered about each theme in subsequent slides.

QUALITATIVE DATA RESULTS

❖ Theme 1 -- “It’s the Field of Dreams”

- “It was the ‘Field of Dreams.’ Build it, and they will come.”
-Lily, Faculty
- “There was a whole list of classes that have moved to other classrooms.” -Siena, Faculty
- “When you think about scheduling classes, you just know that these are the ones we’re using.” -Adam, Faculty

There was a belief that from creating these ALECs, faculty will simply flock to the ALECs. The goal was to maximize utilization so that there are as many faculty and students in these ALECs as reasonable. However, a staff member from the Office of Technology noted that a lot of the ALECs sat empty throughout the day.

Some faculty did not want to use the ALECs because they simply did not want to use them. Rest of the quote by Siena--“So, it was clear that not many people were into it. I even talked to some of the older faculty. I was like ‘Yeah, why would you want to?’ They said, ‘I don’t have time to learn new technology. I don’t want to. I’m not good at that kind of stuff.’”

A contributing factor to the lack of use is that faculty members tended to not go beyond their academic units or colleges for options on where to teach. As a result, if faculty members wanted to use an ALEC at a particular time slot, if the room is not available at their college, it is unlikely that these faculty members will seek out other ALECs in other colleges because that is not what faculty and staff are accustomed to doing so at UCM. There was also no prioritization when it came to signing up for classes in most of the ALECs. It was first come, first serve.

QUALITATIVE DATA RESULTS

❖ Theme 2 -- “It’s a Two-Edged Sword”

- “It gives us problems. But then, the furniture makes up a little bit.” - Aubrey, Faculty
- “It’s difficult to tell where the front of the room even is.” -Dylan, Faculty
- “One of the things that I have had a lot of my students tell me is, they don’t like [active learning].” -Kaylee, Faculty

The ALECs simultaneously offered advantages and disadvantages. Furthermore, the same items that participants appreciated were the same ones that caused issues.

Students learn differently via active learning. The rest of Dylan’s quote-“So, to me, then, it begins to break down the power structures of the normal classroom of ‘I’m the professor. I stand in front. You all are seated and subservient and are the receptacles.’”The flexible furniture and the multiple screens throughout the room not only makes it difficult to know where the “front” is, they also made it easy to change the layout of the room in less than a minute and also facilitated group interactions, a hallmark of active learning.

The rest of Kaylee’s quote-“That at this level of their education, they want to come in to class. And most of my students actually prefer lecture...But I think it’s because it’s what they know. They’re still in a generation where they’ve probably gone through most of their schooling being lectured at. And I also think it’s a little bit of laziness because they just want to sit there. They don’t want to be up and forced to move around and talk and all that kind of stuff.” Also, some students reported feeling overwhelmed by the unfamiliar layout and also falling out of their seats because these seats were so easy to move. And then, with more technology, there were more opportunities for technology failure. As one student participant said, “Yeah, the technology, it just slowed down some of our lecture sometimes when our professor couldn’t figure it out.

QUALITATIVE DATA RESULTS

❖ Theme 3 -- “It’s More Than Just the Bells and Whistles”

- “There’s been one training.” -Sarah, Staff
- “To me, there are two prongs [to training].” -Annabelle, Faculty
- “We wish that we could have had something where we talked about things.” -Cheyenne, Faculty

“It’s More Than Just the Bells and Whistles” – The creation of the ALECs is not just about including the “bells and whistles,” or the latest technologies and capabilities.

There also needs to be a web of support to assist faculty in transitioning from the traditional lecture to active learning.

Part of this web of support is training. Moreover, the training needs to be two-pronged as one faculty participant explained it. The rest of Annabelle’s quote-“There is the technology side of it. But then, there’s also the side of using engaging activities...I think if we provide faculty with more training on not just how to push the buttons but also how to incorporate all this new equipment into their instructional practices.”

Another component of the web of support is community support. The Community of Practice-Active Learning (CoPAL), consisting of like-minded individuals interested in active learning, can allow for the sharing of ideas among faculty who use the ALECs and/or use active learning strategies in their classes.

QUALITATIVE DATA RESULTS

❖ Theme 4 -- “It’s News to Me”

- “I’m not understanding.” -Gladys, Faculty
- “If [faculty] don’t think it impacts them personally, they’re probably not interested.” -Administrator
- Two categories of faculty

“It’s News to Me” – The ALECs are not well-known to the UCM community. For faculty who have not taught in any of the ALECs, they did not know what an ALEC was. Gladys, for example, described the smart classroom she uses. When I asked her which ALEC it was, Gladys replied with “I’m not understanding.”

One administrator explained why faculty may not be aware of the ALECs. “Well, if faculty are interested, the [marketing efforts to make faculty aware of the ALECs] work well...that’s where they get more information about it, maybe ask questions about it. If faculty think that, ‘Well, I never teach in that room,’ then they’re not listening anyway...if they don’t think it impacts them personally, they’re probably not interested. Now, if they’re told, ‘You’ll be teaching in there this semester,’ then yes, it’s going to be, ‘Tell me more. What’s going on? What can I do?’ But if they don’t have that personal connection to that space, I don’t know that they’re concerned about that space.”

One category includes those faculty who are always on the lookout for innovative ways of teaching. The other category includes those faculty who were simply assigned to the ALECs.

QUALITATIVE DATA RESULTS

❖ Grinstead 249

Grinstead 249 is also known as the Gehlken Resource Center. It is used by both the School of Professional Education and Leadership and the School of Technology. It is unique compared to the other ALECs in that it has a computer lab section, a makerspace section, and a kitchenette. While the space does not have flexible furniture, it does have three screens on three walls. One of the displays is interactive. Also, users can share their screens on the various displays. Grinstead 249 came online in the fall semester of 2018.

QUALITATIVE DATA RESULTS

❖ JCKL 1268

JCKL 1268 is the original ALEC, which came online during the fall semester of 2017. It features flexible seating with the triangular tables. There is a control panel for handling the interactive display, three additional displays, and four ceiling speakers. Users have the ability to share their screens on the various displays. Because this ALEC is at the library, faculty members from any of the four colleges are welcome to use the space.

QUALITATIVE DATA RESULTS

❖ LOV 2140

LOV 2140 was created from the Title III grant. It came online during the spring semester of 2020. It features flexible seating, an interactive display, and ample whiteboard space. Users have the option to sit on student desks, padded chairs with the rectangular tables, or the lounge chairs. The space is typically used by the School of Teaching and Learning. However, there are also classes offered by the School of Human Services.

QUALITATIVE DATA RESULTS

❖ LOV 3140

LOV 3140 came online during the fall semester of 2019. The space is primarily used by the School of Teaching and Learning. It features flexible seating, a Hovercam, a projector and projector screen, one interactive display, two additional displays, two-wall mounted cameras for distance learning capabilities, six ceiling speakers, and four dropdown microphones. A control panel is available to control all the electronics in the room. The desks and chairs in the room were meant to mimic what future teachers might encounter in the classroom someday. Also, users can share their screens on the various displays.

QUALITATIVE DATA RESULTS

❖ LOV 4170

LOV 4170 came online during the fall semester of 2019. The space is primarily used by the School of Professional Education and Leadership. It features flexible seating, a projector and projector screen, one interactive display, two additional displays, a soundbar with a camera for distance learning capabilities, six ceiling speakers, a hand-held microphone, and a Lavalier microphone. A control panel is available to control all the electronics in the room. Users can share their screens on the various displays.

QUALITATIVE DATA RESULTS

❖ MAR 230

MAR 230 came online during the fall semester of 2019. The space is primarily used by the School of English and Philosophy, the School of Communication, History, and Interdisciplinary Studies, and the School of Social Sciences and Languages. It features flexible seating with the triangular tables, one interactive display, two additional displays, and four ceiling speakers. A control panel is available to control all the electronics in the room. Users can share their screens on the various displays.

QUALITATIVE DATA RESULTS

❖ WDE 2100

WDE 2100 was created from the Title III grant. It came online during the spring semester of 2020. It features flexible seating, an interactive display, and glassboards. Users have the option to sit on padded chairs with the rectangular tables or the lounge chairs. As of the time of this study, only one class from the School of Human Services was offered in this class.

QUALITATIVE DATA RESULTS

❖ WD 010

WD 010 was created from the Title III grant. It came online during the spring semester of 2020. It features flexible seating, four displays, a projector and projector screen, desktop computer with a single monitor, and whiteboard space. It also has a DVD player and VCR since some videos for teaching languages are not available for streaming or downloading. Users have the option to sit on padded chairs with the rectangular tables or the lounge chairs. The space is typically used by the School of Social Sciences and Languages and School of Human Services. Users have the ability to share their screens on any of the four display monitors.

QUALITATIVE DATA RESULTS

❖ WCM 422

WCM 422 was partly funded by the Title III grant. It will come online during the fall semester of 2020. It will feature flexible seating, an interactive display, four additional displays, a ceiling-mounted camera for distance learning and lecture capture capabilities, a microphone catchbox, a lavalier microphone, ceiling speakers, a laptop for each “pod” of four students, and ample whiteboard space. There will also be a demonstration bench in front of the interactive display. The space will be used by the School of Natural Sciences. Users will have the ability to share their devices on any of the five displays in the room.

ANSWERS TO THE RESEARCH QUESTIONS

- ❖ Research Question One – What are the perceptions of faculty who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?
  - Mixed reviews
  - Positives
  - Negatives

As conveyed under the “It’s a Two-Edged Sword” theme in a previous section, the ALECs offer advantages and disadvantages, or positives and negatives, simultaneously. Thus, the researcher can say that faculty participants had mixed reviews about the ALECs. Also, certain faculty participants who chose to teach in an ALEC had more positive things to say about the ALECs than those faculty participants who had no choice in the matter.

ANSWERS TO THE RESEARCH QUESTIONS

❖ Research Question One – What are the perceptions of faculty who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?

- Positives
- “This has been the kind of soul searching for my teaching style.”
-Erin, Faculty
- “It’s warm and welcoming.” -Veronika, Faculty

Positives

-Provided an environment to push instructional capabilities -- “This has been kind of a soul searching for my teaching style that I've been trying to evolve and trying to improve ever since I've started. And I feel like I just hit the tip of the iceberg and that there's so much more I can do.”

-Technology available and classroom layout enhanced instruction -- The mobility allowed by multiple screens and flexible furniture allowed faculty participants “to be a part instead of apart from the class.”

-Active learning that occurs in the ALECs give students real-life experience

-The atmosphere provided by the ALECs made the spaces more comfortable for teaching and learning. -- “It's kind of their little home away from home in there. I feel like we're not on top of each other. And the room itself is big. Also, aesthetic so that it's warm and welcoming. There's carpet in there. It has some nice colors. The tables look nice. The chairs look nice. And I know that sounds kind of silly. But, you know, across the hallway, you've got rooms that still have the tile floor and the old crappy wooden tables...it's pretty sterile in there...just the overall feel of that room, I think is more calming.”

ANSWERS TO THE RESEARCH QUESTIONS

❖ Research Question One – What are the perceptions of faculty who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?

- ❑ Negatives
- ❑ “You kind of feel cramped, a little hard to get around.” -Siena, Faculty
- ❑ “It definitely impacted my ability to complete a cycle of instruction.” - Lily, Faculty

Negatives

-Some students were not convinced that active learning was considered “learning” in a higher education setting. -- “One of the things that I have had a lot of my students tell me is, they don't like it...And most of my students actually prefer lecture which I find to be very strange. But I think, it's because it's what they know. They're still in a generation where they've probably gone through most of their schooling being lectured at. And I also think it's a little bit of laziness because they just want to sit there. They don't want to be up and forced to move around and talk and all that kind of stuff.”

-In some of the ALECs, furniture placement was awkward. -- “I love the desks for every day. But when we do our presentations, having to move them to make like an audience and someone in the front, there's still not a lot of space in there...[it's] just a shallow room. And so, you kind of feel cramped, a little hard to get around.”

-Technology issues interrupted class flow. “Well, it definitely impacted my ability to complete a cycle of instruction. There will be times that I didn't get through all the information I needed to have them have.”

ANSWERS TO THE RESEARCH QUESTIONS

- ❖ Research Question Two – What are the perceptions of students who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?
  - Mixed reviews
  - Positives
  - Negatives

As conveyed under the “It’s a Two-Edged Sword” theme in a previous section, the ALECs offer advantages and disadvantages, or positives and negatives, simultaneously. Thus, the researcher can say that student participants had mixed reviews about the ALECs as well. However, the bad reviews, according to the student participants, were not enough to negatively impact student learning.

ANSWERS TO THE RESEARCH QUESTIONS

❖ Research Question Two – What are the perceptions of students who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?

- ❑ Positives
- ❑ “I feel like it’s easier to retain in a more relaxed setting the information that we were learning.” -Harriet, Student
- ❑ “The screens thing was really big for me.” -Garfield, Student

Positives

-Students enjoyed the collaborative learning piece. -- “I feel like it's easier to retain in a more relaxed setting the information that we were learning. And since it was so interactive and everybody was presenting and talking with everybody, it just stuck with me more than whenever a professor would read off a PowerPoint. And we were supposed to take notes off of it.”

-The technology and furniture worked well in allowing for collaborative learning. Students could easily talk to each other when the desks are arranged in pods. The multiple screens allowed a good view of presentations no matter where students were seated. The rest of Garfield’s quote-“It was really easy to see, like, read maybe graphs that were really small or something like that. And then, I think the biggest positive to learning was that the professor wanted the class to be a discussion class. And so, class discussions flew or float almost seamlessly because of the way the room is set up and because of the type of classroom it was. If you wanted to bring up some data in an argument, you could just hop on your phone or hop on your computer and just look it up. And bam, there's some evidence for your argument [referring to the ability to share one’s screen to everybody in the room]. And that discussion in a discussion-based class went really well with the actual coursework.”

ANSWERS TO THE RESEARCH QUESTIONS

❖ Research Question Two – What are the perceptions of students who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?

- ☐ Negatives
- ☐ “For us in the beginning, everyone was really quiet.” -Isla, Student
- ☐ “I know we have people fall out of those chairs.” -Opal, Student
- ☐ “Run [professors] through a crash course.” -Garfield, Student

Negatives

-The expectation of collaborative learning was awkward for students at first. -- “For us in the beginning, everyone was really quiet because nobody really wanted to interact towards the beginning of the semester. We've gotten a lot better about, like, we're pretty much all friends with the people that we sit with now.

-The furniture was problematic sometimes. “So, all the furniture in the library is movable. You move wrong, your entire desk moves. I know we have people fall out of those chairs.”

-The students noticed that some professors may not be comfortable with the technology available. -- “Before they give these professors that classroom for the semester, run them through a crash course or better than a crash course, because I think they probably do get a crash course. But some sort of walk them through and get them comfortable using it over the summer, over the semester before, putting in some extra time to make sure that the professor's comfortable. That way, they can teach us and make us comfortable with what we're doing and how to use that technology.”

ANSWERS TO THE RESEARCH QUESTIONS

- ❖ Research Question Three – What can the University of Central Missouri do to encourage faculty utilization of one or more of the Active Learning Engagement Classrooms (ALECs)?
  - Faculty involvement - “There was a disconnect in tech communication and education communication.” -Administrator
  - Relevant training - “They can’t even figure out how to turn the sound on.” - Garfield, Student
  - Publicity - “They don’t know how to use them.” -Sarah, Staff
  - Class scheduling - “We don’t really think about expanding.” -Adam, Faculty

As conveyed under the “It’s the Field of Dreams” theme in a previous section, the ALECs were designed and deployed with the hope that faculty would use them as much as possible. However, many participants shared factors that discouraged the use of the ALECs. Also, from the “It’s News to Me” theme, the researcher found that the ALECs were not necessarily anything that faculty paid attention to for various reasons.

Faculty involvement

-Include faculty during the development process of the ALECs

-“There was a disconnect in tech communication and education communication. There are the different perspectives coming in of what technology feels is appropriate and feasible versus what pedagogy says is appropriate and feasible...Trying to please both sides is probably a greater frustration than any of the rest of it.”

Relevant training

-The ALECs hold a lot of technologies that require training in knowing what buttons to push. However, the ALECs also provide an environment where a different type of learning can occur. Thus, faculty will also require training in how to teach with the available technologies, the classroom layout, etc.

Publicity

-Some faculty may not pay much attention to the ALECs if they do not have any classes to teach in there. Also, for faculty who teach in the ALECs, they did not always know

about all of the classrooms' capabilities. By publicizing the ALECs, there will be greater awareness of these classrooms that might, in turn, encourage faculty to try the rooms.

Class scheduling

-Make it so that colleges and academic units cooperate in allowing all faculty to share ALECs as necessary and appropriate.

ANSWERS TO THE RESEARCH QUESTIONS

- ❖ Research Question Four – What can the University of Central Missouri do to support faculty transition from traditional lecturing to active learning using technology?
  - ☐ Provide a web of support
  - ☐ Training - “Faculty training needs to be higher on the priority list.” -Administrator
  - ☐ Technical support - “I felt bad asking someone to come in at the end of the workday.” -Veronika, Faculty
  - ☐ User guide
  - ☐ Community support

As conveyed under the “It’s More than Just the Bells and Whistles” theme in a previous section, the ALECs require more than making more technologies and flexible furniture available.

Provide a web of support which includes training, technical support, a user guide, and community support.

Training

-Many participants felt that faculty training on how to use the technologies available in the ALECs was lacking. Also, the training offered was during times that may not be convenient for some faculty.

-Rest of the administrator’s quote-”I think that if we could prevent some of the faculty frustration, the equipment and the furniture is used more appropriately.”

Technical support

-Some faculty who teach later in the afternoon or at night do not have anybody to turn to for technical support.

User guide

-A user guide showing users how to utilize the technologies would be one way to address some of the training and technical support needs. By making the user guide readily available, users can access relevant information as needed, whether during

class or outside of class time.

Community support

-Many faculty participants mentioned that they would like to be able to work with like-minded individuals to go over active learning ideas and to learn about what others are doing.

RECOMMENDATIONS

❖ Phase One

- Development process
- Sign-up process
- Training
- Community of Practice-Active Learning

Phase One Recommendations are those actions that can be immediately implemented within three months.

Development process – For future developments of ALECs, or any classrooms for that matter, include all relevant stakeholders, especially faculty members who will be the ones using the ALECs. Another group of stakeholders to involve are students. Instead of relying on what administrators and/or technology staff think should go in the ALECs, there will be input from the faculty members and students who will be directly utilizing the spaces.

Sign-up process – First, implement a prioritization process so that those faculty members who want to use the ALECs for active learning have an opportunity to use the space before assigning the ALECs to faculty members who may not necessarily want to use the space for active learning. Second, allow the four colleges to come to an agreement about the use of ALECs not necessarily being exclusive to a particular college or school.

Training – Provide training that is flexible and relevant to users. Flexibility is important since users cannot always make it to training sessions scheduled during the day. As for relevance, create training relevant to faculty based on where they are on the Innovation Adoption Lifecycle (innovator, early adopter, early majority, late majority, or laggard).

Community of Practice–Active Learning (CoPAL) – Be consistent in monthly meetings to allow participants to learn from peers and to build up networking opportunities. The transition to active learning is not easy, and the existence of a readily-available support group is crucial to the success of a faculty member in switching from the traditional lecture to active learning strategies.

RECOMMENDATIONS

❖ Phase One (cont.)

- ☐ Publicity
- ☐ Data Collection
- ☐ Step-by-step instructions
- ☐ Online resources

Publicity – Use various platforms to make the UCM community more aware of the existence of the ALECs and of what is going on in these spaces. Some ideas are to feature stories about various aspects of the ALECs, classes held in the ALECs, faculty members who teach in the ALECs, student testimonials, students projects, and active learning in general. These stories can be shared via email, posters, press releases, social media, the UCM website, college and school meetings, commercials, and advertisements.

Data collection – To gain insight on faculty and student perceptions and impact on student learning, start collecting relevant data.

Step-by-step instructions – In addition to training and cheat sheets posted in the ALECs, provide detailed documentation on what is available in each ALEC for users who like to learn in this manner. Make it so that the documentation is easily accessible online and can be printed as necessary.

Online resources – To allow for greater visibility and to support stakeholders of the various ALECs, create a website or add web pages to the UCM website to include resources and other news about the ALECs on campus.

RECOMMENDATIONS

❖ Phase Two

- User Guide / Mobile app
  - Features
  - Collaboration opportunity
    - Computer Science, Computer Information Systems, Information Technology, Education, Graphic Arts/Design, Digital Media Production, Marketing/Public Relations, Other Subject Matter Experts

The Phase Two recommendation is closely related to what will be created under the “Online Resources” under Phase One. Phase Two recommendation can take up to a year or more to complete. It involves creating a user guide / mobile app. A mobile app has the potential to address the gap in training at UCM because the app will be flexible, scalable, and user-friendly. Users are able to view the mobile app’s content in their own time, the mobile apps can grow as the number of ALECs or similar spaces expand on campus, and many users are accustomed to using smartphones.

This app can have many other features such as the ability to do searches using questions or to scan a particular piece of equipment and play a video or pull up relevant content based on what was scanned.

This undertaking can be a collaboration opportunity from experts and students in various disciplines.

ALEC UTILIZATION MODEL

This ALEC Utilization Model shows that there are three types of support--administrative, technology, and pedagogy--necessary to sustain the successful use of active learning engagement classrooms by faculty and students in higher education.

The three-legged stool of the ALEC Utilization Model shows that higher education institutions need to provide three types of support--administrative, technology, and pedagogy. Failure to provide one or more of these legs will make the stool "unstable," thus failing to create a system that supports faculty and student success and, ultimately, the fulfillment of institutional goals. Without administrative support, the classrooms will not be created in the first place. Without technology support, faculty will not know how to use the equipment or the designers of the rooms may not choose the right technologies. Without pedagogical support, faculty will feel overwhelmed at all the possibilities and may revert back to proven strategies that are not necessarily active learning using technology.

LIMITATIONS AND FUTURE RESEARCH

❖ Limitations

- Setting, time constraints, and number of participants

❖ Future Research

- More student participants
- Change in faculty and student perceptions if recommendations (Phase One and Phase Two) are followed

Limitations – This study was about just one university. As for time constraints, the researcher was completing this study for a dissertation and thus did not have the opportunity to spend several months collecting data. This is closely related to the number of participants (44) who were interviewed for this study. With more time, the researcher could have reached more participants, especially students.

This is why for future research, a similar study should be done but with more students. Also, another idea for future research is to follow-up on any changes in faculty and student perceptions if any of the recommendations from this study are implemented at UCM.

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DISCUSSION / QUESTIONS?

EXECUTIVE SUMMARY

Active Learning Engagement Classrooms (ALECS) Case Study

by Elmer Ragus

PURPOSE

The purpose of this qualitative study was to discover approaches to assist faculty at the University of Central Missouri (UCM) in learning best how to apply active learning strategies using technology despite barriers to implementation.

CONCEPTUAL / THEORETICAL FRAMEWORKS

A theory under the umbrella of Adult Learning Theories is transformative learning (Merriam & Bierema, 2014). Additionally, a foundational concept of adult learning is that transformative learning leads to personal development via challenging one's long-standing beliefs (Chen, 2014). Mezirow's (1981) transformative learning theory further explains how adults make sense of experiences and how influences affect the transformative learning process. Every person holds a worldview that essentially guides the formation of habits of mind and frames of reference, thus making it difficult to navigate through disorienting events such as learning a new concept (Christie, Carey, Robertson, & Grainger, 2015). Faculty at UCM, as adult learners, will need to be transformed in their ways of thinking regarding expectations of how learning should take place in the classroom. For example, an instructor may feel from experience that students should be told what to do and learn instead of having these students navigate their way through a lesson with their peers (Sunal, Hodges, Sunal, Whitaker, Freeman, Edwards, Johnston, & Odell, 2001) as is the case in active learning activities using technology. In this study's context, evidence of change will come in the form of reformations in faculty teaching practices.

SETTING, PARTICIPANTS, AND DATA COLLECTION

The site of this study was at UCM, a public institution established at Warrnesburg in 1871 (University of Central Missouri, 2019, About section, para. 6). The focus of this qualitative study was the utilization of the nine ALECs located in seven buildings: Grinstead, James C. Kirkpatrick Library, Lovinger, Martin, Ward Edwards, W.C. Morris, and Wood.

There was a total of 44 participants. 38 of these individuals had direct experience with the ALECs while six faculty members have not used any of the nine ALECs for this study. There were 11 participants who were college deans, associate deans, an assistant chair, managers, program coordinators, a director, one faculty member, and staff members from the Office of Technology. These individuals were involved in various aspects of the design of and decision-making for the ALECs. Another staff member interviewed was the office professional from one of the schools represented by the faculty who teach at one of the ALECs. A total of 21 faculty members and 7 students participated in focus groups or one-on-one interviews.

THEMES

"It's the Field of Dreams." After hearing about faculty experiences, a recurring theme was the belief that from creating these ALECs, faculty will simply flock to these rooms. "It was the 'Field of Dreams.' Build it, and they will come," remarked Lily, a faculty member who taught in one of the ALECs. Faculty and staff participants recounted their experiences with the development process for the ALECs as well as the sign-up process to utilize the ALECs.

"It's a Two-Edged Sword." As faculty, staff, and student participants reported their experiences with the ALECs, another theme that emerged was that the ALECs simultaneously offered advantages and disadvantages. "It's a two-edged sword, so to speak," described Aubrey who teaches in one of the ALECs. "It gives us problems. But then the furniture, that makes up a little bit." The ALECs have many things about them that the participants appreciated but were also barriers to active learning.

"It's More Than Just about the Bells and Whistles." The creation of ALECs is not just about including the latest technologies and capabilities, or "bells and whistles" as Ruth, an administrator, called them. A web of support needs to be established for faculty and students to have favorable and successful experiences in the ALECs. This support system should include not only relevant training and timely communications but also a community of like-minded individuals who have an interest in the world of active learning in higher education.

"It's News to Me." In asking faculty participants how they heard about the ALECs, another theme that emerged was that the ALECs were not well-known on campus except for those who were interested in active learning in the first place. Essentially, for many of the faculty participants who have not used any of the ALECs, it was news to them about what an active learning engagement classroom was as defined in this research study.

RECOMMENDATIONS AND CONCLUSION

According to most of the 44 faculty, staff, and student participants in this study, the nine Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri has been a welcome addition. As set forth by the college deans, these ALECs have a goal of maximum utilization by faculty and students because of the investment in the rooms to create spaces that allow for different types of interactions among faculty and students. However, maximum utilization is only possible if faculty and students can see themselves being successful in an ALEC through the existence of a web support. The researcher recommends a two-phase plan of action. Phase One recommendations are those activities that can be implemented within three months--update the development process of future ALECs to include all relevant stakeholders, create a process for signing up for classrooms so that all faculty members interested can teach in an ALEC, provide technology and pedagogical training on the ALECs, expand the Community of Practice-Active Learning, increase publicity for the ALECs, collect data on faculty and student perceptions of the ALECs, provide simple step-by-step instructions for equipment in the ALECs, and post resources relevant to the ALECs online for easy access. The Phase Two recommendation will take a little longer to complete, perhaps up to a year or more. The Phase Two recommendation is to create a mobile app that users of ALECs, whether they are faculty, staff, or students, may use as a user guide. A mobile app has the potential to address the gap in training at the University of Central Missouri because this app will be flexible, scalable, and user-friendly. Users are able to view the mobile app's content in their own time, the mobile apps can grow as the number of ALECs expand on campus, and many users are accustomed to using their smartphones so the user interface can be designed to be user-friendly. Lastly, this mobile app/user guide is a big undertaking. This project could provide an opportunity for collaboration among various academic units and university offices. Also, certain disciplines could make it a project or assignment for students.

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SECTION FIVE
CONTRIBUTION TO SCHOLARSHIP

Dr. Peter Kahn, Editor
Teaching in Higher Education

Dear Dr. Kahn:

Please accept this manuscript entitled “Active Learning Engagement Classrooms at the University of Central Missouri: Practical Strategies to Implement and Sustain Utilization of Active Learning in Higher Education Using Technology” for consideration as a *Teaching in Higher Education* article. In this study, the research questions were “What can the University of Central Missouri (UCM) do to encourage faculty utilization of one or more of the Active Learning Engagement Classrooms (ALECs)?” and “What can the University of Central Missouri (UCM) do to support faculty transition from traditional lecturing to active learning using technology?” The findings revealed that the faculty would like a flexible, “two-pronged” training approach to learn about the technology in the ALECs and about how these technologies can be leveraged for active learning strategies.

Given that higher education institutions are looking to active learning and other viable alternatives to the traditional lecture to improve student performance and increase retention, the answers to the two research questions in this study are relevant. Higher education institutions are updating spaces to be active learning engagement classrooms, which is a costly endeavor. From UCM’s experience, some of the ALECs were left mostly unused because many faculty did not want to teach in the new ALECs.

I hope that with this manuscript, it can expand on the first generation of research about active learning by going beyond asking if active learning worked. In this study’s case, the recommendations, which resulted from the themes that emerged from the data and the answers to the research questions, are practical strategies that can be implemented

in less than a year. Thus, this study's findings will allow your readers to find what is transferable depending on their contexts. Thank you for your time and consideration.

Sincerely,

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Active learning engagement classroom at the University of Central Missouri: Practical strategies to implement and sustain utilization of active learning in higher education using technology

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Active learning engagement classroom at the University of Central Missouri: Practical strategies to implement and sustain utilization of active learning in higher education using technology

Those in higher education today are pushing for active learning because several studies show a positive impact on student performance (Auerbach & Andrews, 2018; Beichner, 2014; Cattaneo, 2017; Heim & Holt, 2018; Lumpkin, Achen & Dodd, 2015; Morrison, 2014). Additional research should therefore focus on topics other than active learning efficacy. This qualitative study aims to add to the literature of the next generation of active learning research by exploring actions that encourage use of active learning engagement classrooms (ALECs) and support for faculty transitioning from lecturing to active learning using technology. Focus group meetings and interviews were conducted with 44 participants at the University of Central Missouri. Participants pointed to the need for training to support the sustained utilization of the ALECs. The themes that emerged from the findings are discussed and connected to the theoretical frameworks guiding this study. The paper concludes with a recommendation for practice and ideas for future research.

Keywords: active learning; higher education; adult learning theory; transformative learning theory

Introduction

The tradition of lecturing in higher education has been around for over 900 years. In fact, the traditional lecture has been used for so long that many individuals regard lecturing as synonymous to teaching (Morrison, 2014). The lecture had its purpose back in medieval times because books were rare (Park & Choi, 2014). Students, therefore, relied on instructors to read from the source. A fourteenth-century painting by Laurentius de Voltolina of a classroom at the University of Bologna in Italy illustrates such a lecture scene. The painting shows rows of desks with the instructor at the front lecturing behind a

lectern. Jump forward 700 years to the 21st century, and one can see that this depiction in de Voltolina's painting seems to still resemble many of today's college classrooms.

Need for Change: Active Learning vs. the Traditional Lecture

The traditional lecture is a passive form of learning (Cattaeno, 2017; Coorey, 2016; Morrison, 2014). Fortunately, those in higher education today are pushing for viable alternatives such as active learning (Beichner, 2014; Cattaneo, 2017; Lumpkin, Achen, & Dodd, 2015; Morrison, 2014). While the definition of active learning is something researchers have been grappling with for several decades, active learning is generally regarded as any instructional activity that engages the student with the content, each other, and the instructor (Arthurs & Kreager, 2017; Bonwell & Eison, 1991; Prince, 2004; Ryan & Martens, 1989; TeKippe, 2017).

Active learning using technology

The most basic form of active learning is the introduction of simple activities to the traditional lecture such as giving students the time to clarify notes with a partner (Prince, 2004). However, the 21st century classroom offers numerous possibilities for enhancing active learning activities with the availability of electronic technologies (Johnson & Johnson, 2008; Kemp, Preston, Page, Harper, Dillard, Flynn, & Yamaguchi, 2014; Onyema & Daniil, 2017). These electronic technologies can already be built into the classroom, such as interactive multi-touch displays mounted on classroom walls and hardware and software for wireless presentation systems. Additionally, students can bring their own personal devices such as laptops, tablets, and smartphones that they can use during active learning activities.

Active Learning Research

Research has shown that active learning has a positive impact on student performance, student achievement, and other learning goals (Auerbach & Andrews, 2018; Cattaneo, 2017; Eddy, Converse, Wenderoth, & Schinske, 2015; Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt, & Wenderoth, 2014; Heim & Holt, 2018). Given the number of studies that have connected active learning to numerous advantages, many educational researchers have suggested the time has come to implement active learning rather than continue to study whether active learning worked (Auerbach, Schussler, & Stains, 2017; Bernstein, 2018).

Purpose of the Study

Barriers to the implementation of active learning exist (Tharayil, Borrego, Prince, Nguyen, Shekhar, Finelli, & Waters, 2018) so this study sought to determine how to minimize or eliminate these barriers. Sources of barriers originate from students, the institution, oneself, and the education literature (Eddy et al., 2015; Sunal et al., 2001). The purpose of this study, then, was to discover approaches to assist faculty at UCM in learning best how to apply active learning strategies using technology despite barriers to implementation. Knowledge of these best practices could, in turn, be utilized to both increase and sustain the use of active learning strategies using technology in the classroom.

Research Questions

1. What can the University of Central Missouri do to encourage faculty utilization of one or more of the Active Learning Engagement Classrooms (ALECs)?

2. What can the University of Central Missouri do to support faculty transition from traditional lecturing to active learning using technology?

Conceptual/Theoretical Frameworks

A theory under the umbrella of Adult Learning Theories is transformative learning (Merriam & Bierema, 2014). Additionally, a foundational concept of adult learning is that transformative learning leads to personal development via challenging one's long-standing beliefs (Chen, 2014). Mezirow's (1981) transformative learning theory further explains how adults make sense of experiences and how influences affect the transformative learning process. Every person holds a worldview that essentially guides the formation of habits of mind and frames of reference, thus making it difficult to navigate through disorienting events such as learning a new concept (Christie, Carey, Robertson, & Grainger, 2015).

Materials and Methods

Setting

The site of this study was the University of Central Missouri (UCM), a public institution established at Warrensburg in 1871 (University of Central Missouri, 2019, About section, para. 6). The Center for Teaching and Learning (CTL), which designed the first ALEC in the fall of 2017, is housed within the UCM library. This space in the library provides faculty a place for testing ideas in active learning using technology (Center for Teaching and Learning, n.d., Overview and purpose of ALEC section, para. 1) with hopes for expanding the number of ALECs throughout the campus. Currently, eight ALECs in five other buildings are at the Warrensburg campus. Three of these eight ALECs resulted from the Title III Strengthening Institutions Program (SIP) grant from the fall of 2018

(Murphy, 2019) which allowed for the addition of one ALEC for each of the four colleges (S. Montgomery, personal communication, March 1, 2019). One more ALEC is under construction and will be completed before the end of summer 2020. As a result, there will be a total of nine ALECs at UCM by the fall semester of 2020.

Participants

The researcher contacted faculty who have taught in one or more of the ALECs and students who have taken classes with these instructors starting from August 2017. Additionally, administrators, faculty, and staff engaged in the design of the classroom spaces and the curriculum were asked to participate. For another perspective, the researcher also sought faculty participants who have not taught in any of the ALECs.

There were 12 participants who were college deans, associate deans, an assistant chair, managers, program coordinators, a director, one faculty member, and staff members from the Office of Technology. These individuals were involved in various aspects of the design of and decision-making for the ALECs. Another staff member interviewed was the office professional from one of the schools represented by the faculty who teach at one of the ALECs. A total of 20 faculty members and 7 students participated in focus groups or one-on-one interviews. Lastly, six faculty members who have never used any of the ALECs were approached. Access to the research site and all these participants resulted from the researcher first reaching out to each of the college deans and the university librarian.

With help from the Center for Teaching and Learning and other offices at UCM that had access to ALEC information, the researcher identified and reached out to faculty, staff, and student participants via email. The researcher, when present on location during

class observations, also spoke directly to student participants with the instructor's permission.

Data Collection Tools

The researcher conducted one-on-one interviews and focus group interviews, observations, and a review of relevant artifacts and documents. The one-on-one interviews were semi-structured and averaged approximately 45 minutes while the faculty focus group meetings were approximately one hour long and the student focus group meeting was 45 minutes.

The researcher conducted data collection efforts before and during the disruptions caused by the COVID-19 pandemic. As such, interviews and focus group meetings were both conducted in person and electronically via video conferencing software. The researcher interviewed administrators and staff members individually. There were three focus group sessions consisting of four individuals each session. Two of these focus groups were with faculty members while the third focus group was with students. Also, 12 faculty participants and three student participants could not attend the scheduled focus group sessions, so they were interviewed individually.

As for observations, the researcher was an observer rather than a participant. Unfortunately, the difficult situation with the pandemic cut short the researcher's ability to do observations on the eight ALECs available during the spring semester of 2020. The researcher observed four class sessions in only three of the ALECs—James C. Kirkpatrick Library 1268, Lovinger 4170, and Martin 230. The class sessions lasted from 50 minutes to three hours. However, the researcher stayed for 75 minutes at the longest.

Finally, data came from artifacts and documents. Artifacts included the various technologies and other objects used in the nine ALECs. Documents were physical or digital in form, such as course schedules, class rosters, job quotations, room layouts, building maps, web pages, pictures, rubrics, and instructors' lessons. Qualitative data from these various preexisting physical or digital sources allowed for triangulation of data with interviews and observations.

All data collection efforts adhered to the University of Missouri and UCM Institutional Review Board ethical requirements. Participants were aware that their participation was voluntary and confidential and that they could withdraw at any time during the study. Additionally, names of participants and collected data remained confidential through the use of pseudonyms. Observation notes and audio recordings of interviews were stored electronically and could be accessed only with the researcher's login credentials.

Data Analysis

The researcher used the participants' voices rather than his voice or other researchers' voices from the literature. Also, the researcher transcribed all interviews for accuracy in descriptions of the phenomenon. From the transcripts, categories and themes were constructed as a result of recurring patterns from the participants' words. The researcher knew there was a pattern when what was gathered from individual and focus group interviews corresponded with data from observations, artifacts, and documents.

Following Creswell's (2014) guidelines, the goal was to reach 25 to 30 categories during the early stages of data analysis and then narrow down to four themes when discussing research findings. The researcher used MAXQDA Analytics Pro 2020 (Release 20.0.7), a

qualitative data analysis software, to assist in keeping the categories and themes organized.

Results

Themes

“It’s the Field of Dreams”

After hearing about faculty experiences, a recurring theme was the belief that from creating these ALECs, faculty will simply flock to these rooms. “It was the ‘Field of Dreams.’ Build it, and they will come,” remarked Lily, a faculty member who taught in one of the ALECs. Faculty and staff participants recounted their experiences with the development process for the ALECs as well as the sign-up process to utilize the ALECs.

Development process. The goal for the ALECs, according to the college deans, is for the spaces to be used as much as possible. However, the rooms may not be utilized as much as hoped because some faculty do not want to be in an ALEC. Siena, a faculty member stated that many faculty members asked to switch rooms the first semester a classroom was converted to an ALEC because the faculty members did not feel that they had enough time to learn new technology. Besides having to learn new technology, some of the resistance was simply from faculty feeling like they were not consulted during the development process when decisions were being made about what would go in the ALECs.

However, for some ALECs, faculty members were involved in the decision-making process. Kelly, a college dean, shared the development experience for one of the ALECs. “What worked well was bringing faculty together with an individual who really understood the faculty side, the instructional side, and technology side. Using a faculty

member who had a vast amount of experience in online instruction and active learning instruction to sit and help guide the conversation with faculty was very useful.”

Sign-up process. Another reason that the ALECs are not being used by faculty is that there is a protocol among colleges and academic units about where classes can be scheduled. Those responsible for scheduling classes do not always look outside their college or academic unit. However, faculty members in a public university should be able to utilize an ALEC outside of their schools or colleges by asking for permission to do so. Additionally, some of the ALECs do not necessarily have an approval process to prioritize who gets to utilize the ALECs. Cheyenne has taught in two different ALECs. She wondered, “Who decides who gets the room? Nobody knows. And I think sometimes that, at least my perception, is that whoever barks the loudest wins. And so, I bark loud.” As a result, some faculty members who want to utilize the ALEC may miss the opportunity simply because the process is first come, first serve.

“It’s a Two-Edged Sword”

As faculty, staff, and student participants reported their experiences with the ALECs, another theme that emerged was that the ALECs simultaneously offered advantages and disadvantages. “It’s a two-edged sword, so to speak,” described Aubrey who teaches in one of the ALECs. “It gives us problems. But then the furniture, that makes up a little bit.” The ALECs have many things about them that the participants appreciated but were also barriers to active learning.

What was appreciated. Most of the participants cited the ALECs’ impact on student learning as one of the most positive aspects of the learning space. “It gets the cogs turning in their brain,” described Aariah, a faculty member. Students can learn

differently in an ALEC because the room is supposed to be different from a traditional classroom. “To me, what works well for active learning, I think, is just the fact that you have a nontraditional space,” explained Dylan, a faculty member. “It’s difficult to tell where the front of the room even is, right? So, to me, then, it begins to break down the power structures of the normal classroom.”

Dylan’s statement above suggested that student learning in the ALECs could only be impacted if three things were present. First, the faculty member teaching must be open to active learning strategies using technology in order to improve instructional capabilities. A second prerequisite to impacting student learning in an ALEC was the furniture. The furniture must facilitate collaborative learning. Isla, a student, described her experience in the ALEC. “The fact that the desks are all grouped together, it was really helpful because sometimes, you get, like, we have a very difficult subject matter. So, sometimes you get confused. But you don’t really want to stop everybody. So, if you could just talk to the person beside you when you weren’t disrupting anything, really, you could be like, ‘Hey, who was that guy?’ Or ‘What are we talking about? What was that?’” A third prerequisite to impacting student learning in an ALEC was the technology. The most popular item in the ALECs, as mentioned by the participants, were the multiple screens, where available.

Barriers. As a “two-edged sword,” the aspects that participants appreciated about the ALECs were the same ones that participants also disliked about the spaces. First, the active learning aspect that had such a positive impact on students, according to the participants, acted as a barrier sometimes. Many faculty participants such as Kaylee dealt with students who were not convinced on the idea of veering away from the traditional

lecture. Kaylee explained, “I’m gonna be kind of honest. And I know this isn’t necessarily what they like. But one of the things that I have had a lot of my students tell me is, they don’t like it...But I think, it’s because it’s what they know. They’re still in a generation where they’ve probably gone through most of their schooling being lectured at. And I also think it’s a little bit of laziness because they just want to sit there. They don’t want to be up and forced to move around and talk and all that kind of stuff.” Depending on the ALEC used by faculty and student participants, furniture also, at times, served as a barrier to active learning or otherwise inconvenienced students. Opal, a student, recounted, “So, all the furniture in the library is movable. You move wrong, your entire desk moves. I know we have people fall out of those chairs.” Lastly, teaching and learning were interrupted as a result of technology issues. Many faculty participants mentioned their experience with the wireless keyboard and mouse that went with the interactive display. Luke, a faculty member who teaches in an ALEC, said, “It’s a little frustrating, the lack of range for the keyboard and mouse.” For Alissia, the ability to share screens took some time for her students to learn. “I will say a challenge that I kind of faced with it with the freshmen was, I don’t know if it just happened to be the group of freshmen that I ended up getting enrolled in my class or what the case was, but they seemed to struggle a lot with using the technology. And so, I ended up having to spend almost a whole class day of explaining and getting them used to the technology itself.”

“It’s More Than Just about the Bells and Whistles”

The creation of ALECs is not just about including the latest technologies and capabilities, or “bells and whistles” as Ruth, an administrator, called them. A web of support needs to be established for faculty and students to have favorable and successful experiences in

the ALECs. This support system should include not only relevant training and timely communications, but also a community of like-minded individuals who have an interest in the world of active learning in higher education.

Training. A common theme that many faculty, staff, and student participants brought up was training as part of a support system. More specifically, many participants felt that faculty training on how to use the technologies available in the ALECs was lacking. “There’s been one training,” explained Sarah, a staff member who helps with faculty and student questions about the ALECs. “And it was during the middle of the day when faculty were teaching in other rooms. So, they weren’t available to go see.” Even student participants noticed that faculty may need additional training on how to use ALEC technology. “I think the biggest thing is just going to be, especially moving forward with technology continually evolving, is keeping those classrooms updated and making sure that the faculty is getting good instruction on how to use it properly,” explained Garfield, a student.

Training is essential as many participants mentioned a “learning curve” when it came to being able to take advantage of the ALECs’ capabilities as envisioned by the designers. Annabelle, after teaching in two different ALECs, had a suggestion about training faculty. “I think that training is important. To me, there are two prongs. There is the technology side of it. But then, there’s also the side of using engaging activities.”

Community support. Another component of a support system is the existence of a community of like-minded individuals. Help for ideas in active learning strategies can come from fellow educators. Luke, who teaches in one of the ALECs, said, “I went and watched another faculty member and observed how he had control, classroom

management.” Another faculty member who has taught in two different ALECs, looked to a colleague for support as well. “He and I would commiserate, ‘Hey, how are you using this? I’m not sure!’ We wish that we could have had something where we talked about things.” Fortunately, a new group called Community of Practice-Active Learning formed during the fall semester of 2019, allowing participants to discuss topics related to active learning.

“It’s News to Me”

In asking faculty participants how they heard about the ALECs, another theme that emerged was that the ALECs were not well-known on campus except for those who were interested in active learning in the first place. Essentially, for many of the faculty participants who have not used any of the ALECs, it was news to them about what an active learning engagement classroom was as defined in this research study.

Emily, an administrator, explained why faculty may not be aware of the ALECs. “Well, if faculty are interested, the [marketing efforts to make faculty aware of the ALECs] work well. That’s where they first hear about it. Or not first maybe, but that’s where they get more information about it, maybe ask questions about it. If faculty think that, ‘Well, I never teach in that room,’ then they’re not listening anyway, you know what I mean? If they don’t think it impacts them personally, they’re probably not interested. Now, if they’re told ‘You’ll be teaching in there this semester,’ then, yes, it’s going to be, ‘Tell me more. What’s going on? What can I do?’”

Emily’s explanation above suggested that there are two categories of faculty users in the ALECs. The first category includes those who are always on the lookout for innovative ways of teaching. The second category are those who were simply assigned to

the ALECs. Lily explained what happened to her. “I walked in, and it was there.” Lily was referring to how the classroom she had always used was changed to an ALEC between the spring and fall semesters. Lily continued about the new technology she found in the ALEC. “Nobody told us. Nobody asked us what we wanted. Nobody asked us what we needed. We just came in. And they were like, ‘Oh, isn’t this wonderful?’”

According to Kelly, a college dean, one way to spread the word about these ALECs so that more faculty use these rooms is to communicate information about these rooms in a systematic way. Kelly said there would be publicity about the completion of new ALECs in the future via various means. “We’re going to have a ribbon cutting ceremony. And we’ll also begin to [include the ALEC in] our campus tours. And we’ll want to take videos of it. And we’ll ensure that they are on virtual campus tours.” The other college dean participants mentioned a similar approach.

Answers to the Research Questions

Research Question One

Research question one is “What can the University of Central Missouri do to encourage faculty utilization of one or more of the Active Learning Engagement Classrooms (ALECs)?” Using qualitative analysis, the research question is answered through the experiences shared by faculty, staff, and student participants regarding nine ALECs at the University of Central Missouri (UCM). As conveyed under the “It’s the Field of Dreams” theme in a previous section, the ALECs were designed and deployed with the hope that faculty would use them as much as possible. However, many participants shared factors that discouraged the use of the ALECs. Also, from the “It’s News to Me” theme, the researcher found that the ALECs were not necessarily anything that faculty paid attention

to for various reasons. Fortunately, based on responses from faculty participants, especially those who were assigned to teach in the ALECs and those who have not used any of the ALECs, there were a few factors that may encourage faculty to utilize the ALECs. The first factor is to ensure that faculty members who will most likely be utilizing the new ALEC are included during the development process. The second factor to ensure utilization of the ALECs is to address the disconnect between “tech communication and education communication” as Emily, an administrator, described it. The solution to the disconnect, according to the participants, is to provide relevant training. This solution can work for both new ALECs and existing ALECs. The most common area where faculty participants needed the most training was in the area of using the technology typically found in an ALEC. An ALEC at UCM may have one more of the following: an interactive display, multiple screens throughout the room, hardware/software for sharing screens from mobile devices (laptop, tablet, or smartphone), video cameras, speakers, microphones, and a control panel to handle the electronics in the room. This point about having multiple technologies in an ALEC is important to note. Consider what Garfield, a student said, about his observation of faculty in a traditional classroom. “They can’t even figure out how to turn the sound on or get the projector to work. So, I think that you definitely need to have more of a tech savviness to definitely run these screens with computers and getting everything to link up.” Emily, an administrator, hinted that the key to faculty making use of the various ALECs is indeed to offer resources such as training to ensure faculty are aware of the ALECs’ capabilities. A third factor to increase utilization is publicizing the ALECs availability and capabilities. By publicizing the ALECs for greater awareness, the fourth factor for increasing

utilization is by communicating with those responsible for scheduling classes that the ALECs are available for use. When asked about the approval or sign-up process, the participants' responses revealed that there is an unofficial classroom assignment protocol. This situation was further described by Dana, a college dean. "When you're accustomed to having certain classrooms assigned to certain disciplines, there's sort of a sense of ownership. The fact is that in a public university, no one owns any classroom. The Provost owns all of the classrooms in general in the college. The dean has supervision over all classrooms in the college." Additionally, Adam, a faculty member who has not used any of the ALECs, said, "When you think about scheduling classes, you just know that these are the ones we're using. These [referring to the ALECs] are not advertised widely...And so, we don't really think about expanding." This means that if faculty members would like to utilize an ALEC outside of their schools or colleges, faculty members may ask for permission to do so. The unbounded use of ALECs by college or school, in turn, has the potential to increase the utilization of ALECs.

Research Question Two

Research question two is "What can the University of Central Missouri do to support faculty transition from traditional lecturing to active learning using technology?" Using qualitative analysis, the research question is answered through the experiences shared by faculty, staff, and student participants regarding nine ALECs at the University of Central Missouri (UCM). As conveyed under the "It's More than Just the Bells and Whistles" theme in a previous section, the ALECs require more than making more technologies and flexible furniture available. A web of support needs to be in place as faculty transition

from traditional lecturing to active learning using technology. The web of support includes training, technical support, a user guide, and community support.

First, many participants felt that faculty training on how to use the technologies available in the ALECs was lacking, something that the researcher established when answering research question one in the previous section. Scheduling conflicts made it difficult to attend these training sessions sometimes. For example, in the College of Education, faculty members are not always on campus. “Our faculty are in the field quite a bit,” explained Emily, an administrator. “So, it’s difficult to provide training for faculty when everyone is available on campus so that they can actually have the time to experience how to use the Air Media, to practice with the different cameras, the different settings.”

Second, the web of support should include technical assistance during all times when classes are in session. Many faculty participants had classes between 8 a.m. and 5 p.m. Therefore, technical support was typically immediately available from many places. Additionally, faculty in need of technical assistance could also contact fellow faculty or staff members who might be able to help if they happen to know anything about the ALEC. However, some faculty members hold classes late in the afternoon or at night. Veronika explained, “The challenge for me was finding the time to get that support and then also the timing of my class... And for me, I felt bad asking someone to come in at the end of the workday to do that.”

Third, the web of support should include a user guide. Most of the faculty and student participants mentioned that their ALECs did not have a user guide, instruction manual, or cheat sheets of any kind. As a result, faculty and students were left on their own to figure out how to use the technology if technical support was not immediately

available to assist. The suggestions from faculty and student participants on what to include in the user guide were consistent. Kit's response to the user guide interview question summed up what many participants had to say.

“Definitely how to reserve the space. Definitely how to set up training to utilize the technology, so how to use it, on and off, those sorts of things. How many students can be enrolled? How many students would be ideal and would ideally work best in the space? Opportunities for further training about active learning, how to sort of incorporate some facilitation strategies into your teaching so there's a way that we get students together and how we get them to collaborate.”

A final component of the web of support is a community. Cari, a program coordinator, said, “We know how we want to use the technology in our brains, but we can't get it to function that way. That's where we need help. I feel like we've got the plan. It's getting the plan and the technology to work together is where we are not having luck.” This help for ideas that Cari spoke of can come from other educators. Many faculty participants felt that having others to collaborate with or share ideas about active learning would be a great way to support what these faculty members do in the ALECs.

Discussion

Connection to Conceptual/Theoretical Frameworks

The two conceptual/theoretical frameworks that guided this study were Adult Learning Theory and Transformative Learning Theory. Considering the themes that emerged from the data and the answers to the two research questions, the frameworks are most relevant to the training that faculty participants need. Any training developed and provided should

account for the six assumptions of andragogy, allow for self-directed learning, and recognize the role of transformative learning to bring about lasting change in behavior.

The six assumptions of andragogy are self-directedness, experience, readiness to learn, difference in time perspective, internal motivation, and needing to know why something should be learned (Merriam & Bierema, 2014). The training that faculty at the University of Central Missouri requires should be two-pronged. One prong addresses the technology aspect. In order to use the technologies available in the various ALECs, users must know how the equipment works. The other prong addresses the pedagogy aspect. Most of the faculty participants recognized the need for them to go through training so that they can be more versed in utilizing not only the technologies available in the ALECs but also activities that encourage active learning using technology. Such recognition addresses the six assumptions of andragogy.

In allowing for self-directed learning, three things had to be addressed--how, when/where, and why (Kitchenham, 2008). First, faculty participants listed various ways they could learn technology and pedagogy the best--in-person training sessions, cheat sheets, text-based user manuals, and online videos. Second, faculty participants indicated they would like the training to be more flexible to accommodate busy schedules. Lastly, adult learners had an understanding of why they need to improve their instruction in the ALEC.

To understand what brings about lasting change, faculty and staff responsible for creating training for faculty members can look to Mezirow's (1981) transformative learning theory for insight. Faculty at the University of Central Missouri (UCM), as adult learners, will have to transform their ways of thinking about what their role as educators

in the classroom can be and about the nature of learning. Faculty participants in the study revealed that instruction is different in an ALEC. This is an uncomfortable task for many instructors, as using active learning would make them feel less in control over the content as well as the amount of information that is supposed to be covered (Bonwell & Eison, 1991). From the data, faculty participants who chose to teach in the ALECs described stable changes in behavior when it came to reformations of teaching practices and philosophy. For example, Veronika, a faculty member who teaches in one of the ALECs, acknowledged, “So it took me a little bit of time to get used to the fact that students might not be watching me. They might be watching over here where the screen is at.” Veronika used this change in the teacher-student dynamic to be more a part of the class. “I could get up and walk around the room more and wasn’t tied so much to my one spot.” Departures from the traditional lecture, traditional classroom dynamic, and traditional classroom equipment (typically a projector and a screen at UCM) might require other faculty members who have yet to fully utilize the ALECs’ potential and who have yet to teach in an ALEC to go through the same transformative learning experience as those faculty members who are actively seeking active learning using technology strategies.

Recommendations

According to most of the 44 faculty, staff, and student participants in this study, the nine Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri have been a welcome addition. As set forth by the college deans, these ALECs have a goal of maximum utilization by faculty and students because of the investment in the rooms to create spaces that allow for different types of interactions among faculty and students. However, maximum utilization is only possible if faculty and students can see

themselves being successful in an ALEC because of the existence of a web of support. The researcher provides two recommendations based on the ALEC Utilization Model developed from the qualitative data analysis (see Figure 1). This ALEC Utilization Model shows that the support system for the ALECS are administrative, technological, and pedagogical. Administrative personnel provide the necessary funds, human resources, and strategic vision. Technology support personnel play an advisory role and create technology standards for the university. Additionally, technology support personnel install and maintain technology and train users on how to use the technology. Pedagogical support includes offices such as the Center for Teaching and Learning (CTL). CTL also plays an advisory role and is the entity responsible for curriculum and instructional training. With this three-legged support, faculty and student users of ALECs are more likely to be satisfied and successful. This success, in turn, could lead to the attainment of institutional goals.

Phase One recommendations are those activities that can be implemented within three months--update the development process of future ALECs to include all relevant stakeholders, create a process for signing up for classrooms so that all faculty members interested can teach in an ALEC, provide technology and pedagogical training on the ALECs, expand the Community of Practice-Active Learning, increase publicity for the ALECs, collect data on faculty and student perceptions of the ALECs, provide simple step-by-step instructions for equipment in the ALECs, and post resources relevant to the ALECs online for easy access

The Phase Two recommendation will take a little longer to complete, perhaps up to a year or more. The Phase Two recommendation is closely related to what will be

created as online resources from Phase One. The Phase Two recommendation is to create a mobile app that users of ALECs, whether they are faculty, staff, or students, may use as a user guide. A mobile app has the potential to address the gap in training at the University of Central Missouri because this app will be flexible, scalable, and user-friendly. Users are able to view the mobile app's content in their own time, the mobile apps can grow as the number of ALECs expand on campus, and many users are accustomed to using their smartphones so the user interface can be designed to be user-friendly.

In a study by Liu, Lobschat, Verhoef, and Zhao (2019), the authors found that consumers interacted more, bought items more frequently, and spent more time in a mobile app compared to a mobile website with the same information. Also, according to Deshdeep (2020), there are numerous advantages to mobile apps:

1. Can be personalized
2. Use to send notifications, adding another communication channel to interested parties
3. Take advantage of mobile device features such as cameras
4. Work even without an internet connection
5. Add to the University of Central Missouri Brand
6. Can be faster than websites

Another advantage listed by Deshdeep (2020) is that the mobile app can be designed to suit the needs of the University of Central Missouri. For example, a few participants suggested ideas that would make the mobile app or user guide useful. One idea was to provide a way to do a search. For example, if a user was in the ALEC at James C.

Kirkpatrick Library 1268, the user can type in a question such as, “How do I turn on the screens in 1268?” Another idea was to have a way for relevant videos or other resources to appear based on the ALEC. For example, the interactive display in Lovinger 3170 can have a QR code that can be scanned with the app which will then pull up a video to show the user how to get started.

Lastly, this mobile app/user guide is a big undertaking. This project could provide an opportunity for collaboration among various academic units and university offices. Also, certain disciplines could make it a project or assignment for students. The following is a list of specific disciplines that can help with the project:

1. Computer Science, Computer Information Systems, and Information Technology: to help with design and development of the mobile app
2. Education: to help with creating “two-pronged” training in technology and pedagogy
3. Graphic Arts, Graphic Design, and Communication: to help with design aspect of the mobile app and other assets
4. Marketing/Public Relation: to help with branding and promotion
5. Other Subject Matter Experts: to help with content if it deals with specific disciplines

Limitations, Design Controls, and Future Research

Limitations to this study include the setting, time constraints, a small number of student participants, disproportionate representation of the nine ALECs, and researcher bias.

First, the setting for this study was one university with its own structure, rules, and culture. Replication of this study may yield different results and recommendations.

Second, the study had a time constraint. More time would have allowed for more a more in-depth analysis of the collected data. Also, more time would have addressed the third limitation which was the small number of student participants compared to the number of faculty and staff participants. COVID-19 shut down the university, causing interruptions to the data collection effort. As for the fourth limitation, disproportionate representation of the nine ALECs, a little over 60% of the participants represented experiences with three ALECs. Given more time, the researcher could have found participants that equally represented each of the nine ALECs. Lastly, because of the researcher's role as the main instrument for collecting data, he was cognizant of how his background position as Instructor, Faculty Liaison, and Instructional Designer for the College of Health, Science, and Technology (CHST) at UCM, as well as personal experience teaching a class at the ALEC in the library prior to this study, may have introduced potential biases in the design of the study and interpretation of results. To control for these potential biases, the researcher used strategies such as providing vivid details of findings, triangulating using multiple sources of data, and keeping a log of qualitative research processes used in the study.

Several future research opportunities are possible. Among those is the opportunity to find more student participants representing each of the nine ALECs at the university. More student participants will allow for additional examples of positive and negative experiences with the ALECs since not all ALECs have the same features. Another research opportunity is to determine the change in faculty and student perceptions of the ALECs should the university choose to follow one or more of the recommendations in a previous section.

Conclusion

This qualitative study about faculty, staff, and student participant experiences allowed the participants to share experiences of the nine active learning engagement classrooms (ALECs) at the University of Central Missouri (UCM). Through the data collection and data analysis process, four themes emerged: “It’s the Field of Dreams,” “It’s a Two-Edged Sword,” “It’s More than Just the Bells and Whistles,” and “It’s News to Me.” The researcher also used the collected data to answer two research questions that related to what can be done to encourage faculty use of the ALECs and what the university can do to support faculty in transitioning from the traditional lecture to active learning strategies using technology. The themes and answers to the research questions allowed the researcher to provide recommendations, the most significant of which was the provision of relevant, timely, and flexible faculty training. Lastly, limitations and future research opportunities were briefly described to allow other practitioners to look for transferability rather than generalizability.

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Figure

Figure 1. This ALEC Utilization Model shows that there are three types of support--administrative, technology, and pedagogy--necessary to sustain the successful use of active learning engagement classrooms by faculty and students in higher education. Copyright 2020 by Elmer Ragus.

SECTION SIX

SCHOLARLY PRACTITIONER REFLECTION

Introduction

This dissertation process has truly been a transformative learning experience. Prior to writing a big portion of what eventually became my dissertation proposal for this study, I still had not quite grasped the work ahead of me. Also, I had not yet imagined the impact that the study's findings could potentially have in the realm of educational leadership. Having completed the dissertation, I now see myself even more as an educational leader and scholar, able to confidently share my views and recommendations, both of which are backed by data.

Change as an Educational Leader

Before starting the EdD program in 2017, I did not necessarily consider myself an educational leader. I left that responsibility to individuals who were in roles of leadership, such as college dean, school chair, and program coordinator. However, by the start of my dissertation process in 2019, I had developed an idea of what educational leadership was through all the doctoral coursework covering this topic in the EdD program. I learned, for example, that as someone working in higher education, I am in the business of caring. More specifically, the center of attention of an educational leader's decisions should be the students. This definition of caring and awareness of my responsibilities allowed me to be more purposeful in how I could help in creating an environment that fosters success in students at the University of Central Missouri (UCM).

One incident to illustrate the change in my approach is how I used to handle late submissions of assignments. Essentially, I had a zero tolerance policy, especially since late submissions in the graphic communication industry are unacceptable. However, in thinking about what really happens in the industry, late submissions are accepted under

certain circumstances. For example, there is room for negotiation when events arise that might legitimately delay projects. Therefore, I learned from educational leadership principles that caring for a student and remaining ethical in grading practices did not have to be mutually exclusive. I have had many opportunities now where I accepted late submissions for partial credit, provided a student met with me first to discuss what happened and what we could do to prevent issues in the future. If I would not have been transformed as an education leader, then I would not have received notes from students such as the following: “You are the most caring, considerate, and kind teachers I have had while attending the university. And I would like to thank you for your patience, especially during the hard times I went through this year.”

I ultimately summed up educational leadership as exhibiting the traits of people who treat others the way they want to be treated. Additionally, educational leadership to me is about positive influence. Lastly, I see educational leadership as the chance to make changes because there is always room for improvement.

I discovered the three ideals above as I listened to my study participants’ voices about their experiences. I also realized that any changes that could occur can have very real consequences to the lives of faculty, students, and staff at UCM. For example, in creating active learning engagement classrooms (ALECs), UCM has provided a way to augment the higher education experience. However, efforts in moving toward active learning using technology should not stop at the creation of the ALECs. Now, there is a need to see how UCM can take the ALECs’ use to the next level, one that allows for the attainment of institutional goals, such as higher retention rates and graduation rates, while addressing the needs of the users--faculty and staff. Doing so, however, will involve

asking various UCM entities to make changes based on collected data. The transformed educational leader in me recognizes that there is a way to ask others to follow me without compromising the three ideals of respect, positivity, and continuous improvement.

Change as a Scholar

Before starting this EdD program, I had a limited view of scholarship. I saw scholars as those who studied the reality in which they lived and then wrote about their methods and findings. Additionally, my experience had been limited to quantitative studies. For example, during the last semester of my MBA program back in 2009, I used quantitative research methodologies to determine influencers on the decision for patients to consider bariatric surgery. This study resulted in a journal article where the methods and findings were shared with the world.

However, after this dissertation process, I now realize there is another side to scholarship. There are also those scholarly practitioners who want to go beyond informing the world of their methods and findings. Instead, these scholarly practitioners want to make a difference in their worlds by using their research skills and knowledge gained from scholarly endeavors to inform practice. In this dissertation-in-practice's case, I took on the role of scholarly practitioner and examined an existing problem encountered at UCM. The findings and resulting recommendations from my study, in turn, have the potential to deliver solutions that allow for improvements and innovations in the organization.

Moreover, I have learned that there are other research methodologies available for scholars. Besides quantitative methods, I can use qualitative or mixed methodologies. After completing this qualitative research study, I have a newfound respect and

appreciation for many others before me who have paved the way for the acceptance of qualitative studies as a form of serious inquiry. This dissertation by far has been the biggest project of my educational career, and I am thrilled about the opportunity to contribute to scholarship whether that is through this dissertation alone or through journal articles that might result from the study's findings. I would not, however, be as sure in my contributions had I not gained confidence in my primary data collection skills.

Another important concept I learned through this dissertation process is that data play an important role in scholarly endeavors. I should use data to determine whether a problem of practice is worth studying through a review of the literature. I enjoyed the literature review process, as what I found helped me pinpoint what I could focus on for my dissertation-in-practice. I also identified the conceptual frameworks and found it enlightening how I could test theories against collected data to advance knowledge.

As a qualitative researcher, I relied on one-on-one interviews and focus group interviews. The opportunity to use interviews as the main source of data for my study has been a significant force in my transformation as a scholar. I was able to see the world from the participants' perspective. This in-depth view would not have been possible if I relied solely on survey data. Additionally, in using the participants' own words in this study rather than my own, I have come to appreciate the power of giving voice.

In conclusion, I want to improve my immediate world as an educational leader and scholar. This goal requires the use of correct and relevant data when contributing knowledge to inform practice. The transformation I have experienced through this dissertation has allowed me to recognize that I should not only know who is affected by

my decisions and actions but also remember that I should always be looking out for the best interest of students.

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Appendix A

Laurentius de Voltolina, Medieval University Lecture

Figure A1. This parchment painting by Laurentius de Voltolina depicts a fourteenth century university lecture scene at the University of Bologna in Italy. This image was obtained from Wikimedia Commons. (de Voltolina, n.d.)

Appendix B

Table 1

*Participant Representation of the Active Learning Engagement Classrooms
(ALECS)*

Room Number/Name	Number of Participants
Grinstead 249	7
James C. Kirkpatrick Library 1268	14
Lovinger 2140	3
Lovinger 3140	5
Lovinger 4170	7
Martin 230	6
Ward Edwards 2100	3
Wood 010	4
W.C. Morris 422	3

Note: There was a total of 44 participants. Some participants represented more than one ALEC.

Appendix C

UCM Organization Chart (July 2019)

Effective July 1, 2019

Appendix D

Sample LSRS Evaluation of a Classroom at the University of Central Missouri

WCM 422 LSRS Evaluation														Comments
Sections and Credits	Points Possible	Chad	Doug	Laura	Athena	Jim	Mike	Vanessa	Ray	RJ	Ken	Shaunte	Elmer	
Section 5: Layout and Furnishings (LF)	16	0	0	2	2	2	1	0	0	0	0	0	0	
Proximities within Space (5.1)	1			0	1	0	0							
Movement through Space (5.2)	1			0	0	0	0							
Seating Density (5.3)	1 or 2			0	0	0	0							Room Dimensions sheet
Furniture Configuration Flexibility (5.4)	1, 2, or 3			0	1	0	0							
Work Surfaces (5.5)	1			0	0	0	0							
Seating Comfort (5.6)	1			0	0	0	0							
Movable Partitions (5.7)	1			0	0	0	0							
Transparency (5.8)	1			0	0	0	0							
Access to Adjacent Informal Learning Spaces (5.9)	1			1	0	1	1							
Writable Surfaces (5.10)	1			1	0	1	0							
Physical Storage (5.11)	1 or 2			0	0	0	0							
Future Proofing (5.12)	1			0	0	0	0							
Section 6: Technology and Tools (TT)	10	0	0	1	2	2	2	0	0	0	0	0	0	
Electrical Power (6.1)	1			0	0	0	0							
Network Connectivity (6.2)	1			1	1	1	1							
Visual Displays (6.3)	1, 2, or 3			0	1	0	0							
Sound Ammplification (6.4)	1 or 2			0	0	0	0							
Audio/Visual Interface and Control (6.5)	1			0	0	1	1							
Distributed Interactivity (6.6)	1			0	0	0	0							
Session Capture and Access (6.7)	1			0	0	0	0							
Section 4: Environmental Quality (EQ)	9	0	0	0	4	4	4	0	0	0	0	0	0	
Daylight (4.1)	1			1	1	1	1							
Views to Outdoors (4.2)	1			1	0	0	0							
Interior Visibility (4.3)	1			1	1	1	1							
Lighting Control (4.4)	1 or 2			1	1	1	1							
Thermal Comfort (4.5)	1			0	0	0	0							
Acoustic Quality (4.6)	1			0	0	0	0							
Environmental and Cultural Inclusiveness (4.7)	1			0	1	1	1							
Accessability and Universal Design (4.8)	1			0	0	0	0							

Appendix E

Consent Form Submitted to the Institutional Review Board at the University of Missouri

CONSENT FORM TO PARTICIPATE IN A RESEARCH STUDY

Researcher's Name: Elmer N. Ragus

Project Title: Active Learning Engagement Classrooms at the University of Central Missouri: Practical Strategies to Implement and Sustain Utilization of Active Learning in Higher Education

STUDY SUMMARY:

You are being asked to participate in a research study. This research is being conducted to acquire and understand faculty and student perceptions of as well as administrator and staff experiences with the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri. You have the right to know what you will be asked to do so that you can decide whether or not you would like to participate. Your participation is voluntary. If you decide not to participate, you will not be penalized in any way. You may also choose to stop at any time without penalty. If you do not wish to answer one or more of the interview questions, you may simply skip them.

PURPOSE OF THE STUDY:

The purpose of this study is to assist administrators, faculty, and staff at the University of Central Missouri in learning best how to apply and/or support the use of active learning strategies using technology despite barriers to implementation.

REQUEST FOR PARTICIPATION:

I am inviting you to participate in a study of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri. You are being asked to complete an interview and/or allow me to observe your class session(s) in one or more of the ALECs. The interview will be audio recorded and transcribed to ensure accuracy. During the observation, I will be writing notes but will not be audio or video recording. All of the information I collect will be kept confidential. Audio recordings will be destroyed upon completion of this study.

QUESTIONS, CONCERNS, OR COMPLAINTS:

Please contact Dr. Sandy Hutchinson, Dissertation Chair, hutchinson@ucmo.edu, if you have any questions about the research. Additionally, you may ask questions, voice concerns, or register complaints to the researcher, Elmer N. Ragus, eragus@ucmo.edu. If you have questions about your rights as a research participant, please contact the University of Missouri Institutional Review Board (IRB) at irb@missouri.edu or 573-882-3181.

Appendix F

Recruitment Letters Sent to Participants

SAMPLE RECRUITMENT EMAIL (TO ADMINISTRATORS AND STAFF)

Dear _____:

My name is Elmer Ragus, and I am a doctoral candidate in the MU EdD Cooperative Program. This spring semester of 2020, I conducting a research study about the Active Learning Engagement Classroom (ALEC) in Building XXXX. I am emailing to ask if you would like to participate in a one-on-one interview regarding your experience with the ALEC. Participation is completely voluntary, and participants' identities will be confidential.

If you are interested, please email me back. If you have any questions, please do not hesitate to contact me at eragus@ucmo.edu or 660-543-8682. Thank you for your time.

Sincerely,
Elmer Ragus
University of Missouri
University of Central Missouri Cohort

SAMPLE RECRUITMENT EMAIL (TO INSTRUCTORS TEACHING IN AN ALEC SPRING 2020 SEMESTER)

Dear _____:

My name is Elmer Ragus, and I am a doctoral candidate in the MU EdD Cooperative Program. This spring semester of 2020, I conducting a research study about the Active Learning Engagement Classroom (ALEC) in Building XXXX. I am emailing to ask if you would like to participate in a one-on-one interview or a focus group regarding your experience with the ALEC. Also, I would like the opportunity to observe your classroom. Participation is completely voluntary, and participants' identities will be confidential.

If you are interested, please email me back. If you have any questions, please do not hesitate to contact me at eragus@ucmo.edu or 660-543-8682. Thank you for your time.

Sincerely,
Elmer Ragus
University of Missouri
University of Central Missouri Cohort

SAMPLE RECRUITMENT EMAIL (TO INSTRUCTORS FROM PREVIOUS SEMESTERS – NO SPRING 2020 CLASSES IN AN ALEC)

Dear _____:

My name is Elmer Ragus, and I am a doctoral candidate in the MU EdD Cooperative Program. This spring semester of 2020, I am conducting a research study about the Active Learning Engagement Classroom (ALEC) in Building XXXX. I am emailing to ask if you would like to participate in a one-on-one interview or a focus group regarding your experience with the ALEC. Participation is completely voluntary, and participants' identities will be confidential.

If you are interested, please email me back. If you have any questions, please do not hesitate to contact me at eragus@ucmo.edu or 660-543-8682. Thank you for your time.

Sincerely,
Elmer Ragus
University of Missouri
University of Central Missouri Cohort

SAMPLE RECRUITMENT EMAIL (TO INSTRUCTORS WHO HAVE NOT TAUGHT IN AN ALEC)

Dear _____:

My name is Elmer Ragus, and I am a doctoral candidate in the MU EdD Cooperative Program. This spring semester of 2020, I am conducting a research study about the Active Learning Engagement Classroom (ALEC) in Building XXXX. I am emailing to ask if you would like to participate in a one-on-one interview regarding your thoughts on this ALEC. Participation is completely voluntary, and participants' identities will be confidential.

If you are interested, please email me back. If you have any questions, please do not hesitate to contact me at eragus@ucmo.edu or 660-543-8682. Thank you for your time.

Sincerely,
Elmer Ragus
University of Missouri
University of Central Missouri Cohort

SAMPLE RECRUITMENT EMAIL (TO STUDENTS)

Dear [Student Name]:

My name is Elmer Ragus, and I am a doctoral candidate in the MU EdD Cooperative Program. This spring semester of 2020, I am conducting a research study about the Active Learning Engagement Classroom (ALEC) in Building XXXX. I am emailing to ask if you would like to participate in a one-on-one interview or a focus group regarding your experience with the ALEC. Participation is completely voluntary, and participants' identities will be confidential.

If you are interested, please email me back. If you have any questions, please do not hesitate to contact me at eragus@ucmo.edu or 660-543-8682. Thank you for your time.

Sincerely,
Elmer Ragus
University of Missouri
University of Central Missouri Cohort

SAMPLE RECRUITMENT TEXT (TO ADMINISTRATORS, FACULTY, AND STAFF FOR IN-PERSON CONVERSATIONS)

Hello, _____! My name is Elmer Ragus, and I am a doctoral candidate in the MU EdD Cooperative Program. This spring semester of 2020, I conducting a research study about the Active Learning Engagement Classroom (ALEC) in Building XXXX. Based on your role in this ALEC, I'm wondering if you would like to participate in a one-on-one interview regarding your experience. Participation is completely voluntary, and participants' identities will be confidential.

Appendix G

Interview Guide for Deans and School Chairs

Questioning Route	Interview Question	Research Questions
Opening	1. Please tell me a little about yourself. 2. Could you please provide an overview of your professional career?	
Introductory	3. What ALECs on campus did you have a role in developing? 4. What support did you provide during the development phase? 5. How did you choose who would be involved from development to implementation of the ALEC(s)? 6. What other learning spaces inspired the ALEC(s)?	
Transition	(for questions in this section, refer to answer to #3 above) 7. What is the main purpose of the ALEC(s) at _____? 8. What has been the timeline of the ALEC(s)? (to determine how long the project took and when the classroom(s) went online if applicable) 9. How does/do the ALEC(s) fit into the College? 10. Overall, what do you think the ALEC(s) at _____ has meant to faculty? 11. Overall, what do you think the ALEC(s) at _____ has meant to students?	RQ3 RQ3 RQ1 RQ2
Key Questions	12. What are the main challenges you faced during the development process? 13. What worked really well during the development process? 14. What would you do differently if you could start the development process over? 15. What is active learning to you? 16. Where do you access ideas or strategies for active learning? How is this communicated to faculty? 17. How did you choose what to put in the ALEC(s)? 18. How did you work with faculty to help in learning how to use what's available (technology, tools, etc.) in the ALEC(s)?	RQ4 RQ3/RQ4

	19. How did you support faculty in transitioning to active learning strategies? 20. What areas have you seen where faculty needed the most help when using the ALEC(s) at _____? 21. What kinds of marketing efforts were used to spread the word about the new space? 22. How well do you think these marketing efforts have worked? 23. What is your goal for the ALEC(s) at _____? 24. How do you capture data to ensure you are meeting this goal? 25. What have you learned from the data? 26. What ideas do you have about how the ALEC(s) at _____ could be utilized differently at UCM? (Alternative: “How do you decide what to change based on your interpretation of the data?”)	RQ3/RQ4 RQ4 RQ3 RQ3 RQ3
Ending	27. Is there anything else I didn’t ask about that you think I should know? 28. May I contact you in the future if I have follow-up questions?	

Appendix H

Interview Guide for Faculty and Staff Interviews Version 1

This interview guide is for those who had a role during the design phase.

Questioning Route	Interview Question	Research Questions
Opening	1. Please tell me a little about yourself. 2. Could you please provide an overview of your professional career?	
Introductory	3. What ALECs on campus did you have a role in developing? 4. What support did you provide during the development phase? 5. What other learning spaces inspired the ALEC(s)?	
Transition	(for questions in this section, refer to answer to #3 above) 6. What is the main purpose of the ALEC(s) at _____? 7. What has been the timeline of the ALEC(s)? (to determine how long the project took and when the classroom(s) went online if applicable) 8. How does/do the ALEC(s) fit into the College of _____? 9. Overall, what do you think the ALEC(s) at _____ has meant to faculty? 10. Overall, what do you think the ALEC(s) at _____ has meant to students?	RQ3 RQ3 RQ1 RQ2
Key Questions	11. What are the main challenges you faced during the development process? 12. What worked really well during the development process? 13. What would you do differently if you could start the development process over? 14. What is active learning to you? 15. How did you choose what to put in the ALEC(s)? 16. How did you work with deans and school chairs to help in learning how use to what's available (technology, tools, etc.) in the ALEC(s)? 17. How did you work with faculty/other faculty to help in learning how to use what's available (technology, tools, etc.) in the ALEC(s)?	 RQ3/RQ4 RQ3/RQ4

	18. How did you support faculty/other faculty in transitioning to active learning strategies? 19. What areas have you seen where faculty needed the most help when using the ALEC(s) at _____? 20. What questions do you get asked most often about the ALEC? 21. If a user guide were to be developed, what would you suggest should be included? 22. What ideas do you have about how the ALEC(s) at _____ could be utilized differently at UCM? (Alternative: “How do you decide what to change based on your interpretation of the data?”)	RQ3/RQ4 RQ4 RQ4 RQ4
Ending	23. Is there anything else I didn’t ask about that you think I should know? 24. May I contact you in the future if I have follow-up questions?	

Appendix I

Interview Guide for Staff Interviews Version 2

This interview guide is for those who had did not have a role during the design phase but are involved with deans, school chairs, and/or faculty who use the various ALEC(s).

Questioning Route	Interview Question	Research Questions
Opening	1. Please tell me a little about yourself. 2. Could you please provide an overview of your professional career?	
Introductory	3. What ALECs on campus do you have experience in offering support for?	
Transition	(for questions in this section, refer to answer to #3 above) 4. How does/do the ALEC(s) fit into the College of _____? 5. Overall, what do you think the ALEC(s) at _____ has meant to faculty? 6. Overall, what do you think the ALEC(s) at _____ has meant to students?	RQ3 RQ1 RQ2
Key Questions	7. What do faculty like the most about the ALEC(s)? 8. What do students like the most about the ALEC(s)? 9. What would you suggest be done differently if the ALEC(s) can be redesigned? 10. What areas have you seen where faculty needed the most help when using the ALEC(s) at _____? 11. What questions do you get asked most often about the ALEC? 12. If a user guide were to be developed, what would you suggest should be included? 13. What ideas do you have about how the ALEC(s) at _____ could be utilized differently at UCM? (Alternative: “How do you decide what to change based on your interpretation of the data?”)	RQ1 RQ2 RQ4 RQ4 RQ4
Ending	14. Is there anything else I didn’t ask about that you think I should know? 15. May I contact you in the future if I have follow-up questions?	

Appendix J

Interview Guide for Focus Group and Individual Faculty Interviews

Questioning Route	Interview Question	Research Questions
Opening	1. Please tell me a little about yourself. 2. Could you please provide an overview of your teaching career?	
Introductory	3. What ALECs on campus have you had a chance to use for teaching your classes? Since when for each? 4. How did you hear about the ALEC(s)? 5. What motivated you to teach in the ALEC(s)? 6. What classes (do/did) you teach in the ALEC(s)? 7. How often (do/did) you meet for each class (from #6)? 8. What other courses do you teach? What would help you switch these courses to the ALEC(s)?	RQ3/RQ4 RQ3/RQ4 RQ3/RQ4
Transition	9. What is a typical teaching day like in the ALEC(s)? 10. What do you know about the main purpose of the ALEC(s) at _____? 11. How does/do the ALEC(s) fit into the College? 12. What do you consider active learning? 13. How would you rate your experience in active learning strategies? Beginner? Novice? Expert? 14. Overall, what do you think the ALEC(s) at _____ has meant to faculty? 15. Overall, what do you think the ALEC(s) at _____ has meant to students?	RQ3 RQ3 RQ1 RQ2
Key Questions	16. What are the main challenges you faced during prepping when you switched from a traditional lecture class to active learning? 17. How much time and effort overall did it take to prepare the course(s) for active learning? 18. What kind of barriers did you encounter when switching to active learning? 19. What kind of support did you receive in switching from traditional lecture to active learning? 20. What kind of support did you not receive that you wish UCM provided?	RQ3/RQ4 RQ4 RQ4 RQ3/RQ4 RQ3/RQ4

	21. What works really well during active learning in the ALECs? What do you like about the ALEC(s)? 22. What do students like about the ALEC(s)? 23. What is an example of an active learning strategy that you and your students enjoyed? 24. What kind of impact do you think the ALEC(s) has/have had on student learning? 25. What have been things that have not worked well in the ALECs? What don't you like about the ALEC(s)? 26. What did students not like about the ALEC(s)? 27. How did what you and your students didn't like impact student learning? 28. What suggestions would you give if we could start the development process over for the ALEC(s)?	RQ3/RQ4 RQ2 RQ2 RQ1 RQ2 RQ2
Ending	29. What classes do you think would work well in the ALEC(s)? 30. What classes do you think will not work well in the ALEC(s)? 31. If a user guide were to be developed, what would you suggest should be included? 32. What ideas do you have about how the ALEC(s) could be utilized differently at UCM? 33. Is there anything else I didn't ask about that you think I should know? 34. May I contact you in the future if I have follow-up questions?	RQ4

Appendix K

Interview Guide for Individual Faculty Interviews Version 2

This interview guide is for faculty who have not used any of the ALECs on campus.

Questioning Route	Interview Question	Research Questions
Opening	1. Please tell me a little about yourself. 2. Could you please provide an overview of your teaching career?	
Introductory	3. What kind of classes do you teach during the academic year? (Subjects? Gen ed? Face-to-face? Distance? Online? Hybrid?) 4. What do you know about any of the Active Learning Engagement Classrooms, or ALECs, here at UCM?	
Transition	Ask the questions below, if from #3 above, they indicate they have heard of the ALECs: 5. How did you hear about the ALEC(s)? 6. Why haven't you considered teaching one or more of your classes in the ALECs?	RQ3/RQ4
Key Questions	7. What do you consider active learning? 8. What kind of active learning activities do you currently employ in your classes? Please indicate if for face-to-face, online, etc. If they know something about the ALECs, ask the following question (#9): 9. How do you think it would be different if you were to try out these active learning activities in the ALECs? 10. What would make you consider trying out one or more of the ALECs on campus in the near future?	RQ3/RQ4 RQ3/RQ4
Ending	11. Is there anything else I didn't ask about that you think I should know? 12. May I contact you in the future if I have follow-up questions?	

Appendix L

Interview Guide for Focus Group and Individual Student Interviews

Questioning Route	Interview Question	Research Questions
Opening	1. Please tell me a little bit about yourself. 2. Could you please provide an overview of your UCM studies?	
Introductory	3. What is a traditional classroom like at UCM? 4. Why do you think this room was turned into an ALEC? 5. How many classes have you had in the ALEC at _____? What about other ALECs on campus?	RQ2
Key Questions	6. How did you feel when you first saw the room? 7. What is a typical class period like in the ALEC at _____? 8. What did you like about the space? How did this help in your learning? 9. What didn't you like about the space? How did this interfere with your learning? 10. How are your classroom experiences different with the ALEC at _____ than within a traditional classroom? 11. Tell me about a favorite ALEC experience you had. 12. What is active learning to you?	RQ2 RQ2 RQ2/ RQ3 RQ2/ RQ3 RQ2
Ending	13. What changes would you suggest should be made about the class and/or the classroom? 14. What would you think if you found out you had other classes in the ALEC at _____? 15. How could have things gone better during your time as a student in the ALEC? 16. If a user guide were to be developed, what would you suggest should be included? 17. Is there anything else I didn't ask about that you I should know? 18. May I contact you in the future if I have any follow-up questions?	RQ2/ RQ3 RQ2 RQ2/RQ3 RQ4

Appendix M

Qualitative Findings

An Introduction to the Active Learning Engagement Classrooms (ALECs)

The focus of this qualitative study is the utilization of the nine active learning engagement classrooms (ALECs) located throughout the University of Central Missouri (UCM) campus in Warrensburg. These ALECs are in the following seven buildings: Grinstead, James C. Kirkpatrick Library, Lovinger, Martin, Ward Edwards, W.C. Morris, and Wood. Each ALEC offers differences in accommodations to address the needs of each of the four colleges at UCM. For example, two ALECs in Lovinger are used by the College of Education to allow for synchronous distance learning. These two ALECs, therefore, also have microphones and cameras. As for the ALEC currently under construction inside W.C. Morris for the College of Health, Science, and Technology, the space will include an instructor bench for chemical reaction demonstrations. These demonstrations will then be captured via a ceiling-mounted camera to be cast on all displays and, in some cases, for lecture capture purposes. Current configurations are also sometimes the result of budget constraints. For example, Title III grants did not fully cover costs that would have allowed for three ALECs to have all the basic features of a typical ALEC at UCM. These typical features include flexible seating, multiple screens, a control panel, and hardware/software for sharing screens. The ALEC in Ward Edwards, for instance, only has one screen. Despite all the differences, all ALECs have interactive displays and allow for Bring Your Own Device, or BYOD, so users can cast their personal devices (smartphones, tablets, or laptops) on available display monitors. In order

to highlight the different ALECs, the next section offers table summaries and image galleries with descriptions for each of the nine ALECs.

Table 2*Grinstead 249 Summary*

Room Number/Name	Grinstead 249 Gehlken Resource Center
ALEC Opening Date	Fall 2018
College(s)	• College of Education • College of Health, Science, and Technology
School(s)	• School of Professional Education and Leadership • School of Technology
Funding	Missouri Department of Elementary and Secondary Education Family and Consumer Sciences Division grant
Dimensions	L-shaped • Rectangular area: 40' x 20' • Other area: 17' x 10'
Floor	Carpet tiles
Tables	Three conference tables
Chairs	22 padded chairs on casters
Additional Seating	• One couch and four chairs with armrests • 10 padded chairs on casters in the computer lab section • Four padded chairs on casters in the makerspace section • Four chairs with armrests in the kitchenette section
Max Seating Capacity	44
Technology	Combined/Independent Screens • One 86" Interactive Display • Two 80" Displays
Additional Notes	• Computer lab section for 10 students • Makerspace section • Kitchenette with a round table and 4 padded chairs

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Figure M1. Grinstead 249 Collage 1. From left to right, top to bottom: 1. East hallway on the second floor of Grinstead Building. 2. Double doors on the left lead to Hart Recital Hall while double doors on the right lead to the Gehlken Resource Room. 3. Looking west from the east entrance. 4. Window on the east side offers a view of the Grinstead Courtyard. 5. Movable wall used to separate the space into a computer lab on one side and a conference-style room on the other. 6. Computer lab portion. 7. An 86-inch interactive display on the north wall. Copyright 2020 by Elmer Ragus.

Figure M2. Grinstead 249 Collage 2. From left to right, top to bottom: 1. An 80-inch display on the south wall. 2. Makerspace at the east end featuring various resources for student use. 3. Mannequin for student use. 4. Two bookshelves containing books and supplies for student use. 5. Kitchenette with amenities hidden from view behind two bookshelves. 6. A view of the east end of the Gehlken Resource Center showing the conference room and makerspace areas. 7. Looking south from the east end showing the lounge and kitchenette area. Copyright 2020 by Elmer Ragus.

Table 3*James C. Kirkpatrick Library (JCKL) 1268 Summary*

Room Number/Name	JCKL 1268
ALEC Opening Date	Fall 2017
College(s)	N/A – Managed by the library
School(s)	N/A – open for use by all the Colleges
Funding	JCKL budget
Dimensions	30' x 23'
Floor	Carpet tiles
Tables	28 triangular tables
Chairs	• 28 padded chairs • One padded instructor stool on casters
Additional Seating	N/A
Max Seating Capacity	29
Technology	Combined/Independent Screens managed via a touchscreen control panel • One 80" Interactive Display • Three 43" Displays • Four Ceiling Speakers
Additional Notes	• Classroom technology is labeled, e.g., "Control Panel," "Interactive Display," POD 2 Monitor • Whiteboards on the north and south walls

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Figure M3. James C. Kirkpatrick Library 1268 Collage 1. From left to right, top to bottom: 1. Instructions on how to set up the client for sharing screens posted on the wall. 2. An 80" interactive display on the west wall with wireless keyboard and mouse on a mobile lectern. 3. Control panel screen on the west wall next to the 80" interactive display. 4. A view of the northwest corner with a 43" display monitor on the north wall next to a whiteboard. 5. Two 43" display monitors on the east wall. Copyright 2020 by Elmer Ragus.

Figure M4. James C. Kirkpatrick Library 1268 Collage 2. From left to right, top to bottom: 1. A view of the classroom looking south from the northwest corner. 2. A view of the classroom looking east from the northwest corner. 3. A peek inside the ALEC from the hallway. 4. Looking west from in front of the double doors in front of JCKL 1268. Copyright 2020 by Elmer Ragus.

Table 4*Lovinger 2140 Summary*

Room Number/Name	Lovinger 2140
ALEC Opening Date	Spring 2020
College(s)	• College of Education (primary) • Also used by faculty in the Harmon College of Business and Professional Studies
School(s)	• School of Teaching and Learning (primary) • School of Human Services
Funding	Title III grant
Dimensions	33' x 24'
Floor	Vinyl tiles
Tables	Eight height-adjustable tables
Chairs	• 14 student desks on casters • 16 padded chairs on casters • One padded instructor stool on casters
Additional Seating	• 5 lounge chairs • 1 padded chair on casters
Max Seating Capacity	37
Technology	• One 86" Interactive Display • Two Ceiling-mounted Speakers
Additional Notes	Lovinger second floor hallway seating options

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Figure M5. Lovinger 2140 Collage 1. From left to right, top to bottom: 1. Looking north from the entrance reveals additional seating. 2. Looking south from the entrance reveals additional seating. 3. A peek inside the ALEC from the hallway. 4. A view of the classroom from the entrance with an 86" interactive display monitor on the north wall next to a whiteboard. 5. Lounge chairs along the east wall. 6. The back of the room with height-adjustable tables and whiteboard space. 7. The northeast corner with lounge chair seating and whiteboard space. Copyright 2020 by Elmer Ragus.

Figure M6. Lovinger 2140 Collage 2. From left to right, top to bottom: 1. Wireless keyboard and mouse featuring a sticky note with instructions. 2. Mobile lectern for the wireless keyboard and mouse. 3. Supply cabinet on the northwest corner. 4. One of two ceiling-mounted speakers. 5. A view of the classroom from the east wall showing the the 86" interactive display monitor on the north wall next to two whiteboards and additional chairs with a whiteboard on the northeast corner of the room. 6. Another view of the classroom from the east wall. 7. Back of the classroom reveals tiered-seating in the back two rows and a whiteboard spanning the entire south wall. 8. Window with a view of the parking lot behind Lovinger. 9. A closer look at the student desk that accommodates both left-handed and right-handed users. Copyright 2020 by Elmer Ragus.

Table 5*Lovinger 3140 Summary*

Room Number/Name	Lovinger 3140/3160
ALEC Opening Date	Fall 2019
College(s)	College of Education
School(s)	School of Teaching and Learning
Funding	College of Education budget
Dimensions	43' x 33'
Floor	Carpet tiles
Tables	• 30 student tables on casters • Three additional tables
Chairs	• 30 chairs on casters • One padded instructor stool on casters
Additional Seating	• 17 chairs on casters scattered throughout the classroom • Two padded chairs
Max Seating Capacity	50
Technology	Combined/Independent Screens managed via a touchscreen control panel • One 86" Interactive Display • One Hovercam with Document Camera • One Projector and 1 Projector Screen • Two 80" Displays • Two Wall-mounted Cameras • Six Ceiling Speakers • Four Dropdown Microphones
Additional Notes	• Lovinger third floor hallway seating options • Classroom contains non-functional smartboard

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Figure M7. Lovinger 3140 Collage 1. From left to right, top to bottom: 1. Charging station for mobile devices by the south entrance. 2. 86" interactive display with a wall-mounted camera on the west wall. 3. Wireless keyboard and mouse for the 86" interactive display. 4. A view of the classroom from the west with an 80" display monitor with a wall-mounted camera on the east wall. 5. View of parking lot from the south window. 6. Looking northeast with a view of the four drop-down microphones, projector, projector screen, and 80" display monitor on the east wall. 7. A view of the classroom from the north entrance featuring the 86" interactive display and camera on the east wall, the Hovercam, and the projector screen in front of a whiteboard. Copyright 2020 by Elmer Ragus.

Figure M8. Lovinger 3140 Collage 2. From left to right, top to bottom: 1. Looking south from the south entrance reveals seating options. 2. Looking north from the south entrance reveals seating options. 3. A peek inside the ALEC through the north entrance from the hallway. 4. Touchscreen control panel. 5. A view of the classroom from the northwest corner which also shows the 80" display monitor on the south wall. 6. North wall has a projector screen and whiteboard. 7. Table on northeast corner contains supplies for class activities. Copyright 2020 by Elmer Ragus.

Table 6*Lovinger 4170 Summary*

Room Number/Name	Lovinger 4170
ALEC Opening Date	Fall 2019
College(s)	College of Education
School(s)	School of Professional Education and Leadership
Funding	College of Education budget
Dimensions	48' x 33'
Floor	Carpet
Tables	• 42 student tables on casters • 12 additional student tables • One rectangular table • One round table
Chairs	• 42 chairs on casters
Additional Seating	• Seven padded chairs on casters scattered throughout the classroom • One padded chair with armrests
Max Seating Capacity	50
Technology	Combined/Independent Screens managed via a touchscreen control panel • One 86" Interactive Display • Two 80" Displays • One Projector and 1 Projector Screen • One Soundbar with Camera • One Ceiling-mounted Camera • Six Ceiling Speakers • One Hand-held Microphone and 1 Lavalier Microphone
Additional Notes	• Lovinger fourth floor hallway seating options

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Figure M9. Lovinger 4170 Collage 1. From left to right, top to bottom: 1. Looking north on the hallway by the south entrance reveals seating options. 2. The south wall has a projector screen, whiteboard, and additional table and chairs. 3. Southern half of the room as seen from the south entrance. 4. Looking northeast from the south entrance. 5. An 86" interactive display with a soundbar and camera on top along the east wall and a wireless keyboard and mouse on a mobile lectern. 6. Touchscreen control panel on the east wall. Copyright 2020 by Elmer Ragus.

Figure M10. Lovinger 4170 Collage 2. From left to right, top to bottom: 1. Charging station for mobile devices by the south entrance. 2. Window view from the east wall. 3. A view of the southern half of the room from the east wall. 4. A view of the classroom from the southeast corner which also shows the 80" display monitor on the west wall, the 80" display monitor on the north wall, and the projector. 5. A view of the classroom from the northeast corner. 6. Rack holding the networking hardware and microphones on top. Copyright 2020 by Elmer Ragus.

Table 7*Martin 230 Summary*

Room Number/Name	Martin 230
ALEC Opening Date	Fall 2019
College(s)	College of Arts, Humanities, and Social Sciences
School(s)	• School of English and Philosophy • School of Communication, History, and Interdisciplinary Studies • School of Social Sciences and Languages
Funding	College of Arts, Humanities, and Social Sciences budget
Dimensions	28' x 24'
Floor	Vinyl tiles
Tables	• 20 triangular student tables on casters • Four additional rectangular student tables • Two rectangular tables
Chairs	• 20 chairs on casters • One instructor stool
Additional Seating	• Four stools • Three chairs on casters • One chair
Max Seating Capacity	29
Technology	Combined/Independent Screens managed via a touchscreen control panel • One 86" Interactive Display • Three 80" Displays • Four Ceiling Speakers
Additional Notes	• Martin second floor hallway seating options • 8' x 3' closet projecting from along the middle of the west wall

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Figure M11. Martin 230 Collage 1. From left to right, top to bottom: 1. A peek inside the ALEC from the hallway. 2. Looking west by the entrance reveals seating options. 3. Closet along the middle of the west wall and an 80" display monitor on the north wall. 4. Southwest corner of the classroom with an 80" display monitor and a chalkboard. 5. A view of the room from the entrance. 6. Window view. 7. The east wall holds the touchscreen control panel and 86" interactive display. Copyright 2020 by Elmer Ragus.

Figure M12. Martin 230 Collage 2. From left to right, top to bottom: 1. A view of the room from the north wall. 2. An 86" interactive display with a wireless keyboard and mouse on a mobile lectern. 3. A view of the room from the northeast corner. 4. 86" interactive display and control panel on the east wall. 5. Student chair on caster can flip up. 6. 4 ceiling speakers. Copyright 2020 by Elmer Ragus.

Table 8*Ward Edwards 2100 Summary*

Room Number/Name	Ward Edwards 2100
ALEC Opening Date	Spring 2020
College(s)	Harmon College of Business and Professional Studies
School(s)	• School of Human Services (only school using ALEC during first semester of availability) • Available to other schools in Harmon College
Funding	Title III grant
Dimensions	35' x 26'
Floor	Carpet
Tables	• 15 student tables on casters • Seven round tables
Chairs	30 padded chairs on casters
Additional Seating	Seven lounge chairs
Max Seating Capacity	37
Technology	• One 86" Interactive Display
Additional Notes	• Plans for more display monitors to the room

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Figure M13. Ward Edwards 2100 Collage 1. From left to right, top to bottom:
 1. Window view. 2. An 86" interactive display on the south wall between two glassboards. 3. Back of the room. 4. Lounge chairs and round tables in front of a whiteboard on the north wall. 5. Lounge chairs and round tables along the northeast corner by the north entrance. Copyright 2020 by Elmer Ragus.

Figure M14. Ward Edwards 2100 Collage 2. From left to right, top to bottom: 1. A view of the room from the northeast corner. 2. Wireless keyboard and mouse on a mobile lectern. 3. A view of the room from the north wall. 4. A peek inside the ALEC through the north entrance door. 5. A peek of inside the ALEC through the south entrance door. Copyright 2020 by Elmer Ragus.

Table 9*Wood 010 Summary*

Room Number/Name	Wood 010
ALEC Opening Date	Spring 2020
College(s)	• College of Arts, Humanities, and Social Sciences (primary) • Also used by faculty in the Harmon College of Business and Professional Studies
School(s)	• School of Social Sciences and Languages • School of Human Services
Funding	Title III grant
Dimensions	30' x 28'
Floor	Vinyl tiles
Tables	• 24 rectangular tables • Six round tables & 3 rectangular tables
Chairs	• 24 padded chairs on casters • Two padded instructor stools
Additional Seating	• 11 lounge chairs • Two corner lounge chairs • One padded chair and 1 padded chair with armrests
Max Seating Capacity	37
Technology	• Four 80" Displays • One Projector and 1 Projector Screen • One Desktop Computer with Single Monitor • Two Wall-mounted Speakers
Additional Notes	• One Mobile Lectern for Instructor • Four Mobile Power Tower • One Podium Lectern with desktop computer, DVD player, and VCR • Wood basement hallway seating options

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Figure M15. Wood 010 Collage 1. From left to right, top to bottom: 1. Looking east by the entrance reveals seating options. 2. Looking east by the entrance reveals seating options. 3. Projector. 4. The western half of the room showing one 80" display monitor on the north wall. 5. One of four mobile power stations. 6. Supply table. 7. Southwest corner with lounge chairs. 8. View from instructor podium. 9. Window view. Copyright 2020 by Elmer Ragus.

Figure M16. Wood 010 Collage 2. From left to right, top to bottom: 1. Looking west from the northeast corner. 2. A view of the room from the northeast corner. 3. Southeast corner has one 80" display on the east wall and one 80" display on the south wall. 4. The northeast corner of the room has one 80" display on the north wall. 5. Another view of the room from the entrance. 6. Looking west from the entrance shows the two 80" displays are on each side of the window. 7. Northeast corner lounge area. 8. Projector screen (not rolled down). 9. Instructor podium with desktop tower, VCR, and DVD player. Copyright 2020 by Elmer Ragus.

Table 10*W.C. Morris 422 Summary*

Room Number/Name	W.C. Morris 422
ALEC Opening Date	Fall 2020 (projected)
College(s)	College of Health, Science, and Technology
School(s)	School of Natural Sciences
Funding	• Title III grant • College of Health, Science, and Technology budget
Dimensions	50' x 28'
Floor	Carpet tiles
Tables	56 rectangular tables
Chairs	• 56 chairs on casters • One padded instructor stool
Max Seating Capacity	57
Additional Seating	N/A
Technology	• Will have one 86" Interactive Display • Will have four 80" Displays • Will have one Ceiling-mounted Camera • Will have more than one microphone catchbox • Will have at least one lavalier microphone • Will have several ceiling speakers • Will have a laptop charging cart with 28 laptops
Additional Notes	• Currently under construction • Stage on north side to be removed • New demo bench to be installed on east side of room • Mobile lectern will have wireless keyboard and mouse • Will be a classroom for Chemistry courses

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Figure M17. W.C. Morris 422 Collage 1. From left to right, top to bottom:
 1. Looking east by the entrance reveals seating options in the hallway. 2. A peek at the ALEC from the hallway. 3. New instructor demo bench to be installed.
 4. Mobile lectern to hold wireless keyboard and mouse. 5. The south wall to the left will hold an 80" display and the west wall will hold an 80" display. 6. Rectangular tables arranged in groups of four. Copyright 2020 by Elmer Ragus.

Figure M18. W.C. Morris 422 Collage 2. From left to right, top to bottom: 1. South window view. 2. West window view. 3. West wall to hold 86" interactive display with the new instructor demo bench to be installed in front of this display. 4. A view of the room from the south wall. 80" display to go on west wall to the right of the windows. 5. The current front of the room with projector screen, stage, and demo table to be removed, and current whiteboard to be replaced with smaller whiteboard to make room for 80" display on north wall. Copyright 2020 by Elmer Ragus.

University of Central Missouri (UCM) Characteristics

General UCM characteristics. During the interview process, the participants in this research study commented on certain characteristics about UCM in general. These characteristics included the age of the buildings, student recruitment, financing, faculty support and development, and classroom assignment protocols. Each of these aspects had an effect or were otherwise relevant to the creation and utilization of the active learning engagement classrooms (ALECs) at the Warrensburg campus.

All the ALECs, except for the one at the library, are in buildings constructed between 1939 and 1971. The library was completed in 1999. The age of these various buildings presented unique challenges to the creation of the ALECs. As Mason, one of the study participants from the Office of Technology, stated there has had to be an effort

sometimes to “shoehorn things into existing spaces that are poorly designed.” Felix, also from the Office of Technology, elaborated with an example.

“Ambient noise from old HVAC equipment, or just from unfortunate placement in the building, too close to HVAC equipment. And this isn't specific to active learning. But for distance learning, ambient noise is a problem unless everyone is microphoned. And that, of course, adds cost and complexity to your room.”

Other issues common to the renovation of older buildings were asbestos abatement, electricity, and electronic technologies. Kelly, a college dean explained, “These buildings were not designed to handle computers or electronic devices. Wi-Fi was another issue because when the building was built, Wi-Fi wasn’t even thought about or cell phones.” On top of adding cost and complexity, the challenges of dealing with older buildings also negatively impacted project timelines. Dana, another college dean, said, “Just like any project on campus, it'd be nice to move forward a little more quickly. But that's out of our control. There are limitations on resources available to FPO [Facilities, Planning, and Operations] and how many staff they have with the very large number of projects they have on campus.”

Despite the inherent difficulties in updating classroom spaces, the university continues to do so for many reasons, including student recruitment purposes. Mason from the Office of Technology asserted, “Having technology to show to potential students is a sales point.” However, the ALECs hold another purpose besides impressing students.

Morgan, a college dean conveyed:

“I want to have more spaces that will allow different types of interactions among students and faculty members. I want students and faculty members to feel that

they have the resources they need to learn in different ways. Obviously, Central Missouri prides itself on being responsive to the students' needs."

Kelly, yet another college dean, said, "I think it's really the creation of a space that more mirrors what the students are going to experience when they go out into the workplace."

Violet, a faculty member from the College of Education teaching in one of the ALECs agreed. "I think it's incumbent upon our school, whose responsibility it is to train teachers to go into K-12 settings, to be as cutting edge as possible." Veronika, another faculty member who utilizes one of the ALECs for instruction, expressed a similar sentiment when she added, "Having this classroom kind of helps to give them examples of what they could strive to do within their own future classroom."

However, the ALECs are not just for preparing students for future careers but also for exposing them to a different college classroom experience. Kit, a faculty member, conveyed that the ALECs like the one she used for her classes offer many things to students:

"Students who are in those high DFW gateway courses, students who are also low income, underrepresented, first generation who would not have otherwise had the encounters with that type of space and equipment, perhaps in their K through 12 experiences...some of the leading, cutting edge experiences that they would need to be successful after they graduate."

Ultimately, Mason from the Office of Technology thinks that we can "create an opportunity for both education to thrive and enrollment to thrive." Mason added a caveat. "You don't need all the technology. You need the right technology." This is important to note because in designing the ALECs to be Bring Your Own Device (BYOD), students

ran into potential issues. Bobbie, a student, pointed out, “I think it would be useful for students to know, ‘Hey, you should probably bring a laptop in here’ just because from my personal experience, the phones don’t really work that well. Using the Blackboard links, they tend to get an error message.” However, Cheyenne, a faculty member, who has taught in two different ALECs lamented, “Some students just don’t have access. We’re not a laptop university.”

Finding the right technology to install in the ALECs is a crucial component because of the way the university funds projects such as classroom renovations. As Emily, an administrator, described it, “Funding creates a roadblock sometimes.” Felix from the Office of Technology concurred when asked about financing the ALEC projects. “We call it a silo effect. Silos are an issue here at UCM...We need a different budget model to look at that to have more centralized funding for setup, installation, and support of these rooms.” Because university funds are not shared, some colleges or academic units simply do not have the means to cover all the costs associated with classroom equipment maintenance, let alone replacements or classroom overhaul expenses. Dana, a college dean, explained, “The issue of course is that we have limited student tech fee dollars available to us each semester and lots of equipment needs.”

Irving, a faculty member who teaches in one of the ALECs, described what happens as a result of limited financial resources. “When there's money available for certain things, then you better spend it because you can't use it for anything else but that type of thing.” One source of funding that drove the creation of four additional ALECs at the Warrensburg campus is the Title III Strengthening Institutions Program (SIP) Grant.

This grant was earmarked for both technology and furniture. Unfortunately, as Emily relayed, “There just wasn’t enough there for the technology.”

Another shortage was time. The Title III grant stipulated that funds had to be spent by a certain date. Regarding this, Erin, a faculty member who helped in designing one of the ALECs, said the following:

“A heads up that the grant was being written in the first place would have been really nice...just giving us a heads up, ‘Okay, we’re going to try to increase active learning so start chewing on what you might do if this gets approved.’ That seed in your mind would have been incredibly useful a year in advance.”

Due to the shortages in funding and time, some classrooms had to be completed in phases. For example, when asked about plans to add more equipment, Ruth, a faculty member who teaches in one of the ALECs, said, “It’s our college’s vision to do it. We’re just waiting on some funding.” Emily, an administrator, added, “When we have the financial stability, we will likely go into phase two. But until the funds are available, I don’t think we’ll make any changes right away.”

One of the goals supported by the creation of ALECs at the university is the 80% retention rate on first-time, full-time students, which include Pell-eligible, underserved minority students. Dana, a college dean, said, “Those are students who often come to campus, questioning whether or not they fit right, whether or not college is right for them.” The willingness and ability of faculty to use the ALECs, therefore, is key to students experiencing what the ALECs have to offer in the first place. Dylan, a faculty member who taught in one of the ALECs, expressed his view on the topic of faculty support and development. “We love shiny, new objects on this campus that we don’t fully

support with human resources dedicated to them, or training resources dedicated to them, or time resources dedicated to them.” Related to this statement, Irving, a faculty member who teaches in one of the ALECs, said, “I think the technology is there. I don't think our programming is quite caught up with the technology...We don't train. We haven't yet trained faculty to use this. Now, some of our really super technology-type teachers are really utilizing it in great ways. And I'm not one of those.”

Felix from the Office of Technology recognized that “faculty development is just as important as the technology of the room.” Hence, training is offered by the Center for Teaching and Learning (CTL). Regarding the training that is provided, Anaya, a faculty member who teaches in one of the ALECs, said:

“If they have offered training on that, it would have been during times I couldn't go. So, I don't want to say that they haven't offered training. I just know that if an email comes to me, and it's offered during a time I can't go, I'm just, ‘It's not possible.’”

The training sessions available and the faculty who need them may therefore not align with one another. In addition to missed training opportunities, as Cari, a program coordinator, put it, “There was a disconnect in tech communication and education communication.” Emily, an administrator, added, “There are the different perspectives coming in of what technology feels is appropriate and feasible versus what pedagogy says is appropriate and feasible...Trying to please both sides is probably a greater frustration than any of the rest of it.”

Kit, a faculty member who taught in one of the ALECs, explained the disconnect.

“I think right now, it's still a novel idea. I mean, I feel like it's still an idea. As we

are creating these spaces, we also have to be mindful that faculty will need training and support, not just in what buttons to push, but how to redesign their curriculum to meet the needs of an active learning environment.”

Lastly, an essential step to teaching in any of the ALECs is to be assigned to the classroom. When asked about the approval or sign-up process, the participants’ responses revealed that there is an unofficial classroom assignment protocol. This situation was further described by Dana, a college dean.

“When you're accustomed to having certain classrooms assigned to certain disciplines, there's sort of a sense of ownership. The fact is that in a public university, no one owns any classroom. The Provost owns all of the classrooms in general in the college. The dean has supervision over all classrooms in the college.”

Additionally, Adam, a faculty member who has not used any of the ALECs, said, “When you think about scheduling classes, you just know that these are the ones we’re using. These [referring to the ALECs] are not advertised widely...And so, we don’t really think about expanding.”

Subsequently, faculty who get to use the ALECs fall in two categories. The first category is faculty who are assigned to the ALECs because no other space will accommodate the number of students. As Janine, a program coordinator, stated, “I think more would want to use it, but they are afraid of the technology. I am not scared of technology. It’s just hard. We have a lot of big classes. And we don’t have a lot of big classrooms. And when we have our biggest classrooms at the ALEC in them, it makes it difficult to schedule by faculty when we are trying to schedule by class.” The second

category is faculty who are always on the lookout for new opportunities to engage in active learning. As Cheyenne, a faculty member who has taught in two different ALECs, described it, “Who decides who gets the room? Nobody knows. And I think sometimes that, at least my perception, is that whoever barks the loudest wins. And so, I bark loud.”

UCM classroom characteristics. This section highlights the findings as a result of specific interview questions about classroom spaces, along with what the researcher witnessed during ALEC class observations. Some interview questions also elicited responses from participants that addressed UCM classroom characteristics. During the interview process, the researcher had the participants think about their experiences with the ALECs. The participants also described traditional classrooms for comparison.

Introduction to UCM classroom characteristics. This study of the ALECs at UCM focused on nine classrooms in seven different buildings out of the approximate 425 possible venues supported by the Office of Technology. According to Felix from the Office of Technology, these venues are “classrooms of all types, be it active learning or distance learning. That also includes conference rooms of varying sizes.” When asked about an estimate of the number of venues featuring the traditional classroom layout, Felix said, “A majority of our classrooms are.”

Utility. The point of a classroom, or venue, is to provide utility. That is, not only is the classroom a space for teaching and learning, it can also be used for other events and for different purposes. A classroom is especially useful when it features certain characteristics such as flexible seating, high seating capacities, roominess, multiple screens, screen sharing capabilities, and video cameras, all of which can be found in

varying degrees in the ALECs. Consequently, faculty and others who want to utilize the ALECs have different reasons for wanting to do so.

One reason is the benefit that comes with larger classrooms. Sarah, a staff member said, “One of the big things is the room itself is bigger than a regular classroom. So, we're able to accommodate more people into it, which means it's good for large meetings, but also good for general ed classes that have a lot of students in them.” A second reason is the ability to use cameras, if available, for distance learning. Sarah explained:

“One of the things that I've seen it used most for so far is sometimes, we have two sections of the same class that meet at the same time. But one is on campus, and one is at the MIC [Missouri Innovation Campus in Lee’s Summit, Missouri]. And so, this allows them to have one instructor in one place, and they connect together.”

A third reason is the convenience of having an ALEC nearby if a faculty member’s teaching style is geared towards active learning. Kit, who has taught in the one of the ALECs, shared:

“I appreciated that it was downstairs from my own office space...Being able to get into the classroom and get out of the classroom quickly was a huge driving factor for me. I like that the other ALEC classrooms are strategically around campus so that they are accessible to other instructors. And then, my teaching style is already one in which it's pretty active and engaging. I'm pretty visual and hands on. The fact that there were those monitors around the room where students could project their own things up on two separate screens, or I could project things onto those

screens around the room. There was a touch screen option. There was the opportunity to write on the screen at the front of the classroom. There was an opportunity for me to move the podium if I needed to around the room, or just have the freedom to move around that space. We do a lot of getting up out of our seats when I teach. The freedom to move those desks out of the way, if necessary, or to reconfigure them in a way that makes sense for the classroom instruction of the day, I thought that that was the best use of the space that was available.”

It is no wonder that students and others also find it useful to have access to the ALECs. Cari, a program coordinator, said, “We have had other people ask to borrow for workshops or something. When we're not teaching in there, it's open to where kids are in there all the time working on projects.”

Main challenges faced during prepping. When asked what the main challenges when prepping for a course for active learning were, faculty participants indicated things that had to do with prepping with the technology in mind. However, because the faculty who utilize the various ALECs come from different backgrounds and teaching experiences, there were varying responses. One group of faculty participants were those who were new to teaching or were otherwise not trained to be teachers. Luke said:

“I’ve only interacted with one other person who uses this particular room. I don’t consider myself a real teacher yet. She is a real teacher. And she has other ways of getting participation in small groups, feedback during class. And she’s really good with that... I have failed to implement active learning in that classroom so far. Occasionally, I come up with an idea. But it’s been basically lecture with being able to demonstrate the technology or the database.”

As for Ruth, she added:

“So, my background is not necessarily teaching. My challenges were just coming up with new ways to take an existing activity or take an existing kind of topic.

And then, what are we going to do with it? And so, in the preparation work, it was mainly just coming up with what are we going to do, what's the activity, and not necessarily how can we make it active learning but how are we going to take my content and make it make sense.”

The other group of faculty participants were those who already taught their classes with active learning in mind regardless of the learning space. “I kind of engage my classroom in a different way anyway,” Cheyenne said. “So, there wasn't too much difference.”

Sometimes, the reason was because the class was already appropriate for active learning. Aubrey noted, “The new furniture makes it easier to do it. So, that plays into my teaching style because teaching languages is very active. Lots of talking, working with a partner.”

However, faculty participants who wanted to use the technology faced a few additional challenges. Dylan described the difficulty he faced in the ALEC.

“Have you ever driven a rental car before? It's like that. You're comfortable with your car. And you know how it functions, you know what it can do. And if you're planning a big road trip or something, you know what kind of gas mileage you get, where your stops are going to be. You just know it intimately. You get into a rental car, and you can't even turn on the windshield wipers. Everything's in a different place. And so, there's this unfamiliarity with all that.”

Irving added, “It's kind of a learn by doing situation. The more you work with it, the easier it gets.” As for Kit:

“I think just remembering how to utilize the technology, not wanting to break something or be afraid of breaking by pushing the wrong button, being a good steward of the resources that are in that room. Having students to be mindful that they should be good resources I think is one of the most nerve-wracking, challenging things, just wanting to be careful with the material.”

Anaya dealt with a different concern because the ALEC she taught had distance learning capabilities.

“My main challenge is trying to figure out, for me it has been relationship building and keeping them invested during class time. I think it can be easy for them to zone out. And this is why it might be different for me is I'm talking more about the ones that are on the other campuses. I'm not there. So, I am not able to communicate with them in their small groups. I think that's been one of my main things. How can I help them? How can I deliver the curriculum and maintain accountability and relationship building if I'm not in the room with them?”

Main purpose of the ALECs. The four colleges at UCM define at the onset of a project what type of classroom an updated space will be and thus, the main purpose of the classroom. Felix from the Office of Technology pointed out, “When we consult with a college, we ask them what role they want the classroom to be. Is it a standard classroom? Is it active learning? Is it distance education? Sometimes, it’s hybridized.” Consequently, when the faculty participants who have not taught in any of the ALECs identified as such in this study were asked what they knew about the ALECs, the researcher had to clarify what an ALEC was. For example, Jerry said, “I can cipher it. But would you refresh my memory?” Gladys, who described her experience in a smart classroom in her building

said, “I’m not understanding,” after the researcher asked which ALEC she was referring to as a smart classroom. Apparently, the term “active learning engagement classroom,” or ALEC, was not familiar at UCM. Annabelle, a faculty member who has used two different ALECs, agreed. “I don’t know that faculty recognize those. If you said the term ‘ALEC’ to them, I don’t think there’s been a lot of notification as far as what those rooms allow people to do.” Not surprisingly, however, the ALEC at the library was the most well-known since it was the original ALEC on campus. Adam, who has not used any of the ALECs, was able to describe the ALEC at the library after the researcher went over the definition.

“It had the moveable desks which I really thought was great. We do a lot of group work...so I think most of our classrooms should be set up that way. Most of the classrooms in the Ward Edwards building are rigid, you have fixed tables. And then, the chairs don’t even move. And so, I really liked the ability to move the classroom around and have people adjust seats, especially if you’re watching things on displays or doing some group work that way. So that’s the one I’m most familiar with. It’s not in the Ward Edwards Building. I’ve never been to the Grinstead or the Lovinger, to these specific classrooms.”

ALECs fulfilling various needs. When faculty and staff participants were asked how the ALECs fit within their respective colleges, the main response was about the desire to provide an active setup. Jordan from the Office of Technology explained:

“Today’s students, they grew up on cell phones. They have always had information at their fingertips, be it good or bad. They have always had a way to answer questions immediately. So, I don’t think they learned in the same way that

they used to in my generation, you know, sit there, listen to your instructor, take notes, go home, review, and pass the test. They don't learn that way. They're very much more tactile. They're challenging and questioning authority a lot quicker than I did in my generation because they can look it up, look up whatever they're talking about right there to counter your position immediately. So, I think, turning the classroom around and giving the students the ability to lead their own learning is a huge key for this generation.”

Speaking of students, Erin, a faculty member who helped design one of the ALECs, added:

“It’s about an incredibly general broad theme of teaching students, meeting them where they're at. You know, there are students that are just unprepared to be in college. So, finding them, helping kind of bridge that gap. I think as a whole, [the college] is fairly aware of how important we are for preparing students for their careers, but how challenging our material can be for them.”

Concurrently, the ALECs were also meant “to give faculty new opportunities to use technology in teaching” according to Luke, a faculty member who teaches in one of the ALECs. Ruth, an administrator, added, “We're trying to encourage more and more faculty to think outside of the lecture box. We want more of that interactive engaging instruction, rather than pure lecture.” However, a different kind of classroom also meant that faculty members had to change. Giorgia, a faculty member who teaches in one of the ALECs explained:

“I'm not gonna say for the whole college, but at least at our school, we are a little nervous about it because it does change how you teach and how you think about

the lesson plan. What I've been doing for [my classes] for 10 years has changed.

And so, my guess is, it's not just about the student. But it's also about keeping us fresh and mustered out.”

In addition to considering student and faculty when creating the ALECs for each of the four colleges at UCM, one thing for certain, according to Mason from the Office of Technology, is that “every college seems to have a different need.” One administrative participant explained:

“I think that each of the classrooms are different, and I think that they each serve a different purpose. I'm thinking of the WC Morris and some of the things that CHST [College of Health, Science, and Technology] is wanting to do in the chemistry space and so really catering to the larger class sizes. We're really thinking about how to have those students have some very hands-on and innovative experiences inside of the classroom. And so, bringing in workbenches I think will be something that's sort of unique to that classroom that won't be in any of the other classrooms. Over in Lovinger [for the College of Education], there's these writable spaces on the wall so they have whiteboards on the wall, and that will sort of meet the needs of the students who are in those classes. Over in CAHSS [College of Arts, Humanities, and Social Sciences], there was a clear understanding of students really needing to have the ability. But how do we move, not just the table, not just the desk, but how do we move off spaces? How do we create a space outside of the classroom? If we have some spillover, if we want students to go outside and do some group work, we sort of spread out. There's even charging stations.”

Lastly, the ALECs fit into each college at UCM because the intent is to expose students to what they might encounter in the workplace. As Jordan from the Office of Technology explained:

“Team building is a huge thing in corporate America. No one person does one thing. It's all of you together collectively making the company a success.

Sometimes coming out of college, I think you don't always have that mindset.

And so, you think because I'm so highly educated, and I have all this knowledge base behind me, and I have all these credentials behind me, it makes me something. And that's not the way corporate America is or has been for some time. Synergy is the key and I think active learning classrooms helps to expose students to that, something they may not have had exposure to before.”

Cari, a program coordinator, agreed.

“We have a class in there where they have more group project type of work. It's more setup like they're working in a field. And so, it seems more like a business environment maybe than a classroom environment. So, I think it helps with that experiential learning piece.”

Goal is maximum use. Participants in the role of administrator, all indicated that the goal is for the ALECs to be used as much as possible, especially because of the investment that the university has put into creating these spaces. Dana, a college dean, said, “The goal is to ensure that these expensive rooms don't just sit there and end up being treated the same way as regular rooms. We want optimal use of the rooms and measurable improvements in student learning outcomes.” Kelly, another college dean, agreed. “I would like to maximize utilization, so that we have as many faculty teachers

and students in those rooms, as is reasonable. I want them to be heavily utilized.” In fact, Morgan, college dean, wanted to go beyond the current number of ALECs at the university.

“I want to have more spaces that will allow different types of interactions among students and faculty members. I want students and faculty members to feel that they have the resources they need to learn in different ways. And, now that we have seen the balances of technology, I hope to have spaces with the most recent technology there, not just an overhead projector and a computer, you know, something a lot more advanced than that.”

Emily, an administrator, hinted that the key to faculty making use of the various ALECs is indeed to offer resources such as training to ensure faculty are aware of the ALECs’ capabilities.

“We’ll continue to offer faculty training. I think moving forward, we’ll probably see instructors using it more as an active learning space and less as a more traditional classroom environment. I think initially, instructors were concerned that they had to leave the furniture in the layout that left it, and they were afraid to move it around. I think we’re finally at a point where instructors feel comfortable to actually move the furniture around and not being in this one particular layout. Personally, I think we’ll start seeing more and better use of those classrooms than we have. It’s taking time to get used to it, to learn the equipment in it, to feel comfortable in moving it.”

Faculty’s mixed reviews of the ALECs. The faculty and staff participants had mixed reviews about what they thought the ALECs have meant to faculty. “Where the

faculty have buy in, it's been positive,” explained Mason. “Where the faculty have had no say, it has been overwhelmingly negative.” Even as participants praised the ALECs for being a good addition for faculty, the negative aspects quickly followed. Emily, an administrator, stated:

“I think faculty do, I know they appreciate the furniture. I know that having flexible seating is very much appreciated. I know that having the technology is appreciated. I just think there's still that level of frustration where we just haven't had quite enough training on the technology, on the on and off, and the switching, but also in how to best implement it in our classrooms with our majors.”

Cari, a program coordinator, agreed:

“I think it's been just great. The faculty and the students are really excited to have it. I think it helps a lot with recruiting...I just think it makes us look cutting edge. And just on top of it, you know, it's very impressive, even just the three screens on the wall, people think it's impressive. So, I think it helps a lot with just visibility and recruiting and look, even if the functionality isn't always what we want it to be.”

Violet spoke further on the need for training.

“For the most part, I've seen mostly frustration, some frustration because it's new. And we become set in our ways. We have things that have worked for us for a long time. And this is a big change in approach. When you change the activity that you do to assess something that, those are small changes. But this is a big change when you're used to an Elmo machine, you know, a projector, not the projector on the ceiling but a document projector...Or you want to, you want to

show a video. And you can't figure out where the volume control is. You're used to a VCR. Just pop the VCR, the DVD, or whatever in. And so, there's a learning curve. But there's not, there's not preparatory training, you know. It was like, okay, now this room has this equipment. The first day I showed up...to teach in the ALEC, I didn't even know how to turn it on. I didn't know it was going to be there. So, I show up fortunately about 15 minutes before the class was supposed to start. I unlocked the door. And here's the stuff. And I have no idea. I was lucky enough that there was a person who could give me a very quick tour of what to push and what went where. And that was all I got.”

Even for those who have experience with one ALEC, the transition to another ALEC is not as easy.

“Even though I did several classes over in the ALEC room in the library, when I went into 4170 it was different. And there were some things that were really awkward, I felt, in trying to implement based on what it had been at the library. And there really was not, there wasn't anybody to train...There wasn't an element of who was actually supposed to be training people. Was it OT [Office of Technology]? Was it CTL [Center for Teaching and Learning]? Who was that supposed to be? And I don't know that there was a follow through with that element.”

Regardless of all the difficulties associated with the ALECs, participants circled back to the positive aspects. Kelly, a college dean, said:

“It allows the faculty to be more creative in how they approach their everyday instruction and then how they approach the course or their program area so that

they can design instructional materials that are beyond simply a PowerPoint where you stand up and talk. They can create things that are active learning, applied learning for the students. Students typically learn best by being able to hear something, see something and do that same thing. And the ALECs really enhance that learning style. And so, they can also accommodate their teaching methodologies to best meet a wide variety of different learning types, learning styles, all in the same classroom, all at the same time.”

Irving, a faculty member who teaches in one of the ALECs, agreed.

“I think it's encouraged us to use different types of resources in the classroom, more than maybe we did before. Straight lecture, which, you know, I'm not against that, in the right place. But there's so many other things you can do. And I think the technology helps you be creative and do different things.”

Speculation of student perceptions. The faculty and staff participants had mixed reviews about what they thought the ALECs have meant to students. On one hand, the faculty and staff participants felt that the students have enjoyed the space based on their observations and on informal feedback from students. Cari, a program coordinator, said:

“I think that they are just really excited about it...They enjoy it. They really like the atmosphere of the room. Our other classrooms don't have windows. It's not really comfortable...It works really well for certain classes. And they say we should meet in here all the time, which we then do if they say that, where we move a class down there for an activity. And they're like, 'This is awesome! We want to stay here.’”

Another faculty member who has not taught in one of the ALECs, added:

“The classroom I teach in myself is not an ALEC room. And students will often ask, ‘Why don't you have this? Or why can't we do that?’ because they were able to do it in an ALEC classroom. I think it's becoming just an expectation to students that some of the technology is available and that they'll be able to just use an Air Media or, you know, an Apple TV and show what's on their phone. And then, when they're in a classroom that doesn't have that capability, there's almost this kind of a panic, Well, how will I share my video with you then?’ I think students are at a point now where they're just, it's an expectation that they can move the furniture around and work in cooperative learning structures. It's an expectation that they can share from their own devices. So, I think when they're in the rooms without those capabilities, there's a frustration with the, ‘Well, now how will I do it?’ So, I think students are appreciative of that furniture at this point. Maybe it's to the point where they take for granted that that's what classrooms should be like.”

As a result of the learning that occurs in the ALECs, students can add to their list of positive college experiences. Kelly, a college dean, said, “It increases satisfaction in the course and allows them to experience having more hands-on active learning. They allow the faculty and the students to work on projects that are new and allow for students to practice their professions and also allow the students to learn in a way that best suits them because the education pathway is dynamic. It can change on the fly, if you will, to be able to accommodate students to have a lot more interaction directly with the faculty and being able to build those bonds of faculty. Many students find that to be very enjoyable it's an important part of their college experience.” Luke, a faculty member who teaches in

one of the ALECs, noted, “I’ve watched students come out of that. And they’re very animated. They’ve had different classroom experiences...But you do see them coming out. They’re not dragging their feet. But coming out and it looks like something’s been happening in there. They’ve been interacting with each other and the interaction continues as they’re leaving the room.” From the ALEC observations, the researcher did find that students were highly interactive with each other, with the content, and with the teacher. “I know they prefer it over the traditional classroom,” Cheyenne, who has taught in two different ALECS, said. “And I say that because in comparing it to a traditional classroom, I sort of feel like in a traditional class, there’s places for them to shrink. And when I say shrink, I mean, I don’t just mean not engaging in the material. I mean, like, you see students check out super easily in a traditional class, right. You see them put their heads down. And they’re just kind of, you know, not participating. It’s harder to get student engagement, and in keeping them in the moment of whatever it is you’re doing. So, in an ALEC class, ...for the most part, you can’t get away because of the structure of the class and the space, the way things are, the tables. But also, the tech is everywhere, you know, you’ve got here but then the other two walls. So, there’s no reason they can’t be looking at things.”

On the other hand, many of the ALECs, as of the time of this research study, had been used by faculty and students less than one academic year. Dana, a college dean, said:

“I do not have direct feedback from students what I would like to have a look at. Of course, we need a few semesters worth of data to look at the same courses, especially where there’s a syllabus template that all instructors in a given gen ed

course use, where we can reliably establish that there is statistically significant gap between student performance in one of our regular rooms versus one of these rooms, but we're just not there yet.”

Other faculty and staff participants also mentioned that they have not changed their courses enough for active learning to justify students getting something out of the ALEC experience. Luke, a faculty member who teaches in one of the ALECs, said:

“I cannot tell at this point. You know, I only know one other faculty member that’s using and was unfamiliar with the technology. And so, at this point, I don’t know that students have experience in an ALEC environment. They just sit in a room with some technology, and people who have yet to implement it.”

Sarah, a staff member agreed.

“I think right now, it hasn’t meant anything to students because the faculty aren’t using it to its fullest potential. I think once the faculty do use it to its fullest potential, it would create greater collaboration instances and more hands-on interactive learning that would definitely enhance student learning and therefore student information retention. Until the faculty know how to use the room appropriately, it’s not going to improve the situation for students.”

Positive aspects of the ALECs. All the faculty and student participants had positive things to say about the ALECs. Overall, the rooms supported active learning as these spaces were designed to do. Dylan, who used the original ALEC at the library affirmed that the ALEC is supposed to be different from a traditional classroom.

“To me, what works well for active learning, I think, is just the fact that you have a nontraditional space. It’s difficult to tell where the front of the room even is,

right? So, to me, then, it begins to break down the power structures of the normal classroom of 'I'm the professor. I stand in front. You all are seated and subservient and are the receptacles.'”

Because of the ALECs’ capabilities, Mitch, who has taught in two of the ALECs, commented on the responsibility that goes with that realization.

“[The classroom’s] functionality has gone up a little bit. And the big question is what do we do in terms of capturing that? I don't mean to denigrate anything, but the room has this kind of capabilities. What are we doing to bring that in?”

Irving, a faculty member who teaches in one of the ALECs, seconded what Mitch described. “So, I enjoy teaching in there. I don't think I utilize it to the extent where I think the technology would allow us to do a lot more things than we do.”

Regardless, both faculty and student participants listed the many aspects they appreciated about the ALECs. Positive comments about the ALECs included the technology available, the ability to do collaborative work, and the atmosphere provided by the ALECs. Starting with technology, the multiple screens proved to be beneficial to the participants. Most of the student participants enjoyed the multiple screens available throughout the room. Opal said:

“Because the desks are grouped differently, you're not always facing the front of the room. So, when the instructor is giving instruction, she can portray it onto the other screens. So then, you don't have to do the constant my notes are here I'm looking over here kind of thing.”

Carson agreed, “If you’re struggling to see, you can just look to your right or behind you or in front of you or your left. It’s just all there.” Siena, a faculty member who teaches in one of the ALECs, recognized the usefulness of the multiple displays.

“I would have one student projecting wirelessly a timer on one screen. And then, we would have the dual displays on another. I thought it was helpful for the kids to have it in front instead of turning and looking backwards.”

Of course, the faculty also had to adjust to the layout of the ALECs. Veronika acknowledged, “So it took me a little bit of time to get used to the fact that students might not be watching me. They might be watching over here where the screen is at.” However, Veronika and Mercedes, another faculty member who teaches in one of the ALECs, both remarked on what they were able to do in an ALEC as a result of the unfamiliar layout. Mercedes said, “Because of the way it’s set up, there isn’t a 100% front of the classroom and back of the classroom. I walk around more than I do in a traditionally set up classroom.” From the class observations in the ALECs, the researcher noted that even though students were not facing the teacher, the students were still engaging with each other and viewing whatever the teacher had to share on the screens because of the way the furniture and multiple monitors were arranged. With the furniture and the technology in the ALECs working together, Violet, a faculty member who has taught in one of the ALECs, believed that being more mobile allowed her “to be a part instead of apart from the class.”

Another piece of technology that was well liked was the touchscreen. More specifically, the touchscreens allowed for the use of electronic whiteboards. Gia, a faculty member who teaches in one of the ALECs, said:

“In a regular classroom, we had regular things like the whiteboard with the marker. With the electronic whiteboard, I think the students like it. They would say, 'Oh cool, it's different from high school!' They like to try to use it, the different colors and the different sizes of the stroke, wider or narrower. They like to do different things.”

Alissia, a faculty member who has taught in one of the ALECs, thought the use of technology in these spaces serves an important purpose.

“A big thing we wanted to do was kind of build their sense of belonging at UCM and show them different things that would be available to them. And so, I think that it did kind of help show them that UCM can be someplace that they can learn about new technologies that are being utilized and things that open option students could potentially be going into as majors.”

As for the furniture, Siena, who teaches in one of the ALECs, recalled about the classroom before its conversion to an ALEC, “Yeah, they were these sort of narrow long tables. So, there were two rows of them. Very difficult to get around in the room...we couldn't fit it felt like.” Additionally, furniture in traditional classrooms are not designed to be moved around much. Jerry, a faculty member who has not taught in any ALEC, when referring to the certain static desks found in traditional classrooms said, “They weighed so much that it would have been a pain to reconfigure them.” Jerry added that when the classroom furniture layout had to be rearranged for a class activity in some classrooms, “We had to check with everybody. ‘Hey, do you mind if it's set up like this on Tuesdays and Thursdays?’”

With flexible seating, however, Cheyenne said, “In 30 seconds we can move tables, move chairs, and we're working in groups. We lose no time that way.” It is no wonder that Siena exclaimed, “If they could get those desks everywhere, that would be amazing!” Mercedes also thought the technology would not even need to be changed from a traditional classroom. “If it was a room with just a projector and that furniture, I would still want to be in that room....it's easier to facilitate those group projects than when I was in the traditional classroom where you couldn't move.” Dana, a college dean, explains that this was because of the following:

“The way that the classroom is set up in modular fashion facilitates collaborative learning and in particular, that type of collaborative learning where students are teaching each other, and are required to engage in metacognition to examine their own understanding and their own learning in order to present information to their students and take their questions. And there's plenty of data showing that just the classroom furniture itself can lead to tremendous improvement in student learning.”

The student participants seemed to agree with that statement from Dana. Isla summed it up when she said, “We kind of got more familiar with the people that we were with.” This familiarity fostered collaborative learning. Erin, a faculty member who helped in designing one of the ALECs, added:

“Students can interact with each other and help each other through the problem. Most all of us have experienced at some point in our own history that the best way to learn is to teach. And so, you know, if the students can kind of help teach each other and fumble their way through things, they'll eventually figure out to work

better. And then, if they can do that in the presence of an instructor where we can catch their mistakes and help them, keep them on track so that what they're learning is actually correct, it has the potential to be powerful.”

Cheyenne, a faculty member who teaches in one of the ALECs, noticed that “students are way more engaged...I can tell that students are more interested there.” In fact, when Cheyenne asked her students what the “rhetoric of the space” was, the students said, “We're going to be talking to each other...the room sends off a rhetorical message that we are going to collaborate.”

Lastly, the ALEC spaces also communicate a different atmosphere that faculty and students appreciated. Harriet, a student, said:

“This one just felt more open. And since we were doing stuff in groups and different groups are presenting all the time, there was a lot more movement. So, it just felt a lot more open and laid back than in a traditional classroom.”

Many other faculty and student participants attested to the openness of the room. Carson, a student, reported, “It’s spacey. I kind of like how big it is.” Irving, a faculty member, likes the size of one of the ALECs as well. “It’s a bigger room. They’re not crushed together quite as much as they are in some classrooms...the setup of the room allows for more hands-on activities.” Several more faculty members who have used the ALECs spoke of the room’s warmth associated with one’s home. Mercedes said:

“Because you walk in and it just feels more comfortable than a classroom. And I think the carpet has a big thing to do with that because, I mean, you don't have carpet in classrooms. You have carpet in living rooms.”

Kaylee added, “It's kind of their little home away from home in there.” To further depict this point, Veronika compared the ALEC with a non-ALEC space.

“I feel like we're not on top of each other. And the room itself is big. Also, aesthetic so that it's warm and welcoming. There's carpet in there. It has some nice colors. The tables look nice. The chairs look nice. And I know that sounds kind of silly. But, you know, across the hallway, you've got rooms that still have the tile floor and the old crappy wooden tables...it's pretty sterile in there...just the overall feel of that room, I think is more calming. At least, it is to me. I'm a bit claustrophobic so I don't like it when everybody's just up in my business. And I feel like, you know, I take two steps and I'm sitting in somebody's lap.”

Impact on student learning. Most of the faculty and student participants regarded the ALECs as able to impact student learning even if difficult to quantify. What participants cited as the most impactful can be summarized in three things. These are the novelty of the ALEC experience, the push for creative ways to teach, and the advantages offered by what is available in the rooms.

First, the overall look and feel of the ALECs granted faculty and students alike the willingness to approach the learning experience differently. Dylan, who taught in one of the ALECs, explained:

“I think there's a novel aspect to it that, ‘Hey, this is cool and different or whatever.’ Can I say with any level of confidence that my students got more out of that [experiences in the ALEC] than if I taught it over here [a non-ALEC space]? Definitely not, you know.”

Dylan added later in the interview:

“When you're in high school, your teachers are like ‘College is gonna be completely different.’ Then, you get here, and you're taking Comp I and a developmental math class. And you're sitting in these rows with a teacher who looks kind of like your high school teachers. And they're teaching it the same. You're like, ‘Man, I thought this was all gonna be different!’ So, I thought, let's really do it different if they've got some cool technology like. Let's do it!”

Another faculty member agreed with Dylan’s perspective. Giorgia said, “It's supposed to let us be able to use tools to expose them [students] in new ways and maybe to push the limits of our instructional abilities.”

By being creative in instructional approaches, Ruth spoke of the resulting learning environment.

“A lot of our students are visual learners. So, having not just the audio by just the lecturing and being able to have some different learning kind of atmospheres for our students have been just beneficial in terms of just staying engaged. I feel like they're more in tune. And they kind of want to be a part of more of the discussions when we have more of that active learning environment.”

Harriet, a student, certainly appreciated the teachers’ efforts to create an active learning space.

“I feel like it's easier to retain in a more relaxed setting the information that we were learning. And since it was so interactive and everybody was presenting and talking with everybody, it just stuck with me more than whenever a professor would read off a PowerPoint. And we were supposed to take notes off of it.”

In addition to what the faculty members were doing for students, the available technology and furniture in the ALECs did their part in improving the student learning experience. Students especially appreciated the group work within the ALECs. Bobbie said:

“For me, it was really easy to have group conversations. So, if we had a question, it was super easy to reach out to one of them. And then, same with the screens, if we didn't see anything, you could make it bigger. You can move different screens around. So, I think overall, it was, like, it was super helpful to have multiple groups. And then also, multiple screens.”

Garfield concurred saying:

“The screens thing was really big for me. It was really easy to see, like, read maybe graphs that were really small or something like that. And then, I think the biggest positive to learning was that the professor wanted the class to be a discussion class. And so, class discussions flew or float almost seamlessly because of the way the room is set up and because of the type of classroom it was. If you wanted to bring up some data in an argument, you could just hop on your phone or hop on your computer and just look it up. And bam, there's some evidence for your argument [referring to the ability to share one's screen to everybody in the room]. And that discussion in a discussion-based class went really well with the actual coursework.”

Room for improvement. While there were many positives to teaching and learning in an ALEC, the faculty and student participants also had a lot to say about the negatives. For instance, one hallmark of active learning in the ALECs is collaborative

learning. However, Ruth, an administrator, identified another aspect to this learning approach.

“One of the purposes of the classes was to create that interaction and teamwork. If someone will just dislike it, they're kind of, you know, it takes them out of their comfort zone. So, I usually hear that in course evaluations.”

Kaylee attested to some students not liking active learning.

“One of the things that I have had a lot of my students tell me is they don't like it...most of my students actually prefer lecture which I find to be very strange. But I think, it's because it's what they know. They're still in a generation where they've probably gone through most of their schooling being lectured at. And I also think it's a little bit of laziness because they just want to sit there. They don't want to be up and forced to move around and talk and all that kind of stuff.”

Additionally, the aspects that faculty and student participants liked as mentioned in previous sections were also the same things that were disliked--the size of the room, the furniture, and the technology. Because not all ALECs are the same size, many faculty and student participants felt that some of the ALECs felt packed. Sienna said:

“I love the desks for every day. But when we do presentations, having to move them...there's still not a lot of space in there. So, the desk being like a triangle and then setting those up, it's very tough to have a person presenting. So, for group work, it's awesome. For a more traditional sort of like that, it's just a shallow room. And so, you kind of feel cramped and a little hard to get around hard to move around.”

One student, Isla, even pointed out:

“One thing that we discussed about the classroom itself was that it's not very helpful to someone with a physical disability. If someone had a wheelchair, there's no way that they would get through. And my professor explained that if someone were to have a wheelchair, we could have a desk for them. But they would be sitting by themselves. And so, maybe it's a great learning experience for able bodied people, but maybe it doesn't help out a lot for those that are disabled.”

However, the solution to the crowdedness might not be as simple as removing furniture. Ruth, an administrator, explained, “We're limited on the number of seats when you got this furniture but want to still have mobility.” There must be a balance between the recommended capacity for active learning spaces given the size of the room and the need to keep enrollment numbers up.

As for the technology, the biggest complaint from faculty participants was not knowing how to use or take advantage of the many functionalities available in the room and not having equipment behave as expected. Bobbie, a student noted:

“I think it'd be a lot easier if [the professor] had a solid knowledge of how to use all this stuff before we got in there, which I know, some of it is unforeseen. Like, when the mouse wouldn't work, the keyboard wouldn't work, or you can't touch the screen to type. But I think just overall, if the professor knew, and then he could show us more, I think it would move more fluidly.”

Garfield, another student, offered a suggestion.

“Before they give these professors that classroom for the semester, run them through a crash course or better than a crash course, because I think they probably do get a crash course. But some sort of walk them through and get them

comfortable using it over the summer, over the semester before, putting in some extra time to make sure that the professor's comfortable. That way, they can teach us and make us comfortable with what we're doing and how to use that technology. Because that was a big thing that would stall lectures was if something wouldn't work and we were trying to help, and the professor was trying to do his thing. And it would kind of, if there were any difficulties, it took a hot second to try and figure out.”

The remaining items that faculty participants did not like about the space had to do with procedures and with shortcomings in the various ALECs. For instance, in the ALEC at the library, teachers had to check out the key from the library circulation desk in order to access the room. However, a few faculty participants sometimes needed their graduate assistants or student workers to prepare the classroom a few minutes ahead of time. Unfortunately, the rules about checking out the keys made it difficult for students. Kit described what happened to one of her students she asked to get a key.

“She was told that she couldn't have the key because she wasn't the instructor, which to some degree, I understand. But I think that it would have been a much better experience for students to be in the classroom getting settled for class, while I was coming down.”

Another shortcoming at the ALEC in the library was there was no cell phone reception. Annabelle, a faculty member, recounted:

“One of the most frustrating things I thought...was that my cell phone didn't get service very well in that room. And there was no phone in that room to call anybody. So, I had to leave the classroom, walk down to the door so I could get

my service. And then, so while I'm talking to, you know, like, [tech support] on the phone, he'll say, 'Well, push this button. Push that button.' Well, I can't, because the minute I go back in, I'd lose service."

Despite the ALEC's flaws at the library, however, it was used as a model for many of the other ALECs. Cheyenne compared the ALEC she teaches in to the one at the library.

"Let me just start with this. I got used to, in the other room, they had the big monitor, and they have three small ones. So, I got used to having three small ones. And this only has two small ones. Now, I have a preference that it would be nice to have three pieces so I can have them...And like I said, I would ask for a whiteboard."

Many other faculty participants agreed that they would like to have more writing spaces such as whiteboards.

Negative aspects of ALECs impact learning. From the many things faculty and student participants did not like, the one mentioned most often as far as impacting student learning had to do with technology problems. The most common issue brought up was that technology problems affected class flow. This is significant when there is a finite amount of class time available. Garfield, a student, noted, "Yeah, the technology, it just slowed down some of our lecture sometimes when our professor couldn't figure it out." Lily, a faculty member, agreed. "Well, it definitely impacted my ability to complete a cycle of instruction. There will be times that I didn't get through all the information I needed to have them have." Dylan went even further saying:

"Well, I mean, if I'm up there and then trying to get the screens going and get apps going and whatever else and if I'm a little bit frustrated, then surely that's

going to set a tone for, you know, the first few students who come in. That may set a tone a little bit. I don't know if that changed learning, but I might not be as enthusiastic as I normally would be because I just had to deal with all this.”

Traditional UCM classrooms. The researcher asked student participants to describe what a traditional classroom was like at UCM. Many of the student participants pointed out the arrangement of the classroom. Harriet said:

“Typically, teachers are at the front of the classroom, have one big screen whiteboard whatever. And then, there's a bunch of desks and rows that we all sit in. I had a couple that were like the auditorium type seating, but most of them were just desks and rows.”

Garfield added:

“Yeah, I know something for me, it's set up for a traditional lecture style where the professor is at the class with some sort of projector and a talk and you listen. Those classrooms aren't really set up for a lot of discussion. It's more for the professor gives you the information. And you absorb it. Not a lot of back and forth.”

After hearing about the projector, Isla mentioned, “I mean most of my professors have a podium at the front too. I'm gonna be honest. I'm an English major. So, typically they rarely even use the projector.” Opal had a different perspective.

“So, because I'm an education major, many of my courses are, I guess, nontraditional because they were grouped in a lot of my classes...I've taken some courses that are, like, you go in and you sit in your rows. It was more like high school, I guess. So, I was used to it.”

Regardless of the classroom layout or class delivery, Carson noticed one thing about his teachers. “They care a lot I can say, you know. We're working together, trying to get better every day at what we learn.”

Classes ideal for the ALECs. The researcher asked faculty participants to talk about what classes they thought would work well in the ALECs. Dylan, who taught in one of the ALECs, explained why the participants were able to list so many possibilities.

“I mean probably a lot. Obviously, you can't do like a flight simulator in there. Maybe you can't a little bit, but I don't see too many things that you wouldn't be able to do in there. I think that a lot of classes can use active learning concepts, even if you lecture for 40 minutes and leave the last 20 minutes to have some group project stuff...I don't see anything that, again, doesn't need specialized lab equipment or something that couldn't use the room. Sometimes space is an issue because they have 50 people in a class. And that room has 50 people. But to me, I don't see any limitation about what could not go on in there.”

Ruth agreed:

“I mean really, I think, any class could be set up in the ALEC room. Yes, it's gonna be the preparation work and the time that the instructor would need to kind of restructure what the classroom environment looks like in the labs and stuff. Maybe not, but I think there's always a place for learning in this type of environment. And I would hope in the future this is kind of what it looks like.”

Among the many possibilities of classes that would work well, the following is a list of what was mentioned by the faculty participants: anthropology, art appreciation, communication, education, general education, graduate, literature, math, political science,

public speaking, speech language pathology, and technology. Coincidentally, the researcher interviewed faculty participants who taught these types of courses in the ALECs and student participants who took these types of courses in the ALECs.

Classes not ideal for the ALECs. The researcher asked faculty participants to talk about what classes they thought would not work well in the ALECs after asking what classes would work well. As was already mentioned in the previous section, many faculty participants felt there were not very many classes that would not work except for a few exceptions. These exceptions involved classes that had special equipment as typically seen in labs. Dylan, a faculty member who taught in one of the ALECs, said, “Yeah, automotive technology, land surveying, pretty much have to get outside to do that.” However, even in lab courses, Ruth thought the lab spaces could be set up like an ALEC.

“Those might look a little differently, but I think that it would be beneficial to have say, like, screens in a science lab or, you know, screens up in know whatever classrooms. I feel like this kind of learning environment could be taken really in any college or department.”

The limits to what faculty can teach in an ALEC was summed up by Siena, a faculty member who teaches in one of the ALECs.

“It depends on how the person teaches. If classroom management might be something that they are not necessarily used to dealing with, then that might be an issue for them. Coming from secondary education, I was very much, like, if you're doing active learning, then you have to monitor. You need to walk so the space is perfect for that. Or have kids using tech and being able to monitor and that kind of stuff. For people that aren't open to having students bring their own tech to class,

then that's not gonna work. If an electronics policy is a thing, then that's not gonna work for them.”

Reasons for classroom conversion to ALEC. After describing what a traditional classroom was like at the University of Central Missouri, the researcher asked the student participants to think about why the ALECs where they took classes were turned into that type of classroom. “I think it was probably an experiment at first just to try out some new technology to kind of update the university and get them a little bit more into the 21st century,” Garfield speculated. “But there was a lot of positive benefits in terms of class cooperation and things like that additionally with the technology that maybe they didn't see coming.” Bobbie added:

“I personally think it was because then you want to have more students’ reactions to the professor. They want to give us more of the opportunity to self-teach ourselves, to interact more with our peers and just have more brainstorming together versus just one-on-one asking questions.”

Isla agreed with Garfield and Bobbie about class interactivity.

“So, it's more so a difficult subject and, first week of classes, my professor suggested that we all get very acquainted with the people that we're sitting with because if we needed help, they're our best helpers.”

Other student participants thought the transformation of the space had to do with the dimensions of the room. Harriet said:

“I think it was a good setup for it because having a bunch of desks and rows in there was like an odd shaped room I guess so it would be kind of weird to have a bunch of desks there.”

As for Opal she thought:

“I think the one in Lovinger was turned into an ALEC room because of the size. It's a very large room. And it's easier to put your information up on all four screens and then, have everyone who's in the room be able to see it.”

First impression of ALECs. After describing several aspects related to the ALEC experience, student participants were then asked to think about how they felt when they first walked into an ALEC. Many of the participants felt uncertain since the ALEC layout was such a departure from most classrooms at the university. Harriet recalled:

“Yeah, it was different than what I was used to. So, I wasn't really sure how it was gonna go. It seems more relaxed. I was excited to be in that classroom because it was just a different setting the different setup, kind of took you out of the traditional classroom feel. And it made it more enjoyable. So, I was excited when I first saw it because I thought it was gonna be really interesting and cool to have something different.”

As for Garfield, he said:

“Yeah, it was a big change from what I had because I had only pretty much done those lecture-based style classes until last year. And then, I walked in. And it was kind of almost a culture shock. And the forced socialization of having to sit facing other people was something new.”

Some student participants knew right away what was in store for the semester. Isla said, “Whenever I walked in, I was like, ‘Man, this is going to be a class that's full of group work.’ And that didn't seem great to me in the beginning.” Bobbie felt the same way.

“When I first saw it at first, I was, like, crap, we actually had to be involved.

When we first walked in, it was definitely overwhelming. Also, there was different pods that you could sit at. Obviously, there was various different screens and a lot of those little screens. So, to me, it was definitely more technology based than, like, just full on lecture, which I ended up liking eventually.”

Opal, on the other hand, was already used to the ALEC classroom setting on account of her being an education major.

“I guess I felt like there were a lot of screens in one room, because it hadn't been introduced yet kind of a thing. But as far as the desk groupings, that wasn't uncommon to me at that point. So many classes had been set up with desks that you can move and things like that.”

ALEC experience vs. traditional classroom experience. After describing several aspects related to the ALEC experience, student participants were then asked to think about how their experiences were different in the ALECs compared to a traditional classroom. Layla summed up what her fellow students thought. “I like it better because you can do more stuff. You can learn different ways. That's what I like the most.” The students could do more things because of the furniture and the technology. Opal said:

“It's easier. I prefer a nontraditional at this point just because I've been exposed to it so many times. But compared, because I had one in a lecture hall and the instructor had one assignment that he wanted us to group up. But you can't move furniture. And then, you have people sitting weird in those uncomfortable chairs. And it just wasn't ideal.”

Garfield liked how the furniture facilitated discussions and how he could use technology in the classroom as part of the learning experience. “It's a lot more conversation-based

which is great for the class I was in. The conversation flowed well. And we were able to back up what we were saying, pulling stuff up on the screen, things like that.” As for Carson, he had a practical reason for appreciating the available technology when asked how his ALEC classroom experience was different. “Probably the screen situation because in other classes, I can't look off to my left. You know, I wear glasses. So, sometimes, I can look off to my left and see what it's saying all the way up front.”

UCM administrator characteristics. During the interview process, administrative and faculty participants touched on UCM administrator characteristics. More specifically, most of the answers were about college deans as told by the college deans themselves. Starting with Kelly, when asked about the support provided during the development phase of the ALECs, the response was:

“I facilitated the faculty discussions of educators who were going to use the room, brought them together and facilitated discussions to how they would use the room, how they would teach, how they needed to modify their current instruction to meet the new design group. I provided some financial support for them to come together. I provided financial support for them to buy additional instructional materials and attend conferences, webinars, etc., to learn how to move their courses from a more static learning to active learning.”

It takes time to meet with the appropriate stakeholders when working on an ALEC space. “The support was mainly time support,” said Morgan. “It's time spent meeting with [the person in charge of the Title III grant] and with the office of Technology, and with Staples to come out with ideas to change the classroom.” In addition to providing financial support for the ALEC projects, college deans also provided people who were

available for technology needs for the college. “One of the [duties of this person] was to be in charge of technology and to run the technology budgets.” Lastly, a faculty member who teaches in one of the ALECs summed up an important factor in getting these ALECs the time and financial support these spaces need from college deans. Irving said his dean is “very supportive of expanding technology.”

UCM faculty characteristics. During the interview process, faculty, staff, and student participants had many things to say about UCM faculty characteristics. Some responses were a result of answering interview questions not necessarily about faculty characteristics. Some questions, on the other hand, were specifically for faculty to tell the researcher more about themselves. For example, there was “Please tell me a little about yourself.”

Introduction to UCM faculty characteristics. There was a wide range in the faculty participants as far as backgrounds, teaching experiences, and course delivery modes. Faculty from all four colleges participated in this study. Out of the 16 schools spread out across these four colleges, the following were the ones not represented in this research study--School of Aviation, School of Computer Science and Mathematics, School of Nursing, and School of Nutrition, Kinesiology, and Psychological Science. One faculty member had only started teaching less than a year during the time of his interview while one other faculty member had been working in education since 1993. As for course delivery modes, the possibilities were face-to-face, online, hybrid, and distance for both undergraduate and graduate courses. Some faculty members taught only online classes while others had a mix of all the delivery modes. Others still taught only face-to-face classes. Lastly, some were full-time faculty while there a few adjunct faculty

members who either had full-time staff positions at UCM or worked elsewhere during the day.

Motivation for teaching in the ALECs. Faculty who taught in the ALECs were either wanting to do so or were assigned to the rooms for various reasons. For many of the faculty participants who chose to teach in the ALECs, they shared the desire to improve their instructional capabilities. Erin stated:

“I've always kind of felt that tug of war between I have to explain it, but we need to practice it too, and there's really no end to how much practice the students need. So, this has been kind of a soul searching for my teaching style that I've been trying to evolve and trying to improve ever since I've started. And I feel like I just hit the tip of the iceberg and that there's so much more I can do. But there's so many questions that I have about how to do it and whatever. So, that's kind of where I'm at with that.”

Some faculty participants recognized that today's college students enjoy learning using technology. Violet said:

“I'm constantly on the lookout for better ways to do things. And I notice more and more that students are super engaged with screens and not very engaged with the traditional lecture format. And so, I'm trying to move away from lecture format whenever possible. So, that's what motivated me to go there. What can this thing do that might help me to move farther away from the person in front showing a PowerPoint?”

The motivation also stemmed from the furniture available. Siena explained:

“I got excited because number one, the desk setup. I mean, it was awesome! When I saw those groups and those desks, I was just like, ‘Yes, please. Thank goodness.’...this is gonna make my teaching so much better. So, yeah, dare I say, that was the first thing that got me really excited. And then, the touch display screen, the good speakers, and that kind of stuff was nice too.”

Ultimately, most of the faculty participants had the students in mind when seeking out an opportunity to teach in the ALECs. Ruth said:

“I'm always excited to kind of do new things. I think maybe that might be my background in working in the industry...It's always quickly moving. And I feel like if we're not, if I wasn't adapting and I wasn't moving forward with my teaching capabilities, then my students wouldn't. So, I felt like it was almost like a necessity for me to go in and at least try it and see what could happen to our program.”

One faculty participant chose the ALEC because of the subject matter. Cheyenne said:

“The total reason is because of the content that I teach...we do a lot of collaborative reviews. And so, when students submit their work to me or to the client for review, I bring it up to the big console. And that's where we edit it...we all sit around, everybody sitting together. They all move their desks...and they pick it apart. They pick apart the doc. They look at the things. We edit it in real time. So, I have somebody at the keyboard. And then, I'm standing at the board. And I'm highlighting passages. Sometimes, I'm adding comments on the side. I knew that there's some things I still don't know about that equipment in there which is frustrating. And I want to know. And I don't know who to talk to about

that. That's part of the lack of training part, you know, because I'm not using it. I know I'm not using it to its fullest potential. That frustrates me.”

The faculty participants who were assigned to the various ALECs for many reasons were less likely to use the ALECs’ capabilities to their fullest potential. Lily ended up in an ALEC because the room she had always taught in was turned into one. In describing her experience with the new technology after losing the document camera in the room, she said:

“So, last fall, all we had was a [Hovercam]. And I mean we were, ‘Help, help, help, help, help!’ Because it just wouldn't work. It was crazy. I taught with the document camera almost every day. So then, we had a meeting in December about all the new technology. Nobody told us. Nobody asked us what we wanted. Nobody asked us what we needed. We just came in. And they were like, ‘Oh, isn't this wonderful!’ And I kept saying, ‘No, it's not wonderful.’”

This was why Sarah, a staff member who helps with faculty questions regarding use of the ALECs, said:

“These tools are there, and the potential is great. But they don't know how to use them, or they don't even know what this room can do...For all intents and purposes, it's a room with four presentation screens, and that's not the intention for the room. And that's how it's used.”

A student who noticed that some teachers struggled offered a suggestion. Garfield said:

“Before they give these professors that classroom for the semester, run them through a crash course or better than a crash course because I think they probably do get a crash course. But some sort of walk them through and get them

comfortable using it over the summer, over the semester before, putting in some extra time to make sure that the professor's comfortable. That way, they can teach us and make us comfortable with what we're doing and how to use that technology, because that was a big thing that would stall lectures was if something wouldn't work and we were trying to help, and the professor was trying to do his thing. And it would kind of, if there were any difficulties, it took a hot second to try and figure out.”

Some staff and student participants speculated that teachers may not use technology in the ALECs or even want to try an ALEC because they do not feel comfortable. Mason, from the Office of Technology explained:

“I've had this experience firsthand. Some educators are completely afraid of technology because they don't want to seem dumb to a younger generation of students that's the most technology savvy that we face, right? We are now with children who have never not been around the internet, computers, or screens, right?”

Garfield, a student, observed:

“Troubleshooting is a big one because I feel, like, especially some of the older professors, they encounter a problem. And they just shut down and don't know how to, don't know what steps to take to try and fix it. And so, I think troubleshooting would be a big, big positive.”

Another reason why faculty may not be using the available technology in the ALECs was offered by several participants. Adam, a faculty member who has not taught in the ALECs, said:

“I think for faculty, one of the biggest fears is that it's something new. And we are creatures of habit. So, once I've got everything in place, it is good. I know the contents of what I want it to be. And then, it's don't change a thing. And I think that happens to a lot of faculty where they end up doing the same thing for 20 years. And so, I know that's a fear for me that I tried to work over but just the idea that, you know, ‘Hey, this is new.’ And I'm gonna have to learn something else. Oh no, that sounds catastrophic! But what happens if it doesn't work? What happens if we can't do it? And so, I think those are always fears with these types of things where I continually have to push myself because it's really easy just to kind of rest on your laurels. I've been doing this for a while now. And I've had some success with it, enough to get through the promotion and tenure process. So, you know it's easy not to not to change and not to try these new things and especially to, you know, I find that I'm something again, I would call myself minimally tech savvy. However, technology changes all the time.”

For faculty participants who did use the technology in the ALECs, they had their own reasons for not taking full advantage of the capabilities. For example, when it came to screen sharing, Mercedes said, “I have not asked students to share their phones’ screens because I feel uncomfortable putting my own phone up there because you never know when you're gonna get some kind of notification or text message or something.” There was also the limited class time to consider. Tiah explained:

“I guess that was probably the real reason I didn't get into having my students put their device up there is I just felt like it would take too much of my class time. And we only met once a week. And my experience is that two people will get it

fast. And the other 18 people will stare at you like you're speaking Greek...I just didn't feel that I had a purpose of it enough to spend the time doing it.”

The key, then, to support faculty in the use of the ALECs is to provide training. However, training faculty comes with its own challenges. The most common reason faculty participants cited for not being able to make it to the training sessions was due to scheduling conflicts. For example, in the College of Education, faculty members are not always on campus. “Our faculty are in the field quite a bit,” explained Emily, an administrator. “So, it’s difficult to provide training for faculty when everyone is available on campus so that they can actually have the time to experience how to use the Air Media, to practice with the different cameras, the different settings.” Later in the interview, Emily went back to the topic of training.

“We do offer faculty training. OT [Office of Technology] has come to do some training. Some of our own faculty members have offered training. But we’re not successful at getting faculty at the training. It’s always very small participation. But we do provide training. We do put it on the calendar. We do send out the invites. We do send out reminders. When faculty are experiencing frustrations, we try to remind them that we have had a training...I don’t know that it’s provided enough. I don’t know if it’s provided maybe at the wrong time of the year.”

Veronika, a faculty member who teaches in one of the ALECs, agreed. As adjunct faculty working elsewhere during the day, she said:

“It is a little difficult especially in the fall semester. My [teaching] job starts at least two weeks before UCM starts as far as work days and things like that goes. So, I'm really pretty busy. But if I had had a little bit of time before the semester

started where I could have come in on my own time and maybe explored it a little bit, that would have been helpful. But you know, once the semester gets going, everybody's going 90 to nothing with their classes, with their workload.”

For some faculty participants, they were assigned to an ALEC because others thought they might enjoy the ALEC or find the location convenient. Mercedes explained:

“The ALEC room was chosen for me this semester. Because Tiah [fellow faculty member who recommended the ALEC] was originally going to teach the class. And then I got the opportunity to teach it. I don't want to go back to a regular classroom. I love the ALEC room.”

Anaya found the room to be useful even though she was simply assigned to an ALEC.

“Well, it was assigned to me. But it was what motivated me to use it. Instead of another technology room was its location. It's right here in the same building as my office so it makes it easy for me to get there. And it allows me to offer class on this campus and also on the Lee's summit campus.”

Switching courses to the ALECs. Faculty participants who taught in the ALECs were asked what other courses they taught that were in non-ALEC spaces. After the faculty participants listed their other courses taught, the researcher asked what would help the faculty participants in switching these courses to the ALECs. The most common reasons cited that needed to be addressed to make the switch to the ALECs were scheduling conflicts, missing equipment, and lack of faculty support.

When the researcher asked why the same classes were scheduled in an ALEC and non-ALEC room, Violet said, “As far as I know, it's just a scheduling thing. I don't know that very many classes actually have a dedicated classroom to where all sections of this

class are taught in this classroom kind of thing.” Cheyenne agreed that not teaching a class in an ALEC was about scheduling. She said, “To switch it to an ALEC classroom? I would switch in a heartbeat. Yeah, if I could. If the room was open, I would.” However, another reason Cheyenne cited was shortcomings in the ALEC design as far as missing equipment. The ALECs were designed to be Bring Your Own Device, or BYOD.

“There's no devices in there for students to use. Because if you think about the population of students too that we are serving, you know, some of these students are, they're first generation. They come from low economic backgrounds. There's not enough money to buy the textbook, let alone, like I said, the equipment to use to write their papers. So, they're using their phones and so forth. So, we really need that in conjunction with using the room, you know, so that's where that comes from...So, that's why I use the [a different classroom] unfortunately.”

As for the lack of faculty support, the researcher asked Dylan what would make him want to teach in the ALEC again since he has not done so since the first semester the ALEC opened at the library last fall semester of 2017.

“Yeah this class now, it would work pretty well in it. You know, probably, if I knew I would have liked some more support. ‘Hey, we're gonna put you in the room, not when the school is in session. And we're going to do a couple Saturday meetings or a couple Thursday meetings during the summer or during break or something like that. And we'll break everything down even if you've taught one before. And then we'll kind of go over all of it and let you play with it or whatever.’ But just to say like, ‘Hey, you could sign up to teach there.’ I had an okay experience doing it, but it probably wasn't enough to make me want to do it

again necessarily. And again, I was iteration number one so I'm sure it's better now, the onboarding for faculty and whatever. But I don't know. Maybe it's not.”

Two other reasons given by a few faculty participants were that as adjunct faculty, the faculty participants taught only one course per semester and that the adjunct faculty participants simply have not asked their school chairs. Alissia explained:

“I kind of teach random classes every once in a while. Most of them have kind of been online. But I also do get to teach a [class] every once in a while for [a department]. There's a lot of sharing of information in that class. And we use a lot of technology for it to share and do research in that class. And I do think it would be very beneficial to move it to an ALEC room, if possible. I haven't really talked to the department about it because I'm not really a lead over there, or anything. But I do could see a really huge benefit of moving that leadership class to an ALEC room.”

Reconsidering teaching in an ALEC. The researcher asked faculty participants who have not taught in any of the ALECs what would make them make the switch to an ALEC with one or more classes. The most common reason cited by the faculty participants had to do with their job descriptions or the needs of their students. “I was hired as an online instructor,” explained Ariaiah. “I think it's not in my job description right now.” For Gladys, she teaches music courses face-to-face.

“There probably wasn’t a lot of reason for me to look into that kind of teaching since everything I do is one-on-one. And, having to listen to the students and also, there has to be a collaboration between the singer and the pianist. So, that would require being in the same room for timing, aligning the two together.”

Another reason was the same reason why other faculty participants who teach in ALECs were unable to teach other courses in the ALECs--scheduling. Janine explained:

“So, we were a little late on the ball. I thought about it. I think it was in November when I pitched it to my department chair. She was like, ‘It’s too late. We have all the students already enrolled.’ So, I did already put in a request for next spring semester. We only have that course in spring.”

Adam added a different point of view regarding the scheduling issue.

“Here's another interesting thing is that we basically kind of have adopted classrooms as our own. And so, when you think about scheduling classes, you just know that ‘Hey, these are our classrooms. And these are the ones that we're using.’”

As a result, those responsible for scheduling classes and classrooms do not think about adding the ALECs to the choice of classroom spaces. For Jerry, the choice was more about allowing himself to be able to handle the demands of teaching in an unfamiliar environment.

“And this would be brutally honest, [in one of my classes], I have 22 people in now. I think that if I had a section with maybe 12, I would be very interested...Now that I know a little more and I've seen pictures, I think it would be great. I think for me personally, not from an intimidation standpoint, but I think just streamlining, what would be easiest for me would be if it happened to be 10, 12, 14 students. Because I think when you first use that and you say I'm going to embrace this and this and this where historically maybe I did not, I think it would be less cumbersome with a smaller number of students.”

For Madison, she wants faculty support. “Give me proper training, and make it available.” However, Adam added that faculty need some kind of motivation on top of training.

“We have training available on campus, but there always seems to be something else to do. So, I think if they would mandate training and be like ‘Hey, now's your time to come in and see what the ALEC classroom has to offer.’ I think faculty would be like, ‘Wow, this is really great! And I could probably use this.’

However, if it's left to me to go out and explore it and want to take that initiative, I don't think that's going to happen, again back to the habitual nature of faculty.

That's something new that isn't viewed as necessary even though it should be because technology is changing how and students are interacting and is changing. But we have all these training sessions. I look at it, what CTL puts out every week here on campus. And it's fascinating. It's like, ‘Oh that would be really cool to see. I should probably go back and get a refresher on that.’ But then, it never happens. Something else happens. You're in a committee meeting or something. And so, it just doesn't happen.”

Other UCM faculty characteristics. During the interview process, faculty, staff, and student participants talked about other UCM faculty characteristics that would allow a faculty member to be successful when teaching in an ALEC. Annabelle, who had experience in two different ALECs, explained it as such:

“I really don't think a room has impact on student learning. I think it's going to be what an instructor does with that. I think it's because you could have a super good

instructor in a room with nothing but a chalkboard, and you could still be learning a lot based on because that instructor was effective.”

For this reason, Ruth felt that the ALECs may not be for all faculty.

“I don't know if there's maybe not enough education there for those to know what the active learning classroom really is and how it can work. So, I think for us and those people that are interested in active learning and kind of are in tune with this kind of ed tech stuff knows what it means and knows what it is. But those that don't know, those that kind of dismiss new technology or anything kind of updating wise, I don't think it really means anything to them.”

Many of the faculty participants who have used the ALECs, therefore, pointed out three main characteristics that seemed to have worked well for them in the ALECs. These characteristics were being go-getters, having a sense of creativity, and exhibiting flexibility. First, faculty participants talked about having a sense of just going for it. Tiah, who would have taught in an ALEC had it been available, said, “I am not afraid to push buttons and see what happens next.” Other faculty participants were able to secure a spot because they asked for it and the ALECs were available for their time slot. Giorgia said, “My chair made it an option if we wanted to have it. And so, we always jump at that.”

Alissia agreed:

“And they had sent out an email saying that the ALEC room in the library was still, still had availability. Sign up for their classes for the fall. And so, I was, like, ‘Well, that sounds interesting.’ I've never taught in one of those rooms before, so I jumped on it.”

Second, faculty participants were innovative, or creative, in coming up with teaching strategies. “I think the curriculum can drive active learning if the educator’s creative,” explained Mason from the Office of Technology. “But how many educators are actually creative or want to be creative? That I don't know. I'm not an educator. And that's, I'm not being critical. I just don't know.” Veronika was one faculty participant who recognized the need to be creative.

“I think there are always opportunities to engage students and learning in different ways. And to give them different modes to learn things for some classes, it's just going to take a little bit more work to find that people stepping outside of their comfort zone and trying to figure it out.”

Other faculty participants talked about the necessity of being prepared. Ruth recounted from her experience back in 2017.

“I feel like I did spend a lot of time preparing. Before I came to class, I definitely did more of my preparation work where right now, I don't necessarily do that all the time for my regular face-to-face classes. I might have needed to create new assignments or try to figure out kind of a better active learning strategy for the room. So, before class started, I did that, you know, prepared maybe a week or so. And when I got in there, I typically would have to get in there a little bit beforehand because in my situation it took a little bit longer to get the screens kind of up and running and making sure that they worked...I think once I find some time, I can kind of look back and say ‘Okay, what are things that I want to work on?’ I think that would be one to kind of look and make sure that there's at least one active learning or two active learning things throughout a week.”

Lastly, faculty who use ALECs need to be flexible. Even with the best intentions and with preparation, “hiccups do happen and an instructor [needs to be] good about thinking on their feet and coming up with an alternative plan for the day,” said Jordan from the Office of Technology. Otherwise, students like Garfield might take note of the teacher’s response.

“Troubleshooting is a big one because I feel, like, especially some of the older professors, they encounter a problem. And they just shut down and don't know how to, don't know what steps to take to try and fix it. And so, I think troubleshooting would be a big, big positive.”

Sometimes, technology might still not work so troubleshooting is not always an option. The teacher would have to exhibit flexibility and do something else for the day. Veronika said:

“There were times when I was trying to get it to work and I would say, ‘Okay, I want you to go out and talk at your table about this while I'm working on the computer.’ So, there were times whenever I had to kind of adjust from the flow of what was happening in the lesson to give myself a little bit of time to get that all situated. Yeah, I mean I'm a teacher so it's fine. I'm used to things coming up in the day. And I roll with the punches.”

Irving, who teaches in one of the ALECs, added, “It's kind of a learn by doing situation, you know, the more you work with it, the easier it gets.” Ruth offered one piece of advice. “Always have a backup if something would happen.”

UCM technology staff characteristics. Faculty and staff participants had a few things to convey regarding UCM technology staff characteristics. There were no specific

questions regarding UCM technology staff characteristics. However, during the interview process, staff participants had an opportunity to tell the researcher about themselves. Also, some of the faculty and staff participants talked about UCM staff while answering interview questions, especially ones regarding training and support provided by the university. The main topics covering UCM staff characteristics were the following: staff's background in technology, responsibilities, successes, and shortcomings.

Staff participants in this research study were those who either had a role in developing or designing one or more of the ALECs or helped with faculty and student questions about using the ALECs. Not surprisingly, these staff participants had a background in technology. Sarah, a staff member who assists people with the ALECs, said:

“I have a master's degree in educational technology from UCM...And mostly, what I do is I help faculty with facilitating their classes and things like that.

Although, I have had to do some tech troubleshooting because I have that kind of the Master's...so, technology is not anything new to me.”

Mason from the Office of Technology described responsibilities.

“My job encompasses all of campus...My main focus is classroom technology. So, 425 classrooms maintaining technology, screens, anything that is digital, electronic... [My team's] challenges are to create a system in which we can triage rapidly, create standards so that the staff knows how to fix them quickly.”

Later in the interview, Mason described technology staff as “the help.” Mason expanded:

“This is so weird to put in words! We’re the help, you know what I mean? There is, and this is universal...we are to be seen, not heard when it comes to students. I would like to get student feedback on rooms. I think that's a key to success.”

Faculty and student participants alike did take note and appreciated the efforts from technology staff. Opal, a student, said:

“So, tech typically came up fairly quickly or would come up, like, on a lunch break. But she [the professor] almost always had immediate feedback on what she could do. Sometimes, that didn't always work so then, she just continued on with our lesson through the other three screens that were still working.”

As for Gregg, a faculty member who teaches in one of the ALECs, recalled:

“There is a person who works in the technology realm for the university who is particularly assigned to the College of Education, and he is our go-to guy. So, I would run down and see if I could find him in his office. Okay, come up and help or text him. And he'll drop by as soon as he can. And usually, you know, these tech people, they can come in, something that's baffled me, they could push two buttons and it's fixed. He's great. I'm glad we have him.”

Morgan, a college dean, talked a little more about the dedicated college technology staff when the researcher asked how faculty was supported in transitioning to active learning.

“We have dedicated techs in the college. And they take care of all the classrooms and labs and spaces. And they update the technology in the classrooms. Then, they talk to the chairs, the program coordinators. And then, they tell them, make sure that faculty members come to see them before the semester starts so they are aware of the updates and the new technology in the classroom. So, yes, we do

have a process that basically informs faculty members that some changes have been made to the classrooms in terms of technology and that they're supposed to be familiar with the technology before the semester starts. So, the same process will be used for ALEC rooms. Obviously, it's going to be a lot more exciting because the technology and the knowledge room is just amazing, right? I'm sure all the faculty members will be very, very pleased to see this type of technology."

Erin, a faculty member who helped design one of the ALECs, agreed that faculty looked to technology staff for support when it came to using the ALECs.

"Well, step one is basically just have somebody there to teach us how it works...I don't know how personalized it needs to be. But basically, we need to understand these are the buttons available. These are the functionalities available. These are how you do them. Probably the creation of a couple of cheat sheets that we can keep up with as instructors then so that like a three-by-five note card for how to turn this on how to turn that off how to change the configurations here, how to keep the screen synchronized or how to turn them asynchronous so the students can upload things."

In referring to everything Erin and her colleagues needed, she was referring to technology staff to help with those efforts.

Lastly, there were a few things pointed out by faculty participants as far as shortcomings when it came to the technology support needed to use the ALECs. For Anaya, it was the absence of technology support after 5 p.m. "There's no one in, and there's no one to contact. I teach in the evening. I have no one I can even reach out to." Irving, who teaches in one of the ALECs, said, "Actually, one department installed the

equipment. But they didn't do any training. Another department came over, and it's just because I know the guy...He came over and just did the hands-on training.” The researcher asked Siena about the type of support she received. Her response was, “Oh, I didn't get anything.” Cari, a program coordinator, felt like she could not get the help she needed. “When we ask a question like ‘Hey, we want to do this. How do we do it? There's never like an answer.” Cari also described an experience in trying to install the right technology in one of the ALECs. “They're not using it, and we are. But we don't understand their tech side of it, and there's just this big disconnect in tech communication and education communication.”

UCM student characteristics. Faculty, staff, and student participants had many things to say about student characteristics. The student participants in this research study were majors representing the four different colleges at the university. One student participant was from the College of Arts, Humanities, and Social Sciences. One student participant was from the College of Education. Three student participants were from the College of Health, Science, and Technology. Lastly, one student participant was from Harmon College of Business and Professional Studies. Also, the student participants’ ALEC experiences were in four out of the nine ALECs at the Warrensburg campus--Grinstead 249, James C. Kirkpatrick Library 1268, Lovinger 3170, and Martin 230.

The researcher asked student participants two specific questions that evoked answers revealing student characteristics. One question asked student participants what they thought about taking more classes in the ALECs. The other question was about how student participants’ time as a student in the ALECs could have gone better. The main

topics covering UCM student characteristics were the following: learning style, technological savviness, shortcomings, and demographics.

When it came to learning style, Ruth, a faculty member who has taught in two different ALECs, noted:

“A lot of our students are visual learners, so having not just the audio by just the lecturing and being able to have some different learning kind of atmospheres for our students have been just beneficial in terms of just staying engaged. I feel like they're more in tune. And they kind of want to be a part of more of the discussions when we have more of that active learning environment.”

Ruth could offer a different learning atmosphere because, according to Kelly, a college dean:

“The ALEC allows the faculty to be more creative in how they approach their everyday instruction and then how they approach the course or their program area so that they can design instructional materials that are beyond simply a PowerPoint where you stand up and talk. They can create things that are active learning, applied learning for the students. Students, typically learn best by being able to hear something, see something, and do that same thing. And the ALECs really enhances that learning style. And so, they can also accommodate their teaching methodologies to best meet a wide variety of different learning types, learning styles, all in the same classroom, all at the same time.”

When it came to technological savviness, Emily, an administrator, noted, “When I'm in those classrooms, students seem to be more comfortable with technology than the instructors sometimes.” Many more faculty and staff participants attested to this

characteristic. Mason from the Office of Technology called students “the most technology savvy that we face. We are now with children who have never not been around the internet, computers, or screens.” As a result, Becky who has taught in two different ALECs, mentioned:

“They don't think twice about getting up. They're not afraid of it. I love that it familiarizes them with the technology that they could be using in industry. They love to play with it. They love to experiment with it. They get up there. And they start. And I get it. This centers the class, so, I'm not always the one who's up there dealing with that, you know. They get to play with it. And they get to practice. And I love that. So again, that makes it an engaged and interactive class, right? So, they're not just talking to each other. But they're teaching the class. They're out there moving stuff around. That's cool.”

Charlene, an administrator, noticed students who were not in ALECs missed the technology.

“The classroom I teach in myself is not an ALEC room. And students will often ask, ‘Why don't you have this? Or why can't we do that?’ because they were able to do it in an ALEC classroom. I think it's becoming just an expectation to students that some of the technology is available and that they'll be able to just use an Air Media or, you know, an Apple TV and show what's on their phone. And then, when they're in a classroom that doesn't have that capability, there's almost this kind of a panic, ‘Well, how will I share my video with you then?’ I think, you know, from that perspective and from my own classroom and what I've seen, I think students are at a point now where they're just, it's an expectation that they

can move the furniture around and work in cooperative learning structures. It's an expectation that they can share from their own devices. So, I think when they're in the rooms without those capabilities, there's a frustration with the, 'Well, now how will I do it?'

With the ALECs designed to be Bring Your Own Device (BYOD), the rooms lend themselves to students using something always on hand for the typical student. "They got those phones all the time anyway because they're that generation," said Irving when talking about how he allows the use of technology in his classroom. "And so, to them, it's really natural to use it." Sarah, a staff member who assists faculty and students in the ALECs, said:

"The potential is there. The students would actually appreciate the increased technology awareness. A lot of the jobs that they're going to be going into are going to have higher level technology so having that in their classrooms is going to be helpful for them."

However, teachers should not be so quick to assume that all students are technologically savvy. Alissia, a faculty member who taught in one of the ALECs, recalled her experience with students trying to use technology.

"I will say a challenge that I kind of faced with it with the freshmen was, I don't know if it just happened to be the group of freshmen that I ended up getting enrolled in my class or what the case was, but they seemed to struggle a lot with using the technology. And so, I ended up having to spend almost a whole class day of explaining and getting them used to the technology itself."

Also, Harriet, a student, explained that students may not necessarily want to share screens or use phones for class.

“I can see where people with their phones where they wouldn't want messages being shown and stuff. And as they only have a phone, like, I have my computer, so I didn't have that problem. But I could see where they wouldn't want to share if it was just their phone or wouldn't want to download the app or something. I feel like things would also display differently like some of the things they shared with you better on a computer screen than like your phone.”

Learning to use the technology available in the ALEC, then, takes time for both faculty and students. Kit, a faculty member who has taught in one of the ALECs, said:

“Well, it's a different medium for them. It was a new medium for me. And so, there's always that learning curve of students and the instructor really having to do troubleshooting sometimes and figure out someone isn't connecting what's going on.”

Another thing that takes time for students to get used to is the interactions that happen in ALECs. Isla, a student, recalled her experience during the first part of the semester.

“For us in the beginning, everyone was really quiet because nobody really wanted to interact towards the beginning of the semester. We've gotten a lot better about, like, we're pretty much all friends with the people that we sit with now.”

However, students did not always appreciate the active learning piece in an active learning engagement classroom. Kaylee, a faculty member who has taught in two ALECs, explained:

“I’m gonna be kind of honest. And I know this isn’t necessarily what they like. But one of the things that I have had a lot of my students tell me is, they don’t like it. That at this level of their education, they want to come in to class. And most of my students actually prefer lecture which I find to be very strange. But I think, it’s because it’s what they know. They’re still in a generation where they’ve probably gone through most of their schooling being lectured at. And I also think it’s a little bit of laziness because they just want to sit there. They don’t want to be up and forced to move around and talk and all that kind of stuff. But once I get them to understand that this is now the expectation of teaching, they’re okay with it.”

Fortunately, Dana, a college dean, recognized this negative view from students.

“We know that in some cases where learning is more effective, the student feedback isn’t always right in line with it. So, in particular, when you problematize a lesson versus your traditional delivery, student evaluations of those problematized, where they you start with a solution and they have to figure out what the problem was, student feedback on those indicates that a lot of students don’t care for them, makes them uncomfortable. Yeah, but subsequent studies show that their retention of that same material that they learned in a problematize format versus regular format is much, much higher. So, sometimes there’s a gap between what students perceive regarding effectiveness of teaching techniques and how well it actually works.”

Faculty and staff participants listed other shortcomings observed in the classroom.

“Sometimes, the students can be resistant to share, depending upon the time of day, the time of year, you may have a very silent classroom, or you may have a very loud

classroom,” Kit, who taught in two ALECs explained the strategy for overcoming this resistance is “building a relationship with the student.” Annabelle, another faculty member who had experience with two different ALECs, agreed.

“Students sometimes don't want to because it's not as easy. They do have to be responsible. They're more accountable for their learning. I mean, they definitely have to share things. And they have to be involved. Otherwise, it's not active learning. So, I think that to me was, is always a major barrier.”

This resistance could also be from students being used to a traditional classroom.

Cheyenne, who has taught in two different ALECs, said:

“I sort of feel like in a traditional class, there's places for them to shrink. And when I say shrink, I mean, I don't just mean not engaging in the material. I mean, like, you see students check out super easily in a traditional class. You see them put their heads down. And they're just kind of, you know, not participating. It's harder to get student engagement and in keeping them in the moment of whatever it is you're doing.”

Additionally, some faculty and staff participants felt like they had to struggle with common barriers that were typically associated with some college students. Mason from the Office of Technology said:

“Some people don't want to come to college. They just want to watch online and learn and take tests and be good. And some people want to come and have an experiential face to face. I think as an educator, I think you know that no two students learn the same way. Everybody's unique.”

Jerry, a veteran educator who has not taught in any of the ALECs, would agree.

“When I first came here [University of Central Missouri], you had one or two people that didn't care in a class of 20. And I taught to the 19 or 18 that did. As time has went on, it hasn't quite been a reversal. But now, I'm talking about 50% of the students, or even 30% of the students. So, if I have to teach to the mass, I have to then set my bar for the mass that doesn't care.”

However, Jerry added later, “Okay, do I believe they're going to take it to the next level? I've been pleasantly surprised many times.”

Lastly, some students at the University of Central Missouri fall into a certain demographic. Dana, a college dean, explained:

“We know that institutionally, we have a goal of an 80% retention rate on first-time full-time students. That's really very important particularly for our demographic between first gen, Pell eligible, underserved minority. You know, we're above two thirds of our students. And those are students who often come to campus, questioning whether or not they fit right, whether or not college is right for them. And, you know, when a student is not retaining in any university, if a person in their first year gets a D or an F or has to withdraw, they're much less likely to ever complete. For our particular demographic the chances are much, much higher because it sort of confirms the nagging doubt some students come in with as to whether or not they're really college material. We know that they are, but some need more guidance than others. So, doing what we can to, you know, across the board, better help the university reach its retention goals.”

The ALECs are able to provide the environment that all students need to have a different college experience and perhaps increase retention. Dylan, a faculty member who has taught in an ALEC, explained:

“We worked mostly with students who had high developmental needs, so they often came from high schools that maybe didn't have as many resources, etc. And they themselves maybe didn't have as many resources. And then, because they're not scoring high enough on the ACT, we put them in these classes that are developmental classes, remedial, whatever you want to call them. And I'm telling you, those rooms look like high school rooms, the way they're set up, the way they're taught, the way they're arranged...We are giving them a different education. And so, to me, there is some benefit to get out of that room and into something that they can have fun with because they're not gonna have fun in those other rooms.”

Taking other classes in the ALEC. After asking student participants to talk about their experiences with the ALECs and what they liked about the ALECs, the researcher asked for the students' reactions if they found out they would be taking other classes in an ALEC. All the student participants conveyed that they would be happy to have more classes in the ALECs depending on the class or the teacher. Bobbie said:

“I personally wouldn't mind a whole lot. I think it'd be a lot different though like versus gen eds or your major classes, because with Gen Ed, most people, they're just there to get it over with. And they don't really want to be involved because everyone hates those little icebreakers you go around. But personally, I like the

idea of having it because it allows you to ask questions that you didn't think of or you hear different ideas that didn't even think of either so I think that's awesome.”

Harriet had a different idea.

“I guess for the gen ed classes, I would have liked it more since the ones that were specific to my major, we were already in a different type of classroom setting when we were in the computer labs or lab or a different place actually doing something. And we're already up and moving. So, for the more gen ed classes though, I would have definitely liked that more.”

For Isla, she thought about her teachers. “I would be interested to see how it worked out, especially for my major just because I don't know, like, there's, just the way that they [professors] would utilize the technology would be interesting.” For Opal, an education major, she had developed a preference for which ALEC she would like. “I really like that library classroom. So, if I, going into it, if I knew that I could be in that library classroom, I would probably pick that class over a different one.”

Improving the student experience in the ALEC. The researcher asked student participants how their experiences in the ALECs could have gone better as students. The most common response had to do with technology not working as expected. Garfield simply put it as such: “I mean, just the professor's learning how to use the technology would be the only thing to add.” For Opal, however, the technology fails were not anything that impacted student learning. “We're taught heavily to roll with it. So, it's typically a you never know kind of situation.” Jordan from the Office of Technology agreed. “Students don't look down on you for that. It's not that big a deal. They all are

very familiar with technological failure. They're familiar with it. It happens to them all the time.” Bobbie mentioned the technology usage issue as well.

“I feel, like, for mine, it was kind of different which maybe it wasn't for everybody else. Everyone in my class that was in there, we already knew each other. So, it wasn't really awkward or anything. So, it was just like an instinct to just communicate easily because we all had similar ideas. And we're all going for the same kind of thing. So, I think it would just depend on what classes you're in, and then also your major.”

Perhaps it was the awkwardness that led Carson to say after reflecting on the interview question, “I just should have asked more questions. I should have just, I was stressed out. But I just should have asked more questions to be more involved.”

Active Learning Definition

The researcher asked faculty, staff, and student participants for a definition of active learning. Just like what the researcher found in the literature, the participants did not have a universal definition of active learning. “So, I don't really have a tight definition of active learning,” explained Violet, a faculty member who teaches in one of the ALECs. Whatever active learning is, the participants came up with the following: focus is no longer the teacher, active learning can be done anywhere, and active learning is collaborative.

To explain active learning, Jerry, a faculty member who has not taught in any of the ALECs, described passive learning.

“So, passive learning is I'm going to sit up front. And I'm going to show transparencies or slides in a PowerPoint. And I'm going to talk. And you're going to sit there. And by traditional method, you're going to jot down notes.”

With that starting point, another participant defined active learning in terms of what Jerry described--the traditional lecture. “For me, it is anything but a traditional lecture,” explained Morgan, a college dean. “So, for me it’s just the experience that the students receive just by participating in the classroom, rather than just sitting and listening.” Additionally, Erin, a faculty member who helped design one of the ALECs, talked about a common thing that accompanies the traditional lecture.

“Instead of sitting and taking notes, which I consider to be rather passive, they're just doing stuff, whether they're discussing things with each other, answering questions, discussing things with me. They're doing more than just sitting in their seats and taking notes.”

In active learning, then, the focus is off the teacher who typically stays up front while students sit, listen, and take notes. Mason from the Office of Technology explained:

“I think active learning takes a traditional classroom, flips it on its head. And I'm not saying that physically. This takes the idea of a person up front droning and just regurgitating information for people to ingest and then regurgitate back. I think active learning takes the focus off the educator as a center of the room and puts student as creator in the forefront, where a student is an active participant in their learning.”

This arrangement where the student is the creator suggests that “the professor is not a fount of wisdom to pour out and the students absorb it all” according to Dana, a college

dean. Instead, the teacher is “a coach who helps students along in that thought process, allow them to work in those high, movable groups,” said Jordan from the Office of Technology. “And everybody has that synergy going on that I think is the biggest key. I believe that's what we're trying to teach using those rooms is synergy because that's a huge thing in the corporate environment.” Anaya, who teaches in one of the ALECs, described this approach as “empowering students to learn.”

While active learning was described by many participants within the context of using the ALECs, another thing that many participants agreed on was that active learning can occur anywhere and does not necessarily need technology to accomplish. Felix from the Office of Technology claimed:

“To be honest, I don't have to have \$100,000 of technology in a room to lead lessons that involve active learning. All I need is to change my teaching methods and say, ‘Okay, we're going to have this content ready beforehand. And now, we're going to do these activities in class. Turn your desks around and face each other. And let's do some small group work.’ I don't need an 86-inch interactive touch display to do that. It helps, but I don't need it.”

Lilly, who taught in one of the ALECs, agreed. “For me, active learning isn't technology. Active learning is getting my students engaged in the content that I need them to learn and understand.” Part of the engagement process is for the students to learn with a purpose. Dylan, who taught in one of the ALECs, said:

“Students typically have a role. They get a task, often a real-world type task, some instructions. They have the roles. And at the end of class, they come together to deliver that in some way. I mean that's only one probably model...I'd say anything

other than just sort of stand-and-deliver type modes, which do have a place but maybe not always.”

Lastly, Dylan touched on a concept mentioned by many other participants--active learning is a collaboration which could involve students moving around, gaining hands-on experience, or using critical thinking. “To me, it's definitely about being involved in the conversation,” said Bobbie, a student. “It beats being behind a computer screen not wanting to answer questions. It's bouncing ideas off of your peers.” Garfield, another student, added, “Active learning is more having a discussion, sharing ideas as a group, rather than getting talked at in some sort of lecture.” One of the results of active learning is that it “gets the cogs turning in their brain, getting them to think about what it is we've discussed and introduced in the class and applying it to something they know already, a situation that they've either experienced or longing to experience as a future career” as Aariah, faculty member who has not taught in any of the ALECs, put it. Also, “when students are more involved, they're more likely to remember and then process and then put in their long-term memory” said Madison, who also has not taught in any of the ALECs. All the collaboration among the students creates a support system described by Jordan from the Office of Technology. “We have to know that we're not an island unto ourselves and that we have support systems, and sometimes we are a support system.”

Active Learning Experience Rating

The researcher asked faculty participants who have taught in one or more of the ALECs how they would rate their experience in active learning strategies. To help in describing, the researcher gave the options of “beginner,” “novice,” or “expert.” Many of the faculty participants did not feel comfortable describing themselves as “expert.” Kit

explained, “I wouldn’t say that I was an expert. I think that we’re all learning all the time. I’m still probably a novice.” Even Aubrey who had been using active learning strategies her whole teaching career said. “Well, I wouldn’t, maybe not an expert. I’ve been using it forever right when I started as a TA. That’s what they told us. It’s ‘active learner communicative,’ was the buzzword when I started out so basically, my whole teaching life.” Ruth, an administrator who teaches in one of the ALECs, described the active learning experience rating as a spectrum.

“I would be more on novice area. But I’m pretty critical. Expert means you are, I don’t know if you get a PhD in that or something. Even then, you’re not an expert. But that’s kind of my scale to somebody who’s doing it in the classes and probably hasn’t researched and studied.”

Dylan, who has a doctorate where he studied active learning agreed.

“I’d say I’m probably closer to an expert in knowledge of. And I use some in the classroom. Do I use as many of those strategies as I could? No. So, I would probably rate myself lower on my implementation of them than I would on my knowledge of them.”

Irving made another distinction. “If you keep the technology out of it, I would say, I wouldn’t call myself an expert. But I’m pretty good. I think my students would say that.”

Ruth described the metric she would use to call herself an expert.

“I feel like, I say, maybe between novice and expert. I don’t feel like I am going to be an expert until I’m doing it all the time because I can say that there are some classes where I’m just lecturing. I need to kind of involve more active learning

within those lectures, though. I think there's still a lot that I can learn. Again, it just takes time to implement those into lessons, right?"

The closest to a faculty participant being regarded as an expert happened during one of the faculty focus group meetings. Kaylee said, "I'm always hesitant to call myself an expert or anything in anything. But I think I have a pretty firm handle and understanding of active learning. I wouldn't say I'm perfect. I'm sure I could learn more." Annabelle's response to what Kaylee explained was, "I would agree that Kaylee's an expert." Lastly, one faculty participant said that he was a beginner. "Very much beginner. Maybe a little bit before beginner. I know there is such a thing and that's about it," Luke said. Earlier in the interview, Luke mentioned that he had been teaching less than one year.

Active Learning Engagement Classrooms (ALECs) Timeline

The researcher asked faculty and staff participants who were involved in the design process of the ALECs to talk about timelines. Each of the nine ALECs have differences based on what was wanted from different levels--college, school, and faculty. For some ALECs, the effort was a collaboration among the college dean, school chairs, and faculty. Other ALECs, on the other hand, contained features that were decided for the most part by the college dean or school chairs. Regardless, all ALECs were installed by the Office of Technology in cooperation with approved university vendors.

According to Mason from the Office of Technology, the ideal timeline is three months. However, Mason described what could delay the timeline.

"It's going to slow down your process by months, not weeks, not days, but months. Because when I write a quote and send it to you and you reject it, I have

to go back to the vendor. Play guesswork. Change it. Send it back. If you reject it again and so on so forth.”

When the researcher asked Felix, also from the Office of Technology, the typical timeline for an ALEC, the reply was, “It depends on funding sources. It’s primarily what impacts time.” Felix expanded on what else could affect the timeline.

“How long it takes to get it conceived and developed and built, well, it depends on the complexity of the room. It depends on the performance of our vendors, be it our technology integrators or the people we buy furniture from. You can't anticipate what the delays will be, but you can know that they're probably going to happen.”

Essentially, quotes were being generated from several vendors depending on the necessary work. As Mason explained earlier, quotes that may go back and forth take a long time. Cari, a program coordinator, agreed. “I think the planning and getting quotes and all of that took the longest. And then, once we had those, everything really got put in pretty quickly.” Also, delays resulted from issues associated with the age of the buildings at the university. Felix said:

“With the age of the buildings, yeah, it is a problem. And the first issue that usually comes up is asbestos. Only certain vendors can do work related to the abatement of asbestos. We only have one vendor who's qualified to work with that. It adds cost. It adds complexity. So, that's one. And some buildings on this campus are just laid out strangely.”

As a result, one of the ALECs for this study has been one year in the making as of the time this research study was written. However, such a timeline is not unheard of for an ALEC. Emily, an administrator, explained.

“3140 was definitely a two-phase project. And so, I know that OT [Office of Technology] tried to start those in the spring semester, have the first phase completed by the fall. So, I wouldn't say it's two full calendar years but definitely two academic years to get 3140 where it currently is.”

The room, Lovinger 3140, that Emily referenced had more technology in it compared to many of the other ALECs. Lovinger 3140 has dropdown microphones, ceiling speakers, wall-mounted cameras, a Hovercam, one interactive display, two additional display monitors, and a projector with a screen all integrated and controlled by a touchscreen control panel.

Typical Day in Active Learning Engagement Classrooms (ALECs)

Kit has taught in one of the ALECs and had a description of active learning.

“I think active learning is messy...It puts the ownership of the responsibility on the student to be part of the learning process. So, it requires for the instructor in some ways to trust that the students are capable, intelligent, rational, thoughtful beings.”

In asking the student participants what a typical class period was like in the ALECs where they took classes, the responses revealed an environment like what Kit described.

Bobbie said, “From my point of view, at first, it was just kind of chaotic. It was everyone trying to talk at once or trying to get their ideas across.” Another student, Garfield, added:

“The average day was more lots of discussion, lots of polite arguing. And yeah, usually, a lot of just class participation stuff. I mean, there was still some sort of lecture. But halfway through the lecture, he'd [the professor] be like, 'All right, let's argue!' And then, we'd bring up some sort of topic. And then, we'd have a class discussion.”

The researcher noted in ALEC class observations that students felt comfortable interacting with each other from the time they walked in the classroom until the end of the class periods. However, getting to this point where students are participating takes time to develop. According to Isla, a student:

“So, for us in the beginning, everyone was really quiet because nobody really wanted to interact towards the beginning of the semester. We've gotten a lot better about, like, we're pretty much all friends with the people that we sit with now.”

Ideas for Different Utilization of Active Learning Engagement Classrooms (ALECs)

The researcher asked faculty and staff participants about different ideas on how the ALECs can be used other than a classroom. Mason from the Office of Technology offered the following advice.

“Abolish rooms belonging to colleges and make it scheduleable by anyone, right? The problem is it's not how money works. To me, we are wasting funds recreating the same room over and over again when an educator could just schedule it and just go over and use the room.”

Felix, also from the Office of Technology, added:

“It seems like a lot of these rooms sit empty. That's why we have so many schools similar to our size, have half the number of rooms deployed. I think we need to be

a little bit smarter in scheduling and saying, ‘Okay, if you're going to teach a class that requires this level of technology integration or if you need active learning, these rooms are available. These are the ones that are available at the time to teach your course. Walk across campus and teach it.’ It's nice, it's great to have a classroom to teach in right down the hall from your office. We're a small campus.”

Faculty and staff participants offered other ideas. Because of the size of some of the ALECs, the rooms are ideal for large gatherings. The ALECs can be used for college and school meetings, conferences, and seminars facilitated by university employees. However, there was hesitation in opening the rooms for use by the public. “Right now, I haven't thought much about using them outside of that format,” remarked Dana, a college dean.

“There are certainly things that could be done, especially as we open up campus to a number of outside constituents. It would require some thinking through...We find that sometimes our equipment is a little mistreated, and so letting those groups, even though there's probably some great creative things they could do with those facilities, I would have to give it real thought to allow an external group into those rooms.”

Morgan, another college dean, agreed.

“Obviously, this type of room might be an excellent option for them, but we have to be a little bit careful because that technology is so advanced that it's so expensive. So, we just need to remind them of their good use of the resources...We just need to know who is using the room and for what purpose.

And if we know those two things, I'm sure we can let them use this room so it will be an excellent showcase for the college.”

Faculty participants also felt that the ALECs could be a recruitment tool. Cheyenne explained:

“We have a group of students who struggle, you know. They come from these backgrounds. They hate writing. They don't want to be here because of the writing. They're forced to take these gen ed classes. So, I think that this, having them walk into a classroom like this will send the message that we take it seriously. And what a cool message to send to students coming in here walking into a high-tech class. And that they have to learn in a different way than they were used to in high school.”

The ALECs could also be used by faculty for other purposes. Kelly, a college dean, said, “Certainly, we can use them in our meetings with faculty. We absolutely could use them as additional training areas for faculty to share ideas or learn new ideas.” Ruth, an administrator, agreed and added that faculty training would be a good way “to expose some of the faculty in the College” to the ALEC. Dylan, who has taught in one of the ALECs, described his experience in an ALEC during a faculty meeting.

“We have meetings in there. It's actually a decent space for what a lot of our standard meetings are where there's 10 to 22 people or something. We often have documents pulled up on monitors. And so, having extra monitors is great, or being able to have different things and different monitors is pretty good, to be able to use some different apps to show something that you know we don't have on traditional computers.”

Additionally, Dylan said, “I think it would be fun to turn it over to students and see what they can come up with, maybe like a digital makerspace kind of thing or something where, they can have a collaborative way to work together.” Violet offered an idea on how students could use the ALEC.

“We could display the research posters and have four of them up at a time, and then go to the next few rounds. Or you can have work on the front screen, right? You could have thumbnails of all of them and let the people at the other three screens choose which ones they wanted to look at.”

Themes

While going through the coding process during data analysis, the researcher found four themes emerge from the collected data. Each theme offers a glimpse at the active learning engagement classroom (ALEC) experience at the University of Central Missouri (UCM) as told by faculty, staff, and student participants. The four themes are “It’s the Field of Dreams,” “It’s a Two-Edged Sword,” “It’s More than Just the Bells and Whistles,” and “It’s News to Me.”

“It’s the Field of Dreams”

After hearing about faculty experiences, a recurring theme was the belief that from creating these ALECs, faculty will simply flock to these rooms. “It was the ‘Field of Dreams.’ Build it, and they will come,” remarked Lily, a faculty member who taught in one of the ALECs. Faculty and staff participants recounted their experiences with the development process for the ALECs, as well as the sign-up process to utilize the ALECs.

Development process. The goal for the ALECs, according to the college deans, is for the spaces to be used as much as possible. “I would like to maximize utilization, so

that we have as many faculty and students in those rooms, as is reasonable," remarked Kelly, a college dean. "I want them to be heavily utilized." However, Felix, from the Office of Technology, observed, "It seems like a lot of these rooms sit empty."

The rooms may not be utilized as much as hoped because some faculty do not want to be in an ALEC. Siena, a faculty member who teaches in one of the ALECs recounted what happened the first semester a classroom was converted to an ALEC. "There was a whole list of classes that have moved to other classrooms. So, it was clear that not many people were into it. I even talked to some of the older faculty. I was like 'Yeah, why wouldn't you want to?' They said, 'I don't have time to learn new technology. I don't want to. I'm not good at that kind of stuff.'"

Besides having to learn new technology, some of the resistance was simply from faculty feeling like they were not consulted during the development process when decisions were being made about what would go in the ALECs. "Some of the faculty are not a part of the design," explained Jordan from the Office of Technology. "A lot of it is dean level. Deans decide this is the room we're going to do. So, that is part of it." However, Jordan also remarked that faculty may have also contributed to the mishaps in the development process.

"The other part of it is, it's difficult to get faculty members here when they're not on contract to be at the university anyway to put their input in. So, sometimes feedback is not forthcoming because instructors are not available to discuss with you what's happening."

For some ALECs, faculty members were involved in the decision-making process. Kelly, a college dean, shared the development experience for one of the ALECs.

“What worked well was bringing faculty together with an individual who really understood the faculty side, the instructional side, and technology side. Using a faculty member who had vast amount of experience in online instruction and active learning instruction to sit and help guide the conversation with faculty was very useful.”

However, there is an additional aspect to consider for faculty buy-in of the ALECs. Felix from the Office of Technology explained.

“There’s a concept of the adoption rate of technology usage amongst teachers. It’s a curve. There are early adopters. And there’s people who we’d call laggards. And so, it depends where they are on that curve. And you must try to adjust. We need to identify those folks and how we convey to them how this can help them teach better to their students.”

Unfortunately, faculty members are “creatures of habit” as Adam, a faculty member who has not used any of the ALECs described. He continued:

“So, once I’ve got everything in place, it is good. I know the contents of what I want it to be. And then, it’s don’t change a thing. And I think that happens to a lot of faculty where they end up doing the same thing for 20 years. And so, I know that’s a fear for me that I tried to work over but just the idea that, you know, ‘Hey, this is new.’ And I’m gonna have to learn something else. Oh no, that sounds catastrophic! But what happens if it doesn’t work? What happens if we can’t do it? And so, I think those are always fears with these types of things where I

continually have to push myself because it's really easy just to kind of rest on your laurels.”

Sign-up process. Another reason that the ALECs are not being used by faculty is that there is a protocol among colleges and academic units about where classes can be scheduled. “When you're accustomed to having certain classrooms assigned to certain disciplines, there's sort of a sense of ownership,” Dana, a college dean explained. “The fact is that in a public university, no one owns any classroom. The Provost owns all of the classrooms in general in the college. The dean has supervision over all classrooms in the college.” This means that if faculty members would like to utilize an ALEC outside of their schools or colleges, faculty members may ask for permission to do so. Adam, a faculty member who has not used any of the ALECs, explained why faculty may not seek out new classrooms. “When you think about scheduling classes, you just know that these are the ones we’re using. These [referring to the ALECs] are not advertised widely...And so, we don’t really think about expanding.”

Additionally, some of the ALECs do not necessarily have an approval process to prioritize who gets to utilize the ALECs. Cheyenne has taught in two different ALECs. She wondered, “Who decides who gets the room? Nobody knows. And I think sometimes that, at least my perception, is that whoever barks the loudest wins. And so, I bark loud.” As a result, some faculty members who want to utilize the ALEC may miss the opportunity simply because the process is first come, first serve. With certain time slots in high demand, Dana, a college dean, felt there should be a process. “I think we’re probably going to have to at some point have a look at classroom prioritization.” Perhaps one metric for prioritization could be a faculty member’s willingness and ability to take

advantage of the technology available in the ALECs. “[The classroom’s] functionality has gone up a little bit,” pointed out Mitch who has taught in two different ALECs. “And the big question is what do we do in terms of capturing that? I don’t mean to denigrate anything, but the room has this kind of capabilities. What are we doing to bring that in?”

“It’s a Two-Edged Sword”

As faculty, staff, and student participants reported their experiences with the ALECs, another theme that emerged was that the ALECs simultaneously offered advantages and disadvantages. “It’s a two-edged sword, so to speak,” described Aubrey who teaches in one of the ALECs. “It gives us problems. But then the furniture, that makes up a little bit.” The ALECs have many things about them that the participants appreciated. At the same time, many of the same things that were appreciated also became barriers to active learning.

What was appreciated. Most of the participants cited the ALECs’ impact on student learning as one of the most positive aspects of the learning space. “It gets the cogs turning in their brain,” described Aariah, a faculty member. “Getting them to think about what it is we’ve discussed and introduced in the class and applying it to something they know already, a situation that they’ve either experienced or long to experience as a career.” Students can learn differently in an ALEC because the room is supposed to be different from a traditional classroom. Dylan, a faculty member, explained:

“To me, what works well for active learning, I think, is just the fact that you have a nontraditional space,” explained Dylan, a faculty member. “It’s difficult to tell where the front of the room even is, right? So, to me, then, it begins to break

down the power structures of the normal classroom of 'I'm the professor. I stand in front. You all are seated and subservient and are the receptacles.'"

Dylan's statement above suggested that student learning in the ALECs could only be impacted if three things were present. First, the faculty member teaching must be open to active learning strategies using technology in order to improve instructional capabilities. "I'm constantly on the lookout for better ways to do things," revealed Violet, who teaches in one of the ALECs. "And I notice more and more that students are super engaged with screens and not very engaged with the traditional lecture format." If faculty members fail to take advantage of the ALECs' capabilities, Sarah, a staff member, felt that there would be no impact to student learning. "Interactive learning definitely enhances student learning and therefore student information retention. Until the faculty know how to use the room appropriately, it's not going to improve the situation for students." Violet agreed because when the researcher asked her what the ALEC has meant to students so far, she replied, "I really have seen no difference whatsoever. But that's because I haven't changed anything either." Violet was referring to how she had not changed the format of her class taught in the ALEC because she also taught the same sections in non-ALEC spaces during the same semester. Annabelle, a faculty member, said something to go along with what Violet stated. "Just because you're in the ALEC room, doesn't mean that it's active learning."

A second prerequisite to impacting student learning in an ALEC was the furniture. The furniture must facilitate collaborative learning. Isla, a student, described her experience in the ALEC. "The fact that the desks are all grouped together, it was really helpful because sometimes, you get, like, we have a very difficult subject matter.

So, sometimes you get confused. But you don't really want to stop everybody. So, if you could just talk to the person beside you when you weren't disrupting anything, really, you could be like, 'Hey, who was that guy?' Or 'What are we talking about? What was that?'" Additionally, the furniture was designed to be moved as necessary to accommodate the lesson of the day. This feature was in stark contrast with the traditional classroom experience when it came to moving furniture. Jerry, a faculty member, when referring to some static desks found in traditional classrooms said, "They weighed so much that it would have been a pain to reconfigure them." Jerry added that when the classroom furniture layout had to be rearranged for a class activity in some classrooms, "We had to check with everybody. 'Hey, do you mind if it's set up like this on Tuesdays and Thursdays?'" With flexible seating, however, Cheyenne, a faculty member, said, "In 30 seconds we can move tables, move chairs, and we're working in groups. We lose no time that way." Mercedes, another faculty member, also thought the technology would not even need to be changed from a traditional classroom. "If it was a room with just a projector and that furniture, I would still want to be in that room....it's easier to facilitate those group projects than when I was in the traditional classroom where you couldn't move."

A third prerequisite to impacting student learning in an ALEC was the technology. The most popular item in the ALECs, as mentioned by the participants, were the multiple screens, where available. Garfield, a student, said:

"Having the extra screens is really nice because the professor still had a whiteboard to write on if he wanted to write something. But you're actually able

to read everything because the screen was right next to you regardless of where you sat.”

For Opal, another student, the screen sharing capability made class presentations seamless since students could share what was on their screens without the need to take turns logging in to the teacher’s computer or loading the necessary files. Opal said, “In the ALEC at the library, we used our iPads. And then, we were able to mirror our screens. And then gave presentations like that.” Annabelle reported that students enjoyed the activity that Opal just mentioned. Annabelle said, “The students admit that they really liked that activity because it involved the technology of creating. And then, there was the collaboration piece. And then, there was sharing out.”

Barriers. As a “two-edged sword,” the aspects that participants appreciated about the ALECs were the same ones that participants also disliked about the spaces. First, the active learning aspect that had such a positive impact on students, according to the participants, acted as a barrier sometimes. For example, Harriet, a student, shared what class was like as a result of the collaboration that was expected of students.

“Sometimes, it felt like whenever the professor was trying to teach or something, since we were in those groups and then the tables, that people will just keep talking and not really pay attention because they did take it as a more relaxed type setting. So, it was sometimes hard to pay attention in here because other people were talking more freely than I feel like they would in a typical standard classroom.”

Sometimes, the teachers could not even get the students to participate in active learning. Many faculty participants such as Kaylee dealt with students who were not convinced on the idea of veering away from the traditional lecture. Kaylee explained:

“I’m gonna be kind of honest. And I know this isn’t necessarily what they like. But one of the things that I have had a lot of my students tell me is, they don’t like it. That at this level of their education, they want to come in to class. And most of my students actually prefer lecture which I find to be very strange. But I think, it’s because it’s what they know. They’re still in a generation where they’ve probably gone through most of their schooling being lectured at. And I also think it’s a little bit of laziness because they just want to sit there. They don’t want to be up and forced to move around and talk and all that kind of stuff.”

Depending on the ALEC used by faculty and student participants, furniture also served as a barrier to active learning or otherwise inconvenienced students. Opal, a student, recounted, “So, all the furniture in the library is movable. You move wrong, your entire desk moves. I know we have people fall out of those chairs.” Opal also thought that the choice in tables was better in some ALECs.

“I prefer the triangular desks that were in the library one. Whereas the desks that are used in Lovinger are the rectangular desks. You’re able to circle around the triangular pieces because they create a different shape, whereas the rectangular ones, you can only make one long square. You can see people better when you’re able to group into the circle. That’s easier to collaborate.”

For Aubrey, a faculty member, the placement of furniture designed for collaboration was a hindrance.

“What I don’t like about the furniture is it has those comfy chairs in the corners with a little table in front of it, looks like in a living room. And in general, I like those if you have class that has a lot of discussions. But that one grouping is right in front of that little piece of whiteboard that I have left when the projector screen is down. So, I’m kneeling on it a lot. So, that makes it difficult.”

Lastly, teaching and learning were interrupted as a result of technology issues. Many faculty participants mentioned their experience with the wireless keyboard and mouse that went with the interactive display. Luke, a faculty member who teaches in an ALEC, said, “It’s a little frustrating, the lack of range for the keyboard and mouse.” The short Bluetooth range made it hard for faculty to move the mobile lectern holding the keyboard and mouse around the classroom. For Cheyenne, she could not pass around a functional keyboard and mouse during class.

“Sometimes, I actually pass the keyboard in my class. I pass the keyboard and mouse around to the students. So, that’s another active learning tool, I guess, I got that. So, a lot of times, I’ll just say, ‘Okay, grab the stuff, call up your things, and let’s work on it.’ So, if they’re not in a specific space where the keyboard will register to the monitor, it’s hard to type. That’s kind of a little annoying.”

For Alissia, the ability to share screens took some time for her students to learn.

“I will say a challenge that I kind of faced with it with the freshmen was, I don’t know if it just happened to be the group of freshmen that I ended up getting enrolled in my class or what the case was, but they seemed to struggle a lot with using the technology. And so, I ended up having to spend almost a whole class day of explaining and getting them used to the technology itself.”

Sometimes, the screens could not even be used because they were not functional.

Troubleshooting technology issues was thus another factor that disturbed class time.

Garfield, a student, noted, “Yeah, the technology, it just slowed down some of our lecture sometimes when our professor couldn't figure it out.” Lily, a faculty member agreed.

“Well, it definitely impacted my ability to complete a cycle of instruction. There will be times that I didn't get through all the information I needed to have them have.”

“It’s More Than Just about the Bells and Whistles”

The creation of ALECs is not just about including the latest technologies and capabilities, or “bells and whistles” as Ruth, an administrator, called them. A web of support needs to be established for faculty and students to have favorable and successful experiences in the ALECs. This support system should include not only relevant training and timely communications but also a community of like-minded individuals who have an interest in the world of active learning in higher education.

Training. A common theme that many faculty, staff, and student participants brought up was training as part of a support system. More specifically, many participants felt that faculty training on how to use the technologies available in the ALECs was lacking. “There’s been one training,” explained Sarah, a staff member who helps with faculty and student questions about the ALECs. “And it was during the middle of the day when faculty were teaching in other rooms. So, they weren’t available to go see.” Even student participants noticed that faculty may need additional training on how to use ALEC technology. Garfield explained:

“I think the biggest thing is just going to be, especially moving forward with technology continually evolving, is keeping those classrooms updated and making

sure that the faculty is getting good instruction on how to use it properly. That's, I think, the biggest thing would be teaching professors how to teach with the technology instead of just giving them a crash course and saying, 'Good luck!' Sitting down, maybe during summer meetings or something and actually showing them how to properly teach with the technology that they're given."

Training is essential as many participants mentioned a "learning curve" when it came to being able to take advantage of the ALECs' capabilities as envisioned by the designers. Annabelle, after teaching in two different ALECs, had a suggestion about training faculty.

"I think that training is important. To me, there are two prongs. There is the technology side of it. But then, there's also the side of using engaging activities. Somebody could say, 'Well, they could go in and do their PowerPoint and show it on all four screens in an ALEC room.' But I don't consider that necessarily engaged instruction."

Emily, an administrator, agreed.

"I really think faculty training needs to be higher on the priority list. I think that if we could prevent some of the faculty frustration, the equipment and the furniture is used more appropriately. I think if we provide faculty with more training on not just how to push the buttons but how to incorporate all this new equipment into their instructional practices. Rather than just display something on each monitor, how do we get the students to actively engage in the activities and the tasks that we want them to? And then, just use this equipment to implement what the student wants to do or what the instructor wants to accomplish."

Community support. Another component of a support system is the existence of a community of like-minded individuals. Cari, a program coordinator, agreed.

“We know how we want to use the technology in our brains, but we can't get it to function that way. That's where we need help. I feel like we've got the plan. It's getting the plan, and the technology to work together is where we are not having luck.”

This help for ideas that Cari spoke of can come from other educators. Luke, who teaches in one of the ALECs, said, “I went and watched another faculty member and observed how he had control, classroom management.” Another faculty member who has taught in two different ALECs, looked to a colleague for support as well. “He and I would commiserate, ‘Hey, how are you using this? I’m not sure!’ We wish that we could have had something where we talked about things.” Fortunately, a new group that was formed during the fall semester of 2020 does exist at the university where participants can discuss topics related to active learning. This group is called the Community of Practice--Active Learning, or CoPAL. Annabelle, a faculty member who has taught in two different ALECs, described the group.

“It's not necessarily in the context of the ALEC room. It's just the context of active learning. And it's taken a couple of different avenues. I attended, I think, I've gone to three of them this year. And they've all been very good. I really like hearing what people across the university are doing. But it was all things that you really didn't need an official ALEC room to do.”

“It’s News to Me”

In asking faculty participants how they heard about the ALECs, another theme that emerged was that the ALECs were not well-known on campus except for those who were interested in active learning in the first place. Essentially, for many of the faculty participants who have not used any of the ALECs, it was news to them about what an active learning engagement classroom was as defined in this research study. For example, when the researcher asked Jerry what he knew about the ALEC, he said, “I can cipher it. But would you refresh my memory?” Jerry’s statement suggested he was not clear on what classrooms were considered ALECs. Another faculty participant, Gladys, who has not used any of the ALECs either, described her experience in a smart classroom in her building. She replied, “I’m not understanding,” after the researcher asked which ALEC she was referring to as a smart classroom.

Emily, an administrator, explained why faculty may not be aware of the ALECs. “Well, if faculty are interested, the [marketing efforts to make faculty aware of the ALECs] work well. That’s where they first hear about it. Or not first maybe, but that’s where they get more information about it, maybe ask questions about it. If faculty think that, ‘Well, I never teach in that room,’ then they’re not listening anyway, you know what I mean? If they don’t think it impacts them personally, they’re probably not interested. Now, if they’re told ‘You’ll be teaching in there this semester,’ then, yes, it’s going to be, ‘Tell me more. What’s going on? What can I do?’ But if they don’t have that personal connection to that space, I don’t know that they’re concerned about that space.”

Emily's explanation above suggested that there are two categories of faculty users in the ALECs. The first category includes those faculty who are always on the lookout for innovative ways of teaching. Dana, a college dean, stated:

“The ALEC doesn't really require much, much marketing. We have a lot of very on-the-ball instructors. And so, as soon as they hear from their chairs that these rooms are available, they're looking to sign up for them. So, this was standard college communication from office through the chairs to the faculty.”

Many faculty participants indicated that they responded to emails telling them about the opportunity to teach in an ALEC. Alissia said:

“I had received an email. The email said that the ALEC room in the library still had availability. Sign up for their classes for the fall. And so, I was like, ‘Well, that sounds interesting. I've never taught in one of those rooms before.’ So, I jumped on it.”

The second category are those who were simply assigned to the ALECs. Lily explained what happened to her. “I walked in, and it was there.” Lily was referring to how the classroom she had always used was changed to an ALEC between the spring and fall semesters. Lily continued about the new technology she found in the ALEC. “Nobody told us. Nobody asked us what we wanted. Nobody asked us what we needed. We just came in. And they were like, ‘Oh, isn't this wonderful?’ And I kept saying, ‘No, it's not wonderful.’” Veronika, a faculty member who teaches in one of the ALECs had a similar experience.

“Well, I have taught in that classroom for several semesters. It's the largest classroom on the third floor. And typically, the sections that I teach in the fall

have at least 20 students in it. And so, that is the classroom I typically get. And it was a bit of a surprise. When I came in for my first day of class with my students, I walked in and it was completely different from what I had known in the previous semester. So, I was not aware that the classroom had been changed over to an ALEC classroom. There was a little bit of figuring things out that first class period.”

According to Kelly, a college dean, one way to spread the word about these ALECs so that more faculty use these rooms is to communicate information about these rooms in a systematic way. Kelly said there would be publicity about the completion of new ALECs in the future via various means. “We’re going to have a ribbon cutting ceremony. And we’ll also begin to [include the ALEC in] our campus tours. And we’ll want to take videos of it. And we’ll ensure that they are on virtual campus tours.” The other college dean participants mentioned a similar approach.

Answers to the Research Questions

Research Question One

Research question one is “What are the perceptions of faculty who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?” Using qualitative analysis, the research question is answered through the experiences shared by faculty participants regarding the nine ALECs at the University of Central Missouri (UCM). As conveyed under the “It’s a Two-Edged Sword” theme in a previous section, the ALECs offer advantages and disadvantages, or positives and negatives, simultaneously. Thus, the researcher can say that faculty participants had mixed reviews about the ALECs. Also, certain faculty participants who chose to teach in

an ALEC had more positive things to say about the ALECs than those faculty participants who had no choice in the matter.

Most of the faculty participants chose to teach in an ALEC because of the desire to improve their instructional abilities. The availability of space to do just that is a positive aspect of the ALEC experience. Erin stated:

“I’ve always kind of felt that tug of war between I have to explain it, but we need to practice it too, and there’s really no end to how much practice the students need. So, this has been kind of a soul searching for my teaching style that I’ve been trying to evolve and trying to improve ever since I’ve started. And I feel like I just hit the tip of the iceberg and that there’s so much more I can do.”

Many other faculty participants conveyed that the ALECs pushed the limits of their instructional capabilities which was exactly what was sought after.

Next, some faculty participants recognized that today’s college students enjoy learning using technology. Thus, the technology available in the ALECs was also a positive aspect. Violet said:

“I’m constantly on the lookout for better ways to do things. And I notice more and more that students are super engaged with screens and not very engaged with the traditional lecture format. And so, I’m trying to move away from lecture format whenever possible. So, that’s what motivated me to go there. What can this thing do that might help me to move farther away from the person in front showing a PowerPoint?”

The multiple screens made it easier for students to see what teachers were presenting but also changed the dynamic of the classroom. Veronika acknowledged, “So it took me a

little bit of time to get used to the fact that students might not be watching me. They might be watching over here where the screen is at.” However, Veronika and Mercedes both remarked on what they were able to do in an ALEC as a result of the unfamiliar layout. Mercedes said, “Because of the way it's set up, there isn't a 100% front of the classroom and back of the classroom. I walk around more than I do in a traditionally set up classroom.” This mobility allowed faculty participants “to be a part instead of apart from the class” as Violet described it.

Yet another positive aspect of the ALEC experience stemmed from the furniture available which is designed for flexibility. Siena explained:

“I got excited because number one, the desk setup. I mean, it was awesome!

When I saw those groups and those desks, I was just like, ‘Yes, please. Thank goodness.’ ...this is gonna make my teaching so much better. So, yeah, dare I say, that was the first thing that got me really excited.”

With flexible seating, Cheyenne said, “In 30 seconds we can move tables, move chairs, and we're working in groups. We lose no time that way.” Mercedes also thought the technology would not even need to be changed from a traditional classroom. “If it was a room with just a projector and that furniture, I would still want to be in that room....it's easier to facilitate those group projects than when I was in the traditional classroom where you couldn't move.”

The next positive aspect that faculty appreciated relates to the impact on student learning due to real-world experiences students receive from active learning activities.

Ruth said:

“I'm always excited to kind of do new things. I think maybe that might be my background in working in the industry...It's always quickly moving. And I feel like if we're not, if I wasn't adapting and I wasn't moving forward with my teaching capabilities, then my students wouldn't. So, I felt like it was almost like a necessity for me to go in and at least try it and see what could happen to our program.”

Students can learn differently in an ALEC because the room is supposed to be different from a traditional classroom. Dylan explained:

“To me, what works well for active learning, I think, is just the fact that you have a nontraditional space. It's difficult to tell where the front of the room even is, right? So, to me, then, it begins to break down the power structures of the normal classroom of ‘I'm the professor. I stand in front. You all are seated and subservient and are the receptacles.’”

The last positive aspect pointed out by several faculty participants had to do with the atmosphere of the ALEC. Mercedes said:

“Because you walk in and it just feels more comfortable than a classroom. And I think the carpet has a big thing to do with that because, I mean, you don't have carpet in classrooms. You have carpet in living rooms.”

Kaylee added, “It's kind of their little home away from home in there.” To further depict this point, Veronika compared the ALEC with a non-ALEC space.

“I feel like we're not on top of each other. And the room itself is big. Also, aesthetic so that it's warm and welcoming. There's carpet in there. It has some nice colors. The tables look nice. The chairs look nice. And I know that sounds

kind of silly. But, you know, across the hallway, you've got rooms that still have the tile floor and the old crappy wooden tables...it's pretty sterile in there...just the overall feel of that room, I think is more calming.”

Three of the positive aspects that faculty participants appreciated about the ALECs were the same ones that participants considered negatives as well. First, in introducing active learning to students as a teaching strategy, faculty participants ran into barriers, a negative aspect. Sometimes, faculty participants such as Kaylee dealt with students who were not convinced on the idea of veering away from the traditional lecture. Kaylee explained:

“I'm gonna be kind of honest. And I know this isn't necessarily what they like. But one of the things that I have had a lot of my students tell me is, they don't like it...And most of my students actually prefer lecture which I find to be very strange. But I think, it's because it's what they know. They're still in a generation where they've probably gone through most of their schooling being lectured at. And I also think it's a little bit of laziness because they just want to sit there. They don't want to be up and forced to move around and talk and all that kind of stuff.”

Depending on the ALEC used by faculty participants, furniture also became a negative aspect. For Aubrey, the placement of furniture designed for collaboration was a hindrance.

“What I don't like about the furniture is it has those comfy chairs in the corners with a little table in front of it, looks like in a living room. And in general, I like those if you have class that has a lot of discussions. But that one grouping is right

in front of that little piece of whiteboard that I have left when the projector screen is down. So, I'm kneeling on it a lot. So, that makes it difficult."

Siena also had an issue with the furniture.

"I love the desks for every day. But when we do our presentations, having to move them to make like an audience and someone in the front, there's still not a lot of space in there...[it's] just a shallow room. And so, you kind of feel cramped a little hard to get around."

Another negative aspect was that teaching and learning were interrupted as a result of technology issues. Many faculty participants mentioned their experience with the wireless keyboard and mouse that went with the interactive display. Luke said, "It's a little frustrating, the lack of range for the keyboard and mouse." The short Bluetooth range made it hard for faculty to move the mobile lectern holding the keyboard and mouse around the classroom. For Cheyenne, she could not pass around a functional keyboard and mouse during class.

"Sometimes, I actually pass the keyboard in my class. I pass the keyboard and mouse around to the students. So, that's another active learning tool, I guess, I got that. So, a lot of times, I'll just say, 'Okay, grab the stuff, call up your things, and let's work on it.' So, if they're not in a specific space where the keyboard will register to the monitor, it's hard to type. That's kind of a little annoying."

For Alissia, the ability to share screens took some time for her students to learn.

"I will say a challenge that I kind of faced with it with the freshmen was, I don't know if it just happened to be the group of freshmen that I ended up getting enrolled in my class or what the case was, but they seemed to struggle a lot with

using the technology. And so, I ended up having to spend almost a whole class day of explaining and getting them used to the technology itself.”

Sometimes, the screens could not even be used because they were not functional. Lily stated, “Well, it definitely impacted my ability to complete a cycle of instruction. There will be times that I didn't get through all the information I needed to have them have.”

Lastly, faculty participants who volunteered to teach in an ALEC had more positive things to say than those faculty participants who were assigned to the room. The biggest source of dissatisfaction from faculty participants who did not have a choice was the unexpected element and the ensuing adjustments necessary to continue with the class. Lily explained what happened to her. “I walked in, and it was there.” Lily was referring to how the classroom she had always used was changed to an ALEC between the spring and fall semesters. Lily continued about the new technology she found in the ALEC. “Nobody told us. Nobody asked us what we wanted. Nobody asked us what we needed. We just came in. And they were like, ‘Oh, isn’t this wonderful?’ And I kept saying, ‘No, it’s not wonderful.’” Veronika, a faculty member who teaches in one of the ALECs had a similar experience.

“Well, I have taught in that classroom for several semesters. It’s the largest classroom on the third floor. And typically, the sections that I teach in the fall have at least 20 students in it. And so, that is the classroom I typically get. And it was a bit of a surprise. When I came in for my first day of class with my students, I walked in and it was completely different from what I had known in the previous semester. So, I was not aware that the classroom had been changed over

to an ALEC classroom. There was a little bit of figuring things out that first class period.”

Research Question Two

Research question two is “What are the perceptions of students who have used one or more of the Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri?” Using qualitative analysis, the research question is answered through the experiences shared by student participants regarding four out of the nine ALECs at the University of Central Missouri (UCM). The four ALECs represented were Grinstead 249, James C. Kirkpatrick Library 1268, Lovinger 3170, and Martin 230. As conveyed under the “It’s a Two-Edged Sword” theme in a previous section, the ALECs offer advantages and disadvantages, or positives and negatives, simultaneously. Thus, the researcher can say that student participants had mixed reviews about the ALECs as well. However, the bad reviews, according to the student participants, were not enough to negatively impact student learning.

The student participants appreciated many of the same positive aspects that faculty did in the ALECs. First, the students considered the active learning component as a positive aspect. Students especially enjoyed the collaborative learning piece. Harriet stated:

“I feel like it's easier to retain in a more relaxed setting the information that we were learning. And since it was so interactive and everybody was presenting and talking with everybody, it just stuck with me more than whenever a professor would read off a PowerPoint. And we were supposed to take notes off of it.”

Isla felt that the constant interaction with classmates offered an additional benefit on top of learning course content. She said, “We kind of got more familiar with the people that we were with.”

The students’ statements above regarding the benefits of collaborative learning are incomplete, however, without putting these statements in context with the use of the technology and furniture available in the ALECs. The technology and furniture are two additional positive aspects according to the students. Bobbie said, “For me, it was really easy to have group conversations. So, if we had a question, it was super easy to reach out to one of them.” Students could easily speak to one another because desks and chairs can be reconfigured as needed. Typically, the desks and chairs are together in groups of four or five. Bobbie continued with what she appreciated about the ALEC. “With the screens, if we didn't see anything, you could make it bigger. You can move different screens around. So, I think overall, it was, like, it was super helpful to have multiple groups. And then also, multiple screens.” Garfield concurred saying:

“The screens thing was really big for me. It was really easy to see, like, read maybe graphs that were really small or something like that. And then, I think the biggest positive to learning was that the professor wanted the class to be a discussion class. And so, class discussions flew or float almost seamlessly because of the way the room is set up and because of the type of classroom it was. If you wanted to bring up some data in an argument, you could just hop on your phone or hop on your computer and just look it up. And bam, there's some evidence for your argument [referring to the ability to share one’s screen to everybody in the room].”

The positive aspects described above--collaborative learning, furniture, and technology--also had the tendency to be hindrances, or negative aspects, as well. Starting with collaborative learning, student participants shared that it was awkward, especially at the beginning of the semester. Isla recalled her experience.

“For us in the beginning, everyone was really quiet because nobody really wanted to interact towards the beginning of the semester. We've gotten a lot better about, like, we're pretty much all friends with the people that we sit with now.”

However, student participants did not always appreciate the active learning piece in an active learning engagement classroom. Bobbie said, “When I first saw it, at first, I was like, crap, we actually had to be involved. When we first walked in, it was definitely overwhelming.” Garfield agreed:

“Yeah, it was a big change from what I had because I only pretty much had done those lecture-based style classes until last year. And then, I walked in. And it was kind of almost a culture shock. And the forced socialization of having to sit facing other people was something new.”

As for the furniture, Isla pointed out:

“One thing that we discussed about the classroom itself was that it's not very helpful to someone with a physical disability. If someone had a wheelchair, there's no way that they would get through. And my professor explained that if someone were to have a wheelchair, we could have a desk for them. But they would be sitting by themselves. And so, maybe it's a great learning experience for able bodied people, but maybe it doesn't help out a lot for those that are disabled.”

For the typical student, the tables and chairs were also problematic. Opal recounted, “So, all the furniture in the library is movable. You move wrong, your entire desk moves. I know we have people fall out of those chairs.” Opal also thought that the choice in tables was better in some ALECs.

“I prefer the triangular desks that were in the library one. Whereas the desks that are used in Lovinger are the rectangular desks. You're able to circle around the triangular pieces because they create a different shape, whereas the rectangular ones, you can only make one long square. You can see people better when you're able to group into the circle. That's easier to collaborate.”

Next, some student participants mentioned the technology became a negative aspect because of the disruptions to class. Bobbie noted:

“I think it'd be a lot easier if [the professor] had a solid knowledge of how to use all this stuff before we got in there, which I know, some of it is unforeseen. Like, when the mouse wouldn't work, the keyboard wouldn't work, or you can't touch the screen to type. But I think just overall, if the professor knew, and then he could show us more, I think it would move more fluidly.”

Garfield, another student, offered a suggestion.

“Before they give these professors that classroom for the semester, run them through a crash course or better than a crash course, because I think they probably do get a crash course. But some sort of walk them through and get them comfortable using it over the summer, over the semester before, putting in some extra time to make sure that the professor's comfortable. That way, they can teach us and make us comfortable with what we're doing and how to use that

technology. Because that was a big thing that would stall lectures was if something wouldn't work and we were trying to help, and the professor was trying to do his thing. And it would kind of, if there were any difficulties, it took a hot second to try and figure out.”

Despite all the difficulties with the ALECs, the student participants indicated the issues were not severe enough to negatively impact student learning. Harriet's response to the question about how what she did not like about the ALEC impact her learning was “It didn't really affect me that much.” In fact, for Opal, she saw the disruption as part of everyday life. “We're taught heavily [by the professors] to roll with it. So, it's typically a you never know kind of situation.” The positive aspects of the ALEC experience clearly outweighed the negative aspects.

Research Question Three

Research question three is “What can the University of Central Missouri do to encourage faculty utilization of one or more of the Active Learning Engagement Classrooms (ALECs)?” Using qualitative analysis, the research question is answered through the experiences shared by faculty, staff, and student participants regarding nine ALECs at the University of Central Missouri (UCM). As conveyed under the “It's the Field of Dreams” theme in a previous section, the ALECs were designed and deployed with the hope that faculty would use them as much as possible. However, many participants shared factors that discouraged the use of the ALECs. Also, from the “It's News to Me” theme, the researcher found that the ALECs were not necessarily anything that faculty paid attention to for various reasons. Fortunately, based on responses from faculty participants, especially those who were assigned to teach in the ALECs and those

who have not used any of the ALECs, there were a few factors that may encourage faculty to utilize the ALECs. These factors are faculty involvement, relevant training, publicity, and class scheduling.

The first factor is to ensure that faculty members who will most likely be utilizing the new ALEC are included during the development process. Kelly, a college dean, shared a successful development experience for one of the ALECs.

“What worked well was bringing faculty together with an individual who really understood the faculty side, the instructional side, and technology side. Using a faculty member who had a vast amount of experience in online instruction and active learning instruction to sit and help guide the conversation with faculty was very useful.”

Without this person playing the role that Kelly spoke of, Emily, another administrator, described what happened in her college’s ALEC projects.

“There was a disconnect in tech communication and education communication. There are the different perspectives coming in of what technology feels is appropriate and feasible versus what pedagogy says is appropriate and feasible...Trying to please both sides is probably a greater frustration than any of the rest of it.”

The second factor to ensure utilization of the ALECs is to address the disconnect between “tech communication and education communication.” Kit, a faculty member who taught in one of the ALECs, explained the disconnect.

“I think right now, it’s still a novel idea. I mean, I feel like it's still an idea. As we are creating these spaces, we also have to be mindful that faculty will need

training and support, not just in what buttons to push, but how to redesign their curriculum to meet the needs of an active learning environment.”

The solution to the disconnect, then, is to provide relevant training. This solution can work for both new ALECs and existing ALECs.

The most common area where faculty participants needed the most training was in the area of using the technology typically found in an ALEC. An ALEC at UCM may have one more of the following: an interactive display, multiple screens throughout the room, hardware/software for sharing screens from mobile devices (laptop, tablet, or smartphone), video cameras, speakers, microphones, and a control panel to handle the electronics in the room. This point about having multiple technologies in an ALEC is important to note. Consider what Garfield, a student, said about his observation of faculty in a traditional classroom.

“They can’t even figure out how to turn the sound on or get the projector to work.

So, I think that you definitely need to have more of a tech savviness to definitely run these screens with computers and getting everything to link up.”

Emily, an administrator, hinted that the key to faculty making use of the various ALECs is indeed to offer resources such as training to ensure faculty are aware of the ALECs’ capabilities. Emily said:

“We’ll continue to offer faculty training. I think moving forward, we’ll probably see instructors using it more as an active learning space and less as a more traditional classroom environment. I think initially, instructors were concerned that they had to leave the furniture in the layout that left it, and they were afraid to move it around. I think we’re finally at a point where instructors feel comfortable

to actually move the furniture around and not being in this one particular layout.

Personally, I think we'll start seeing more and better use of those classrooms than we have. It's taking time to get used to it, to learn the equipment in it, to feel comfortable in moving it."

Emily touched on the third factor to increase utilization--publicize the ALECs availability and capabilities. As Emily said, some faculty thought they had to leave the furniture configuration alone. However, the furniture was designed to be easily moved to accommodate whatever activity the teacher had in mind. This suggests that even faculty who already utilize the ALECs may not be using the room's full capabilities. This was why Sarah, a staff member who helps with faculty questions regarding use of the ALECs, said:

"These tools are there, and the potential is great. But they don't know how to use them, or they don't even know what this room can do...For all intents and purposes, it's a room with four presentation screens, and that's not the intention for the room. And that's how it's used."

A lot of the unknown about the ALECs can certainly be addressed by training. Another method is to use different modes to disseminate information about ALECs, especially when faculty members are most receptive. Emily, an administrator, explained how her college told faculty members about the ALECs. "I know at the beginning of the academic year, we have our first college meeting. I know there were announcements [about the ALECs] made for our faculty and stakeholders who attend those meetings." Emily continued later on in the interview:

“If faculty think that, ‘Well, I never teach in that room,’ then they’re not listening anyway, you know what I mean? If they don’t think it impacts them personally, they’re probably not interested. Now, if they’re told ‘You’ll be teaching in there this semester,’ then, yes, it’s going to be, ‘Tell me more. What’s going on? What can I do?’ But if they don’t have that personal connection to that space, I don’t know that they’re concerned about that space.”

In addition to college meetings, other college deans mentioned creating videos to share with faculty and to use for virtual tours, writing a story about the ALECs in the college’s quarterly newsletter, and holding ribbon cutting ceremonies for NEW ALEC spaces.

The lack of publicity about the ALECs makes these spaces known only to people who have worked on the rooms or to faculty who are always on the lookout for opportunities to teach in a different way. As mentioned in the “It’s News to Me” theme in a previous section, for many of the faculty participants who have not used any of the ALECs, it was news to them about what an active learning engagement classroom was as defined in this research study. For example, when the researcher asked Jerry what he knew about the ALEC, he said, “I can cipher it. But would you refresh my memory?” Jerry’s statement suggested he was not clear on what classrooms were considered ALECs. Another faculty participant, Gladys, who has not used any of the ALECs either, described her experience in a smart classroom in her building. She replied, “I’m not understanding,” after the researcher asked which ALEC she was referring to as a smart classroom.

By publicizing the ALECs for greater awareness, the fourth factor for increasing utilization is by communicating with those responsible for scheduling classes that the

ALECs are available for use. When asked about the approval or sign-up process, the participants' responses revealed that there is an unofficial classroom assignment protocol. This situation was further described by Dana, a college dean.

“When you're accustomed to having certain classrooms assigned to certain disciplines, there's sort of a sense of ownership. The fact is that in a public university, no one owns any classroom. The Provost owns all of the classrooms in general in the college. The dean has supervision over all classrooms in the college.”

Additionally, Adam, a faculty member who has not used any of the ALECs, said, “When you think about scheduling classes, you just know that these are the ones we’re using. These [referring to the ALECs] are not advertised widely...And so, we don’t really think about expanding.” This means that if faculty members would like to utilize an ALEC outside of their schools or colleges, faculty members may ask for permission to do so. The unbounded use of ALECs by college or school, in turn, has the potential to increase the utilization of ALECs.

Research Question Four

Research question four is “What can the University of Central Missouri do to support faculty transition from traditional lecturing to active learning using technology?” Using qualitative analysis, the research question is answered through the experiences shared by faculty, staff, and student participants regarding nine ALECs at the University of Central Missouri (UCM). As conveyed under the “It’s More than Just the Bells and Whistles” theme in a previous section, the ALECs require more than making more technologies and flexible furniture available. A web of support needs to be in place as

faculty transition from traditional lecturing to active learning using technology. The web of support includes training, technical support, a user guide, and community support.

First, many participants felt that faculty training on how to use the technologies available in the ALECs was lacking, something that the researcher established when answering research question three in the previous section. “There’s been one training,” explained Sarah, a staff member who helps with faculty and student questions about the ALECs. “And it was during the middle of the day when faculty were teaching in other rooms. So, they weren’t available to go see.” Even student participants noticed that faculty may need additional training on how to use ALEC technology. Garfield explained:

“I think the biggest thing is just going to be, especially moving forward with technology continually evolving, is keeping those classrooms updated and making sure that the faculty is getting good instruction on how to use it properly. That's, I think, the biggest thing would be teaching professors how to teach with the technology instead of just giving them a crash course and saying, ‘Good luck!’ Sitting down, maybe during summer meetings or something and actually showing them how to properly teach with the technology that they're given.”

From what participants like Sarah and Garfield said regarding training, the support UCM needs to provide as part of the web of support should be timely and provided at convenient times.

In addition to making it easier for faculty to attend or receive training, Annabelle had another suggestion.

“I think that training is important. To me, there are two prongs. There is the technology side of it. But then, there's also the side of using engaging activities. Somebody could say, ‘Well, they could go in and do their PowerPoint and show it on all four screens in an ALEC room.’ But I don't consider that necessarily engaged instruction.”

Emily, an administrator, agreed.

“I really think faculty training needs to be higher on the priority list. I think that if we could prevent some of the faculty frustration, the equipment and the furniture is used more appropriately. I think if we provide faculty with more training on not just how to push the buttons but how to incorporate all this new equipment into their instructional practices. Rather than just display something on each monitor, how do we get the students to actively engage in the activities and the tasks that we want them to? And then, just use this equipment to implement what the student wants to do or what the instructor wants to accomplish.”

Second, the web of support should include technical support during all times when classes are in session. Many faculty participants had classes between 8 a.m. and 5 p.m. Therefore, technical support was typically immediately available from many places.

Jordan from the Office of Technology explained the process.

“Typically, how it works is the user in the room calls the Technology Support Center in an emergency ticket to say, ‘My room is down. I need help right now.’ Then, the dedicated techs are sent on an emergency basis. They are to drop everything and go immediately.”

Additionally, faculty in need of technical assistance could also contact fellow faculty or staff members who might be able to help if they happen to know anything about the ALEC. Sarah, a faculty member explained how she provided support.

“I constantly get asked, ‘How do I get this screen to turn on?’ And a lot of them just use the one screen. And it’s basically, they use it like a regular projector instead of using the room to its potential, in which case the rooms are not being used the way they should be.”

However, some faculty members hold classes late in the afternoon or at night. Veronika explained:

“The challenge for me was finding the time to get that support and then also the timing of my class. Because I would guess that if I had asked someone like, ‘Hey, can you come in and assist me in here or show he how to do it?’ they would have been more than happy to. But because my class was in the afternoon. And it was at the end of the workday that made it more challenging. And for me, I felt bad asking someone to come in at the end of the workday to do that.”

Third, the web of support should include a user guide. Most of the faculty and student participants mentioned that their ALECs did not have a user guide, instruction manual, or cheat sheets of any kind. As a result, faculty and students were left on their own to figure out how to use the technology if technical support was not immediately available to assist. The suggestions from faculty and student participants on what to include in the user guide were consistent. Kit’s response to the user guide interview question summed up what many participants had to say.

“Definitely how to reserve the space. Definitely how to set up training to utilize the technology, so how to use it, on and off, those sorts of things. How many students can be enrolled? How many students would be ideal and would ideally work best in the space? Opportunities for further training about active learning, how to sort of incorporate some facilitation strategies into your teaching so there’s a way that we get students together and how we get them to collaborate.”

In addition to a user guide, something that can be easily made available right away in all the ALECs is a cheat sheet. Mason from the Office of Technology said:

“We’re trying to get this off the ground. So, what we want in every room is a one-sheet. It is laminated, attached to a desk with a document camera and a mount for an iPad or phone and a PC a wireless mouse, keyboard. And on that sheet, it tells you how to use the room. And it’s simple. There are eight simple steps on how to use the room. That is what we would put into each room that has those things. The problem is, the more complex the room, the harder it is to do a one-sheet.”

A final component of the web of support is a community. Cari, a program coordinator, said:

“We know how we want to use the technology in our brains, but we can't get it to function that way. That's where we need help. I feel like we've got the plan. It's getting the plan and the technology to work together is where we are not having luck.”

This help for ideas that Cari spoke of can come from other educators. Luke, who teaches in one of the ALECs, said, “I went and watched another faculty member and observed how he had control, classroom management.” Another faculty member who has taught in

two different ALECs, looked to a colleague for support as well. “He and I would commiserate, ‘Hey, how are you using this? I’m not sure!’ We wish that we could have had something where we talked about things.” Fortunately, a new group that was formed during the fall semester of 2020 does exist at the university where participants can discuss topics related to active learning. This group is called the Community of Practice--Active Learning, or CoPAL. Annabelle, a faculty member who has taught in two different ALECs, described the group.

“It's not necessarily in the context of the ALEC room. It's just the context of active learning. And it's taken a couple of different avenues. I attended, I think, I've gone to three of them this year. And they've all been very good. I really like hearing what people across the university are doing. But it was all things that you really didn't need an official ALEC room to do.”

Many faculty participants felt that having others to collaborate with or share ideas about active learning would be a great way to support what these faculty members do in the ALECs.

Connection to Conceptual/Theoretical Frameworks

The two conceptual/theoretical frameworks that guided this study were Adult Learning Theory and Transformative Learning Theory. Considering the themes that emerged from the data and the answers to the four research questions, the frameworks are most relevant to the training that faculty participants need. Any training developed and provided should account for the six assumptions of andragogy, allow for self-directed learning, and recognize the role of transformative learning to bring about lasting change in behavior.

The six assumptions of andragogy are self-directedness, experience, readiness to learn, difference in time perspective, internal motivation, and needing to know why something should be learned (Merriam & Bierema, 2014). The training that faculty at the University of Central Missouri requires should be two-pronged. One prong addresses the technology aspect. In order to use the technologies available in the various ALECs, users must know how the equipment works. The other prong addresses the pedagogy aspect. Faculty participants come from different experiences and backgrounds when it comes to teaching in general and active learning strategies. In the case of utilizing the ALECs, there is also opportunity to deploy active learning strategies using technology.

Most of the faculty participants recognized the need for them to go through training so that they can be more versed in utilizing not only the technologies available in the ALECs but also activities that encourage active learning using technology. Such recognition addresses the six assumptions of andragogy. Additionally, developers and providers of training should be mindful that the instructors of adult learners, according to Chen (2014), do not have the role of gatekeepers of knowledge but rather are facilitators and collaborators. In other words, the instructors of adult learners, who are, in this case, faculty members, should be a model for what active learning could look like in the classroom where learners are self-directed.

In allowing for self-directed learning, three items must be addressed (Kitchenham, 2008). First, adult learners need to know the best way to go about learning the information. Faculty participants listed various ways they could learn technology and pedagogy--in-person training sessions, cheat sheets, text-based user manuals, and online videos. Second, adult learners should determine when and where learning should take

place. Many faculty participants indicated they would like the training to be more flexible to accommodate busy schedules. Lastly, adult learners should know why they need to learn the information in the first place. This last factor is tricky since the faculty members who will take advantage of the training can potentially come from different interests and different needs. These faculty members may be those who are always on the lookout for improving their instruction in the ALEC, those who were assigned to the ALEC, and those who have yet to use the ALEC or a classroom like one. To understand what brings about lasting change, faculty and staff responsible for creating training for faculty members can look to Mezirow's (1981) transformative learning theory for insight.

Faculty at the University of Central Missouri (UCM), as adult learners, will have to transform their ways of thinking about what their role as educators in the classroom can be and about the nature of learning. Faculty participants in the study revealed that instruction is different in an ALEC. Dylan, a faculty member who has taught in one of the ALECs, explained:

“To me, what works well for active learning, I think, is just the fact that you have a nontraditional space. It's difficult to tell where the front of the room even is, right? So, to me, then, it begins to break down the power structures of the normal classroom of ‘I'm the professor. I stand in front. You all are seated and subservient and are the receptacles.’”

The switch from a teacher-centered classroom to a learner-centered classroom will require an instructor to step aside as the sole source of knowledge and expertise in the classroom (Cattaneo, 2017; Morrison, 2014). This is an uncomfortable task for many instructors, as doing so would make them feel less in control over the content as well as

the amount of information that is supposed to be covered (Bonwell & Eison, 1991). Evidence of transformative learning among faculty in higher education will be from “significant and irreversible changes in the way a person experiences, conceptualizes, and interacts with the world” (Hoggan, 2016, p. 71). From the data, faculty participants who chose to teach in the ALECs described stable changes in behavior when it came to reformations of teaching practices and philosophy. For example, Veronika, a faculty member who teaches in one of the ALECs, acknowledged, “So it took me a little bit of time to get used to the fact that students might not be watching me. They might be watching over here where the screen is at.” Veronika used this change in the teacher-student dynamic to be more a part of the class. “I could get up and walk around the room more and wasn’t tied so much to my one spot.” Departures from the traditional lecture, traditional classroom dynamic, and traditional classroom equipment (typically a projector and a screen at UCM) might require other faculty members who have yet to fully utilize the ALECs’ potential and who have yet to teach in an ALEC to go through the same transformative learning experience as those faculty members who are actively seeking active learning using technology strategies.

Recommendations

According to most of the 44 faculty, staff, and student participants in this study, the nine Active Learning Engagement Classrooms (ALECs) at the University of Central Missouri has been a welcome addition. As set forth by the college deans, these ALECs have a goal of maximum utilization by faculty and students because of the investment in the rooms to create spaces that allow for different types of interactions among faculty and students. However, maximum utilization is only possible if faculty and students can see

themselves being successful in an ALEC through the existence of a web support. The researcher provides three recommendations based on the model developed from the qualitative data analysis (see Figure M19). Phase One recommendations are those activities that can be implemented within three months. The Phase Two recommendation will take a little longer to complete, perhaps up to a year or more. The Phase Three recommendation is one that is indefinite due to the nature of what needs to happen.

Figure M19. This ALEC Utilization Model shows that there are three types of support--administrative, technology, and pedagogy--necessary to sustain the

successful use of active learning engagement classrooms by faculty and students in higher education. Copyright 2020 by Elmer Ragus.

Phase One Recommendations

Development process. For future developments of ALECs, ensure that all relevant stakeholders, especially faculty, are included in the process. Faculty members will be the ones using the ALECs so faculty input is an important component. Otherwise, equipment in the ALECs will end up not getting used. Also, the university will be less likely to update the wrong room because there will be many viewpoints. For example, three large classrooms were updated. This meant, however, that faculty members who typically teach in these updated classrooms will have to continue teaching in there even though they might not be interested in doing so. Another possibility, as suggested by one participant, is to include students in the development process. The students will bring their own perspectives since they will be using the ALECs along with the faculty members. This might help determine, for instance, if future ALECs should not be Bring Your Own Device, or BYOD. Many participants in the study indicated that students were hesitant or unable to use their smartphones in the ALECs even when the multiple screens were designed to be used by students for that purpose.

Sign-up process. There are two parts to this recommendation. First, implement a prioritization process so that most, if not all, faculty members who want to use the ALECs for active learning using technology have an opportunity before other faculty members who just get assigned to the rooms but do not necessarily want to use the room as an active learning space. A few participants indicated that they were teaching in the ALEC because it was the only room that would work for the number of students. Perhaps these faculty members should be scheduled in non-ALEC spaces outside of these faculty

members' colleges or schools. This leads to the second part of the recommendation which is to have the colleges come to an agreement about classroom spaces such as ALECs not necessarily being exclusive to a college or school.

Training. Many participants indicated that one piece of support that the University of Central Missouri has not provided is training when it came to the ALECs. Some training was provided but was limited or lacking. For example, the training provided teaches what the technology in the ALECs can do. However, there is no training on how to teach with the technology. The recommendation is to provide training that is flexible and relevant to users. First, many participants indicated that training was missed because of scheduling conflicts. To address the scheduling conflict issue, allow the trainings to be asynchronous by making a video recording available. Videos are useful because many participants indicated that even though they may have made it to the training, there were certain things they forget how to do. With videos, faculty can simply watch videos as necessary. Second, training should be relevant to address the needs of various users. The recommendation is to use the Innovation Adoption Lifecycle to identify where faculty members are so that training can be tailored to meet training needs. The Innovation Adoption Lifecycle identified five categories of technology adopters-- innovators, early adopters, early majority, late majority, and laggards (Rogers, 2003).

Community of Practice-Active Learning (CoPAL). The Community of Practice-Active Learning started in the fall semester of 2019. The intent was for faculty and other interested parties to get together once a month to talk about active learning topics not necessarily in the context of the ALECs. During the 2019-20 academic year, the group met only three times. The recommendation is to be more consistent in monthly

meetings and build up the networking opportunities for attendees. A few participants indicated that one thing they wish they had more of was somebody to go over ideas or to help with ideas in active learning. Since CoPAL attendees represent faculty members from all over the university, this presents an opportunity to learn from one another.

Publicity. The recommendation is to publicize the ALECs more by using the various methods that faculty members and the university community at large can be exposed to the information on a regular basis. Some ideas are to feature stories about various aspects of the ALECs, classes held in the ALECs, faculty members who teach in the ALECs, student testimonials, student projects, and active learning in general. These stories can be shared via the UCM Daily (daily information email sent to faculty and staff about news and events on- and off-campus), posters, press releases, other emails, social media, UCM website, college and school meetings, commercials, and advertisements.

Data collection. To gain insight on faculty and student perceptions and impact on student learning, collect relevant data. Participants in the role of administrator said that the university has not collected data yet because many of the ALECs are very new. Six of the nine ALECs were completed during the 2019-2020 academic year.

Step-by-step instructions. A few participants mentioned that the ALECs had simple instructions on how to use certain equipment. The researcher, when visiting the classrooms, saw only one ALEC that had instructions posted on the wall. Instructions in other ALECs were either nonexistent or were on sticky notes. The recommendation is to include a one sheet, or cheat sheet, so that users can easily do things as basic as turning on the screens. Another recommendation is to provide more specific documentation for

each ALEC so that users can refer to them as needed. This documentation can be a PDF so that users can print as necessary.

Online resources. To allow for greater visibility and to support stakeholders of the various ALECs, create a website or add web pages to the University of Central Missouri's website to include resources and other news about the ALECs on campus. These resources will include training materials, training videos, ALEC equipment documentation, and active learning engagement ideas. Additionally, the website or web pages can be where stakeholders go to find training dates, news about the ALECs, and contact information of individuals interested parties may contact for questions, collaboration, tours, and ALEC observations.

Phase Two Recommendation

The Phase Two recommendation is closely related to what will be created under "Online resources" in the previous section. The content for the online resources, in turn, will be items created for training as also explained in the previous section. The Phase Two recommendation is to create a mobile app that users of ALECs, whether they are faculty, staff, or students, may use as a user guide. A mobile app has the potential to address the gap in training at the University of Central Missouri because this app will be flexible, scalable, and user-friendly. Users are able to view the mobile app's content in their own time and the mobile app can grow as the number of ALECs expand on campus, and many users are accustomed to using their smartphones so the user interface can be designed to be user-friendly.

In a study by Liu, Lobschat, Verhoef, and Zhao (2019), the authors found that consumers interacted more, bought items more frequently, and spent more time in a

mobile app compared to a mobile website with the same information. Also, according to Deshdeep (2020), there are numerous advantages to mobile apps:

1. Can be personalized
2. Use to send notifications, adding another communication channel to interested parties
3. Take advantage of mobile device features such as cameras.
4. Work even without an internet connection.
5. Add to the University of Central Missouri Brand
6. Can be faster than websites

Another advantage listed by Deshdeep (2020) is that the mobile app can be designed to suit the needs of the University of Central Missouri. For example, a few participants suggested ideas that would make the mobile app or user guide useful. One idea was to provide a way to do a search. Therefore, if a user was in the ALEC at James C.

Kirkpatrick Library 1268, the user can type in a question such as, “How do I turn on the screens in 1268?” Another idea was to have a way for relevant videos or other resources to appear based on the ALEC. For example, the interactive display in Lovinger 3170 can have a QR code that can be scanned with the app which will then pull up a video to show the user how to get started.

Lastly, this mobile app/user guide is a big undertaking. This project could provide an opportunity for collaboration among various academic units and university offices.

Also, certain disciplines could make it a project or assignment for students. The following is a list of specific disciplines that can help with the project:

1. Computer Science, Computer Information Systems, and Information Technology: to help with design and development of mobile app
2. Education: to help with creating “two-pronged” training in technology and pedagogy
3. Graphic Arts, Graphic Design, and Digital Media Production: to help with design aspect of mobile app and other assets
4. Marketing/Public Relations: to help with branding and promotion
5. Other Subject Matter Experts: to help with content if it deals with specific disciplines

Phase Three Recommendation

The Phase Three recommendation is to evaluate the way ALEC projects are funded. Currently, the way ALECs are created contribute to the silo effect, creating ALECs that are very different from each other. One faculty participant mentioned that it was not an easy transition to go from one ALEC to another ALEC because the capabilities were not the same. The silo effect also has a way of wasting funds. As one participant indicated, if an ALEC already exists that can address the needs of faculty members from another college, then there is no reason to create another ALEC. Lastly, another reason why some ALECs may be different from other ALECs on campus is because the lack of funding can be a roadblock. For colleges or academic units that have the money, they can add many features to their ALECs. For colleges or academic units that do not have much money or rely on extra funding like the Title III grant, they may not be able to install everything that is typically found in the ALEC. For example, two ALECs that became available for use during the spring semester of 2020 have only one

interactive display with no additional screens. One participant summed up what the University of Central Missouri should consider when it comes to creating more ALECs in the future.

“It would be much more beneficial from a standpoint of stewardship of university funds because we are in tough budget times. That’s one thing I would really like to see is that we share our resources a little bit better...We need a different budget to look at how we can have a more centralized funding for setup, installation, and support of these rooms.”

This idea falls under the Phase Three Recommendation section because it is uncertain if this can happen and the timeline for completion could be indefinite.

Limitations and Future Research

Limitations to this study include the setting, time constraints, a small number of student participants, and disproportionate representation of the nine ALECs. First, the setting for this study was one university with its own structure, rules, and culture. Replication of this study may yield different results and recommendations. Second, the study had a time constraint as the researcher was working to complete data collection and data analysis before the end of a semester. More time would have allowed for more a more in-depth analysis of the collected data. Also, more time would have addressed the next limitation, which was the small number of student participants compared to the number of faculty and staff participants. Part of the reason was from interruptions to the data collection effort as COVID-19 shut down the university. Perhaps a student survey would have garnered more responses. As for the disproportionate representation of the nine ALECs, a little over 60% of the participants represented experiences with three

ALECs. Given more time, the researcher could have found participants that equally represented each of the nine ALECs.

Several future research opportunities are possible. Among those is the opportunity to find more student participants representing each of the nine ALECs at the university. More student participants will allow for additional examples of positive and negative experiences with the ALECs since not all ALECs have the same features. Another research opportunity is to determine the change in faculty and student perceptions of the ALECs should the university choose to follow one or more of the recommendations in a previous section.

Summary of Qualitative Findings

The qualitative study about faculty, staff, and student participant experiences allowed the researcher to share experiences of the nine active learning engagement classrooms (ALECs) at the University of Central Missouri. Through the data collection and data analysis process, four themes emerged: “It’s the Field of Dreams,” “It’s a Two-Edged Sword,” “It’s More than Just the Bells and Whistles,” and “It’s News to Me.” The researcher also used the collected data to answer four research questions that related to what faculty and student perceptions were of the ALECs, what can be done to encourage faculty use of the ALECs, and what the university can do to support faculty in transitioning from the traditional lecture to active learning strategies using technology. The themes and answers to the research questions allowed the researcher to provide recommendations, the most significant of which was the provision of relevant, timely, and flexible faculty training. Lastly, limitations and future research opportunities were

briefly described to allow other practitioners to look for transferability rather than generalizability.

Vita

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Ragus has experience in the graphic communication industry along with an academic background in economics, business administration, marketing, information technology, educational technology, and educational leadership. Yes, he enjoys learning as much as he loves to teach. He is always interested in learning new techniques in Photoshop and Illustrator, in augmenting proficiency in web design and development, and in staying creative. Additionally, his research interests include active learning in higher education, adult learning theories, and online course design.