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## Exploring the Experiences and Needs of Faculty When Implementing Active Learning at a Public Southeastern Regional University: A Mixed-Methods Approach

Michael Lampe

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EXPLORING THE EXPERIENCES AND NEEDS OF FACULTY WHEN IMPLEMENTING ACTIVE  
LEARNING AT A PUBLIC SOUTHEASTERN REGIONAL UNIVERSITY: A MIXED-METHODS  
APPROACH

by

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## DEDICATION

This dissertation is dedicated to my father who passed away the academic year I was expecting to graduate. Regardless of what life events were taking place, a phone call without his reminder about finishing my Doctorate was rare. I finished it Dad! See you on the other side.

## ACKNOWLEDGEMENTS

I would like to thank everyone who made this study possible including the administrators and participants who were willing to take time out of their busy schedule to provide feedback. I would also like to thank Dr. Grant, Dr. Ari, and the rest of the dissertation committee who provided valuable input to ensure I completed the dissertation in a way that would make a difference in the field. I lastly want to thank my family and my fiancé Laura who never hesitated in giving me motivation and support during the challenging process.

## ABSTRACT

The purpose of this action research was to identify participant experiences and needs of faculty when teaching in the active learning classrooms at a public regional southeastern university. This study aimed to determine what were the experiences of faculty members who have taught in the active learning classrooms, what were the experiences of students who have taken a course in the active learning classrooms, and what are the faculty development, classroom technology, and technical support needs of faculty members who have taught in such classrooms. With the five-year Federal grant cycle ending in 2019, the university needs to create a formal process to train faculty members in teaching active learning strategies and preparing them to utilize the active learning classrooms built. Such activities and research being done at this institution is consistent with other institutions reporting on how active learning classrooms were constructed and how they created faculty development programs for appropriate active learning instruction in active learning classrooms.

To answer the research questions, explanatory sequential mixed methods were executed that included sending a quantitative survey and conducting qualitative focus groups with participants chosen through purposive sampling. The results of this study indicated overall agreement in the active learning strategies being implemented, the technology experiences within the active learning classrooms, and overall experiences. For strategies implemented, faculty and students both agreed that more collaborative activities were being implemented while faculty struggled to implement independent-

based active learning activities and traditional assessment strategies. While participants felt there was adequate technology support, faculty felt that more troubleshooting training was needed and students felt more hands-on exposure is needed prior to starting classroom activities. Overall, faculty overwhelmingly disagreed that the active learning classroom experience was a waste of time while students were mixed on their active learning classroom experience.

Recommendations given to academic affairs administrators include providing pre-faculty development observation activities to allow perspective participants to see the benefits and challenges of teaching in active learning classrooms, address the individual assessment issues related to academic integrity, and training faculty members on how to implement active learning strategies when in traditional or online course environments. Recommendations given to information technology administrators include utilizing the technology usefulness results as a way to better allocate technology funds, initiate conversations with academic affairs administrators to standardize active learning classrooms that provide basic rudimentary furniture and technology features, and assist in orientating students to the new active learning classrooms by creating technology tutorials.

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## LIST OF ABBREVIATIONS

CAO .....	Chief Academic Officer
CIO .....	Chief Information Officer
PLEAT .....	Physical Learning Environments Assessment Team

## CHAPTER 1

### INTRODUCTION

#### **National Context**

According to EDUCAUSE, the construction active learning classrooms was one of higher education's top 10 strategic technologies for 2017 (Brooks, 2017). Brooks suggested that the experimental work being done today regarding active learning classrooms will transform into a standard for higher education by 2022. An active learning classroom is defined as a learning space that enables learners to get to know each other and engage in dialogue, work on group projects, interact in variety of ways such as collaborative or cooperative learning, and present their work publicly, teach others, or give feedback (Connolly & Lampe, 2016; Friel et al., 2009). Some institutions are documenting and reporting faculty participation, student perceptions, technology features installed, and recommendations for future steps when analyzing the active learning classroom experience (Florman, 2014; Fournier et al., 2014).

Starting in 2003, North Carolina State University started a project that looked at new classroom designs that were different from the traditional lecture classrooms and aimed to enhance student problem-solving, learning attitudes, and course success rates (Alexander et al., 2008; Beichner & Saul, 2003; Park & Choi, 2014). There have been numerous studies that have tested the effectiveness of active learning activities and collaborative technology features associated with the active learning pedagogy (Carr et al., 2015; Waltz et al., 2014). For example, one study reported how students were more

enthusiastic when having more ability to participate in hands-on activities (Exeter et al., 2010). Other researchers reported instructors feeling that there was a lack of motivation and spontaneity when comparing their lecture classes to their active learning classes (Langley & Guzey, 2014; Obenland et al., 2012; Scott & Scott, 2016). Other researchers identified problem-based learning, the use of educational games, and interactive case studies as some of the many strategies that instructors used to implement the active learning pedagogy (Auerbach & Schussler, 2016; Waltz et al., 2014).

Active learning classrooms have been documented as being different than traditional lecture classrooms in terms of the technology and furniture being installed (Bachen et al., 2014; Florman, 2014; Park & Choi, 2014). For example, active learning classrooms were classified for being in-the-round and may have televisions at each table station. These stations would have students facing each other rather than all of the students facing the instructor (Fournier et al., 2014; Painter et al., 2013; Salter et al., 2013). For these reasons, it is not surprising that there would be recommendations calling for faculty support through dedicated staff and scheduled workshops (Dahlstrom, 2015; Florman, 2014). Justification for such recommendations come from faculty needs to “help faculty adapt their courses to this new environment” before and during the semester when they are in the new environment (Fournier et al., 2014; Painter et al., 2013, p. 12).

Considering such literature is asking for support before and during courses that are scheduled in active learning classrooms, this creates a conflict with how the current training and scheduling process works in higher education’s academic affairs. For example, faculty members at some institutions are not required to be inspected on criteria that would ensure they are given priority to teach in a specific classroom (Fournier et al.,

2014; Sallee, 2008). Such criteria often mean going through some sort of faculty development training to understanding the active learning pedagogy and demonstrating proficiency in the technology installed in such classrooms (Bachen et al., 2014; Brooks, 2011; Florman, 2014). This could create some tension with those in academic departments who may have concerns regarding the new classroom design and pedagogy. This also creates some issues with reservation policies for what courses will be taught in what classrooms, adding another filter for the classroom scheduling administrator (Painter et al., 2013; Torres-Ovalle et al., 2014). These issues stated by the various research indicates there is a need for universities that implement active learning classrooms to look at the impact it creates for how faculty members develop instruction and teach in such classrooms.

### **Local Context**

This action research took place at a small regional public institution in the southeastern United States during the 2017-2018 academic school year. The institution serves approximately 6,000 students per year and employs 245 full-time and 222 part-time faculty members. The university is considered one of the top diverse southern regional public institutions in the United States having 20% fewer White students than its flagship public institution (College Factual, 2018). The gender breakdown of the student population includes 54% of students identifying as female and 34% identifying as male. The faculty population consists of 57% White faculty members and 7.8% African American faculty members. 30.6% of the faculty population were labeled “Ethnicity unknown.” 57% of faculty members identified as female while 43% identified as male.

In late 2014, the Vice-Chancellor of Information Technology and Data Services and the Director of Learning Technologies at the university received a Title iii Federal Grant that gave authorization for building active learning classrooms as an effort to increase retention and student engagement. Until Spring Semester of 2019, the Title iii Steering Committee, in which I was a part of in the 2015-2016 academic year, gathered reporting data required by the grant to measure student and faculty perceptions of the active learning classrooms. While analyzing this data through surveys and focus groups, we found that our active learning classrooms allowed students to feel like they built better rapport with the faculty members who taught their courses in active learning classrooms. Students also felt that they paid more attention in class due to the combination of group work and having multiple points of displays showing course content. We also have evidence of faculty members publishing and presenting on their active learning classroom experiences at various academic conferences which provide support of faculty enthusiasm for the project they are participating in (Connolly & Lampe, 2016; Hernandez-Laroche et al., 2015).

My role in completing grant tasks started in February of 2015 in which I was the instructional designer involved in scheduling and designing active learning classrooms that are connected to Title iii funds. I also was involved with selecting and training faculty members to ensure they understood active learning pedagogy and the technology features that were installed in the new classrooms. Through the relationships I built with those involved in the project, conversations regarding the research problem have happened informally about after-grant classroom operations. When this dissertation process started, no post-grant formal procedures were drawn for the active learning



classrooms. In June of 2018, the Director of Learning Technologies as chair of the Title iii Federal Grant Steering Committee announced the Physical Learning Environments Assessment Team (PLEAT) to discuss classroom needs based on the classroom analysis and faculty perceptions.

In the Summer of 2016, the research problem specifically arose when three academic departments outside of the Title iii Steering Committee requested capital funding through one process and technology funding through a separate process for constructing active learning classrooms without any consultation or training from staff members from the Department of Learning Technologies or other Title iii Steering Committee members. Considering both funding avenues were exclusive from each other, any funding requests for active learning classrooms were denied because it was requesting funding for a project that required combining the furniture and technology requests to ensure the funding committees adequately understood what the departments wanted to install.

Along with issues regarding funding streams to enhance classroom activities, the Title iii active learning classrooms also caused some initial conflicts with classroom scheduling procedures. When the first active learning classroom was constructed, the Department of Learning Technologies received permission to restrict any course scheduling of the new classrooms built with Title iii funds unless the request was coming from a faculty member who was already trained in the active learning faculty development program. Occasionally, there was miscommunication that resulted in an unapproved course with an untrained faculty member being scheduled by our Registrar in an active learning classroom during a time that an approved course by a trained faculty

was scheduled by the Department of Learning Technologies to be taught in that classroom.

### **Statement of the Problem**

There was not a formal process in place at the public regional southeastern university to intentionally train faculty members that would ensure appropriate active learning pedagogical strategies implementation in the active learning classrooms after the Title iii Federal Grant project was complete. This problem did not initially exist because the grant steering committee had temporary authority in designing active learning classrooms, requiring faculty members to be trained in the active learning classrooms, and having the authority to schedule courses in these classrooms (Florman, 2014; Torres-Ovalle et al., 2014; White et al., 2016). While the temporary process sought formal advice from faculty members participating in the program, there is a need to ensure PLEAT provides a permanent process to prepare future active learning classrooms based on faculty feedback and prepare faculty for utilizing active learning pedagogical strategies appropriately. During the time this research was taking place, there was no stated definition of what an active learning classroom consisted of at this public regional southeastern university. It was initially understood that, after the last grant funding cycle was complete, the Registrar would once again gain full access to scheduling courses in those designated classrooms with the priority of space in mind rather than which faculty members are adequately trained to teach in the active learning classrooms (Brooks, 2011; Torres-Ovalle et al., 2014). After the completion of this research, the Office of Academic Affairs has directed the instructional designer overseeing the active learning classroom activities that any active learning classrooms not filled by active learning-trained faculty

members will be filled by courses that may or may not have faculty who are trained in active learning pedagogy.

### **Purpose Statement**

The purpose of this action research was to identify participant experiences and needs of faculty when teaching in the active learning classrooms at a public regional southeastern university.

### **Research Questions**

1. What are the experiences of faculty members who have taught in the active learning classrooms?
2. What are the experiences of students who have taken a course in the active learning classrooms?
3. What are the faculty development, classroom technology, and technical support needs of faculty members who have taught in the active learning classrooms?

### **Research Subjectivities and Positionality**

During this research and at the university educational setting, I am considered an outsider in the form of the former Instructional Design Specialist inside the Office of Distance Education housed under the Division of Academic Affairs at the public regional southeastern university exploring the practices and needs of faculty members implementing active learning pedagogy (Herr & Anderson, 2005). The departmental services we provided at Office of Distance Education included instructional design support, faculty development opportunities, sponsoring academic initiatives involving technology tools and pedagogical practices involving teaching online at the university. While my focus at the university shifted into preparing faculty members for teaching

online, I was considered the only instructional designer hired by this study's university during the time of this action research. As of April 2019, I left the university to become a Senior Instructional Designer at a school of pharmacy and pharmaceutical sciences at a large public medical university campus in the Rocky Mountain region.

Before starting my research, my main responsibility as the Instructional Designer was to assist in designing, training, and scheduling active learning faculty participants in the active learning classrooms. However, I have changed roles where I was no longer employed through the Title iii Federal Grant. This meant my responsibilities were to work more as a generalist that did not limit my tasks to be only for Title iii projects. Considering my professional position in improving instructional practices at the university, my role sometimes expanded outside of the online domain to assist the university in analyzing technology use and general faculty development opportunities. The tasks I worked on included supporting our online teaching certification programming, providing instructional assistance for faculty wanting to use university supported tools, and designing modules for the university accessibility training.

Regarding my experiences, expertise, beliefs, and biases of educational technology, I would first like to start with my philosophy of teaching and learning before the technology. This is due to my belief that technology should fit into the context of what academic activity is being done (Friel et al., 2009; Langley & Guzey, 2014). If an instructor decided to utilize technology without proper planning of why it would benefit the instruction, misuse of the technology is more likely to occur. An example of this occurred when leading a grant-required student focus group about their experiences in active learning classrooms. In this focus group, many of the students agreed that there

were times when the faculty member would instruct students to plug their computers into the television displays without proper reasons why that instruction was important.

My teaching and learning beliefs and experiences were influenced by the constructivism learning theory. This concept requires instructional participants to either learn from the experience or from those they are interacting with (Dennick, 2016; Schrader, 2015). Active learning and service-learning could both be considered a pedagogy that fits under the constructivist perspective (Brooks, 2011; Connolly & Lampe, 2016). When I began my career in higher education, my job responsibilities were to build service-learning and community service activities in higher education. During that time, I believed students could not be exposed to the challenges and issues facing their community inside the classroom like they would if they participated in service-learning or community service. Although there seems to be more of a push to apply course concepts to the real world, I believe universities could do more in providing co-curricular activities to help the communities around higher education institutions.

My research paradigm aligns with the pragmatism worldview because it calls for a competition of interpretations regarding what is truth and understanding significance based on actions or situations (Barton, Stephens, & Haslett, 2009; Creswell, 2013; Hammond, 2013). Considering such perspective, I believe action research often aims at research being focused on one's instructional situations or interacting with stakeholders that have some sort of relationship with the researcher (Manfra & Bullock, 2014; Mertler, 2017). Such a view fits with my experiences in higher education where many departments provide evidence as to why they should receive more resources than other departments (Birnbaum & Edelson, 1989).

In this research, participants were faculty members, under the purview of the Office of Academic Affairs, who have responsibilities that are different to those of administrative staff. For this reason, I was acting as an administrative staff outsider in collaboration with insiders (Herr & Anderson, 2005). Considering I was not in a leadership role in either distance education or academic affairs, I had no authority in the actual decision-making that took place when research results were shared. While I was an outsider when the study was conducted, a statement was made to the participants coming from other departments how I conducted the study and analyzed the data to ensure their information was not skewed based on my role at the university.

Considering my professional and personal connections to this project, I needed to accept the possibility that faculty members and university leadership may not feel the need to change the current process when designing new active learning classrooms. Therefore, I plan to be the facilitator of the conversation among the administrator-participants involved rather than being a specific advocate for particular steps needing to be taken based on my interpretation of research results.

## **Definition of Terms**

### **Active Learning**

Active learning is generally defined as pedagogical practices that are student-focused in that students participate in the learning process through meaningful activities and evaluations (Carr et al., 2015; Dilmac, 2016; Lucas et al., 2013). Active learning is also usually associated with activities involved with technology, service-learning, experiential learning, role-playing, and case studies.

### **Active Learning Classroom**

An active learning classroom is defined as a learning space that enables learners to get to know each other and engage in dialogue, work on group projects, interact in variety of ways such as collaborative or cooperative learning, and present their work publicly, teach others, or give feedback (Beichner & Saul, 2003; Friel et al., 2009). Some of the furniture involved included round movable tables and chairs facing students (Fournier et al., 2014). There are usually television displays at multiple spots in the classrooms (Brooks, 2017)

### **Adult Learning Theory**

Adult learning theory, or andragogy, can be defined as providing a learner-centric, constructivist, approach to learning in which the adult learners draw from their own experience to connect old knowledge with new knowledge (Cox, 2015; Gilstrap, 2013)

### **Constructivism**

Constructivism is a learning theory and philosophy in which new knowledge is generated based on prior experiences and ideas from the learner (Applefield et al., 2001;

Dennick, 2016). In the situated learning process, learners can make meaning of the new knowledge they have encountered in the learning environment (Krahenbuhl, 2016).

### **Faculty Development**

Faculty development is intentional programming provided by university staff to instructors in a higher education institution that focus on learning environments, engagement, reflection, analysis, and application (Bachen et al., 2014; Ertmer & Ottenbreit-Leftwich, 2010; Holt et al., 2013; Paige et al., 2015). Such programming is typically centered around adult learning theory that allows instructors to draw from their own experiences to best implement faculty development content (Cox, 2015; Gilstrap, 2013).

### **Pedagogy**

Pedagogy is “the connection between three dimensions: (i) learners and their learning, (ii) teachers and their teaching, and (iii) knowledge in context” (Casey et al., 2017, p. 291).

### **Scheduling**

Scheduling is defined as “time slots to first allow the students to have some flexibility when choosing their courses; secondly to allow lecturers and teachers to carry out other administrative and research activities, and finally, to guarantee a good level of infrastructure utilization” (Torres-Ovalle et al., 2014).

### **Traditional Classroom**

A traditional classroom is defined as a learning space where all students are facing the expert instructor while receiving academic knowledge (Lasry et al., 2013).



## **Training**

Training is defined as “learning by doing, establishing relevancy to specific roles and responsibilities, modeling effective instructional strategies, and providing ongoing support” (Friel et al., 2009, p.300). Faculty development is used interchangeably with training for this dissertation.

## CHAPTER 2

### LITERATURE REVIEW

The purpose of this action research was to identify participant experiences and needs of faculty when teaching in the active learning classrooms at a public regional southeastern university. To best identify these needs, I focused on these three research questions:

1. What are the experiences of faculty members who have taught in the active learning classrooms?
2. What are the experiences of students who have taken a course in the active learning classrooms?
3. What are the faculty development, classroom technology, and technical support needs of faculty members who have taught in the active learning classrooms?

With the various components of understanding what research has been published regarding my topic, I utilized online databases from the Thomas Cooper Library website hosted by the University of South Carolina that included *Academic Search Complete*, *Education Resource Information Center (ERIC)*, and *Education Resource*. All database search inquiry limiters that were selected when searching included availability of full-text, that the article was coming from a scholarly peer-reviewed journal, and that the research was recent. I limited the search to only articles that were published from 2010 to 2020. Any articles or books that were cited before 2010 are considered to come from authors that have created a foundation for the topic or concept being referenced.

When providing my search inquiries, Boolean operators were used when combining the various keywords. The first search inquiry included the keywords “higher education” and “active learning” to ensure the database would not list irrelevant research coming from primary and secondary educational settings. Whenever there were insufficient search results in the various inquiries I conducted, I excluded “higher education” to allow for any active learning research to be displayed about the selected sub-topic keywords. Subsequent searches included the keywords “faculty development,” “training,” “classroom\*,” and “scheduling” in combination with “higher education” and “active learning.” The asterisk after the classroom keyword was to include other possible classroom design, characteristics, and classification studies. When gathering additional journal articles regarding student perceptions of active learning classrooms and pedagogy, the terms “student perceptions” and “student attitudes” were used with the other combinations of keywords used.

As I was selecting relevant articles to be used for my research, I saved them in a Portable Document Format (PDF) to upload into Mendeley Desktop Reference Manager (See figure 2.1). This software allowed me to organize the articles in various folders and metadata representing the relevant keywords that were associated with my research. Aside from the research articles searched in library databases, I selected books from David Christopher Brooks when providing a foundation for active learning research and Robert Birnbaum when providing a foundation for organizational cultures that impact decisions in higher education. Other non-database resources were recommended to me by faculty members guiding me through the process of my dissertation.

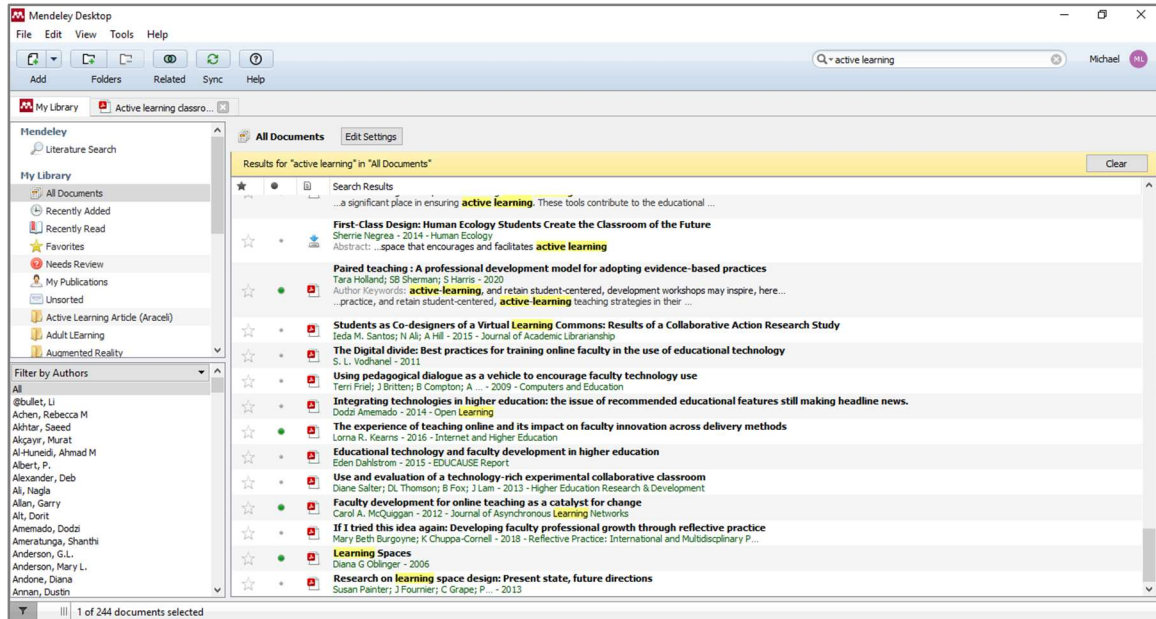


Figure 2.1. Mendeley Desktop Manager allowing for storage of scholarly articles.

Considering the research questions and keywords for the literature search, there are three main guiding sections: (a) active learning classrooms in higher education, (b) impacting instruction through faculty development for active learning classrooms and (c) student experiences and behaviors in active learning classrooms.

### Active Learning Classrooms in Higher Education

To best understand active learning classrooms in higher education, it is important to discover what research has been done to identify such classrooms. In this section, I will provide (a) a definition of active learning in higher education, (b) connecting active learning with constructivism. (c) active learning classroom characteristics and features, (d) reasons for higher education institutions to construct active learning classrooms, (e) assessing active learning classrooms, and (f) challenges when implementing such classrooms.

## Definition of Active Learning in Higher Education

Active learning as a definition can be described as a general pedagogical approach while also identifying specific activities. It can be generally described as a pedagogy that engages learners to be self-motivated, solve real-time problems, and learn in formal and informal authentic ways when interacting with others (Bachen et al., 2014; Burd et al., 2015; Coorey, 2016; Dall’Alba & Bengtsen, 2019). For example, Burd, Pollard, & Hunter (2015) expressed that having peers working with each other to solve problems in the course demonstrates the ability to implement active learning in the classroom. While many of active learning activities are considered collaborative, such activities can also include hands-on independent activities that include independently searching for knowledge using appropriate sources or producing presentations (Niemi, 2002).

More specifically, activities include discussion, project-based work, group work, and cooperative learning (Dilmac, 2016; Nordquist & Laing, 2015). For example, Dilmac (2016) noticed an increase in teacher candidates’ perceptions of museums after asking student groups to work together and experiment while exploring museums. Coorey (2016) specifically indicated that the most effective active learning method is peer learning where students teach other students about course content at the university. When implementing such activities, instructors are more likely to be facilitators moving around the room consulting with the different student groups in the classroom (Cotner et al., 2013; Painter et al., 2013). For example, Nordquist and Laing (2015) suggested that 40% of their researched activities included projects that were accomplished by student teams rather than individuals. Considering teamwork equates to less time for lecturing, Kyu, Mi, Khera, and Getman (2014) suggest instructors should see themselves as facilitators

and not lecturers that may result in encouraging students to be more prepared for class. By doing so, the active learning methods may result in a more independent impact on student performance (Cotner et al., 2013).

### **Connecting Active Learning with Constructivism**

Active learning pedagogical activities that typically occur in higher education often are connected to the learning theory of constructivism (Alt, 2016; Connolly & Lampe, 2016; Dennick, 2016). Constructivism can be defined as any learning experience that allows for collaboration, communication, interaction and knowledge construction that results in the learner making meaning of content being covered in a learning activity (Al-Huneidi & Schreurs, 2012; Du Plessis, 2016; Isik, 2018; Schrader, 2015). For example, Carr, Palmer, and Hagel (2015) indicated that comprehensive measures for active learning should include the constructivist approach of challenging students by requiring them to connect concepts to their own experiences. Hayton (2019) suggested that constructivist learning can come in the form of student-led teaching aiding in comprehension and understanding. This educational philosophy is different from positivist-based objectivism where knowledge is believed to be separate from the learner (Akmoglu, 2018). It is also different from other pedagogical approaches such as Behaviorism where the same intervention is implemented until there is a change in behavior (Driscoll, 2005).

Outside of the general definition, this learning theory can be classified in the categories of cognitive, social, and radical constructivism (Asamoah & Oheneba-Sakyi, 2017). Piaget describes cognitive constructivism as knowledge being constructed in every person's brain while Vygotsky believed through social constructivism that knowledge

was built from collaboration in social contexts. Radical constructivism, as described by von Glaserfeld, asserts that knowledge cannot be constructed far off of a general societal consensus (Applefield et al., 2001; Krahenbuhl, 2016).

When assessing specific activities that are in line with the constructivist framework, Hartle, Baviskar, and Smith (2012) identify four criteria to help educators assess such activities: (1) learners are eliciting prior knowledge, (2) learners' experience cognitive dissonance that leads to the discovery of misconceptions and list comparing, (3) learners can apply new knowledge with feedback, and (4) an opportunity of metacognition takes place where learners reflect on their learning. Along with the criteria, other researchers have identified various characteristics that have included students having the opportunity to construct their own knowledge (Driscoll, 2005; Krahenbuhl, 2016). Students must also be exposed to social interaction among each other as well as among the instructor to construct such knowledge (Cotterill, 2013; Krahenbuhl, 2016). This definition allows for activities such as in-class discussion, project-based work, group work, cooperative learning, and peer learning that are often a part of active learning pedagogy (Dilmac, 2016; Nordquist & Laing, 2015).

### **Active Learning Classroom Characteristics and Features**

With the emergence of networked information technology, there becomes an increased opportunity for diverse instructional strategies that includes active learning (Brown & Gachago, 2013; Nordquist & Laing, 2015). For example, faculty members have seen an improvement in using group-based learning utilizing such network information technology. Such awareness calls for more need to intentionally design and identify learning spaces, whether they are collaborative project meeting spaces or public

interaction workspaces. In higher education classrooms, intentionally designing active learning classrooms have been focused around a framework of space characteristics, specified technology integration, and pedagogy (Harrop & Turpin, 2013; Pates & Sumner, 2016). Designing classrooms through this framework can lead to such classrooms being more authentic, informal, relaxed, and studios (Dall'Alba & Bengtson, 2019).

When applying such a framework, there are specific features that constitute active learning classrooms when applying the active learning pedagogy. Many classrooms have been characterized for having round movable tables with up to nine movable chairs at each table facing each other so those in the classroom can interact with each other (Brooks, 2017; Florman, 2014; Langley & Guzey, 2014; Mercier et al., 2016). This is different than a traditional classroom having the chairs solely facing the direction of the instructor in the front of the classroom. Some classrooms have writable glass tables for creative student engagement while other tables are fixed to accommodate organized and compartmentalized electronic wiring for video ports and power outlets (Burd et al., 2015; Painter et al., 2013).

The installed technology tools that utilize such table setup include document cameras, Blu-ray players, microphones and smartboards (Bachen et al., 2014; Fournier et al., 2014). Many of these tools within the active learning classrooms provide specific teaching enhancements such as the microphone allowing instructors to grab attention to students (Beichner & Saul, 2003). Alexander et al. (2008) describe how a document camera installed at a University of Minnesota active learning classroom allowed for an instructor teaching mechanical engineering to demonstrate a DC motor as students



worked in teams to determine torque and torque curve. In a Biology class, the instructor used the glass markerboards that allowed students to build gene sequencing. Similar classrooms at the same institution allowed for students to look up information and display it on the screens, utilizing the electronic wiring used for video inputs. While some of these technology features, such as power outlets and television displays, have been perceived by students to enhance the ability to learn, other technology tools such as document cameras and blu-ray players were less used by faculty members (Fournier et al., 2014)

### **Reasons Why Higher Education Institutions are Constructing Active Learning Classrooms**

From a revenue-generating perspective, constructing active learning classrooms have become a viable option for institutions to attract new students which can lead to more tuition funds (Park & Choi, 2014; Pusser, 2010). For example, active learning classrooms constructed at SoongSil University in Seoul, South Korea to advance the government's Advancement of College Education aimed at shifting from quantity expansion to quality improvement (Park & Choi, 2014). When reporting on learning space design in higher education, Painter et al. (2013) describe the impact physical campus features have on prospective college students when formulating a first impression of the campus culture (Reynolds, 2007; Strange & Banning, 2001).

Along with attracting new students with the student-centered technology, such classrooms can increase student learning after enrolling into an active learning course that may result in lowering the failure rate and increasing retention (Bachen et al., 2014; Connolly & Lampe, 2016). For example, Bachen, Elrod, and Cutler (2014) argued that

implementing active learning classrooms at the university increased student performance by six points that resulted in increasing the number of students who do not fail in their courses. As enhancing student learning is connected to the environmentally-impacted activities, institutional leadership encourages instructors to utilize the active learning classrooms to increase student engagement considering such classrooms are more student-centered (Cotner et al., 2013; Lasry et al., 2013). For example, Beichner and Saul (2003) describe how SCALE-UP classrooms were designed to increase collaboration and encourage more student-centered instruction. This also becomes more apparent when connecting active learning classrooms with constructivism and the active learning pedagogical strategies that are associated with such learning theory (Krahenbuhl, 2016).

### **Assessing Active Learning Classrooms**

In higher education, many active learning classrooms that are constructed are usually taking the place of traditional lecture-style classrooms (Park & Choi, 2014). When devoting monetary and capital structure resources, it is important to ensure the active learning classrooms are meeting the institutional objectives. This demonstrates two assessment needs: (1) assessing the instruction using active learning pedagogical strategies and (2) the characteristics that define what the active learning classroom looks like at the university.

**Assessing instruction.** Assessing the instruction requires identifying the learners, objectives, methods, and evaluation and ensuring they are congruent with each other (Florman, 2014; Ruder et al., 2018). For example, Connolly and Lampe (2016) suggested that students must have intentional communication to ensure they understand that completing activities through the active learning pedagogy may be different than

attending a traditional lecture class (Salter et al., 2013; Worthen, 2015). When it comes to assessing instruction in active learning classrooms to capture the differences, research often includes asking students and faculty members whether certain activities that fit under the active learning definition were done in the classroom and asking such participants to capture such activities through digital artifacts (Alexander et al., 2008; Connolly & Lampe, 2016; Lumpkin et al., 2015; Obenland et al., 2012). A diverse range of assessment strategies to determine active learning implementation have included distributing pre-test/post-test approaches, measuring instructional impact on overall grades and retention rates, and researchers observing such implementation (Coorey, 2016; Fournier et al., 2014; Frey et al., 2016; Oblinger, 2006).

**Assessing classrooms.** While instruction is the more crucial component to ensure active learning classrooms are being used appropriately, it is also important to understand the impact resources within such classrooms (Park & Choi, 2014). Research that have been published to explore the impacts often indicated whether students or faculty members notice changes in behavior based on the new positioning of technology or furniture (Brooks, 2011; Connolly & Lampe, 2016; Fournier et al., 2014). For example, the University of Minnesota focus group interview protocol included questions that asked if it was a distraction to have students facing each other or having their back to where the instructor was. Other assessments of classrooms have included measuring the usefulness of technology integration and the perceptions of various components that distinguish the active learning classrooms from others at the institution (Brooks, 2011; Gordy et al., 2018).

## **Challenges when Implementing Active Learning Classrooms**

Budgets and infrastructure at universities can highly impact the designs and features of active learning classrooms (Brooks, 2017; Persichitte, 2013). For example, decisions must be made on whether a classroom table should be round or rectangular while figuring out whether video ports should be installed within tables or placed on the walls (Burd et al., 2015; Pates & Sumner, 2016). Considering universities' limited budgets outside of potential grant-funded opportunities, providing flexibility, comfort, technology, staff support, and resources can be costly and difficult to purchase at reasonable prices (Eickholt et al., 2019; Graham, 2012; Painter et al., 2013).

Other challenges to justifying the cost of active learning classrooms include whether there are demonstrated successes as a result of implementing such classrooms and pedagogy. In some cases, active learning classrooms were a factor in the increase of as much as five percentage points in students' grades versus the grades of students who were in traditional classrooms (Cotner et al., 2013; Lasry et al., 2013). However, other studies raise concerns about what successes occur in comparing classroom experiences. For example, students in traditional classrooms accomplish course tasks quicker than students who are in active learning classrooms, which could also lead to more predictable outcomes for ACT scores and student grades (Brooks, 2011; Mercier et al., 2016). Along with student performance, will university administrators help justify the cost due to the reported increased higher-order thinking, student engagement, and employer-valued skills that takes place in these types of spaces (Kyu et al., 2014; Winkelmes et al., 2016)?

Outside of student performance justifying the costs of active learning classrooms, institutions need to identify what specific actions faculty members need to execute to

validate that active learning methods and classroom technology tools were used effectively. For example, what was the percentage of time they lectured in a class period versus implementing an active learning method of using clickers for student engagement (Auerbach & Schussler, 2016; Ebert-May et al., 2011)?

### **Impacting Faculty Instruction Through Faculty Development for Active Learning Classrooms**

It is important to understand research that discusses developing instructors to best prepare them for the new pedagogically enhanced classrooms. In this section, I synthesized research findings in the following topics: (a) faculty perceptions of teaching, technology, and active learning classrooms, (b) adult learning theory guiding curriculum development, (c) faculty development recommendations and results, and (d) challenges to consider when constructing faculty development programs for active learning.

#### **Faculty Perceptions of Teaching, Technology, and Active Learning Classrooms**

When exploring potential academic activities that include educational technology in higher education, it is important to understand the perceptions of faculty members, such as their personal philosophy, demands of their position, and why they are teaching at the specific organization they are employed with (Fernández Díaz et al., 2010; Kazley et al., 2013). When looking at perceptions relating to active learning classrooms, faculty members may feel better about using the technology in the classroom if they know the clear benefits for the students, have time off teaching to design a course with the technology, and feel confident overall that the technology will work when they need it (Dahlstrom, 2015; Nistor et al., 2014). Those factors may be negatively impacted if they feel pressured by a department chair or dean to use active learning classrooms or

technology tools, especially if teaching is not as valued as research is at the institution (Langley & Guzey, 2014; Scott & Scott, 2016). Other faculty members may feel restricted in their academic freedom due to the limitations of the technology provided to them for instruction and student engagement.

While there are potentially negative impacts of faculty members' perceptions of active learning classrooms, some may feel more encouraged by active learning classrooms to make changes to their teaching practices potentially due to senior faculty members mentoring younger instructors to emphasize less lecturing and implement more active learning strategies (Bachen et al., 2014; Florman, 2014; Langley & Guzey, 2014). If such trend continues of more faculty members wanting to teach in active learning classrooms, higher education institutions may need to address some faculty members perceiving an imbalanced support between those who are teaching in the small number of active learning classrooms constructed on campus and the traditional classrooms that are more likely to make up the majority of the campus footprint (Fournier et al., 2014). There have been other concerns raised that, if the faculty members are not properly trained and supported, active learning methods may not be employed correctly (Du Plessis, 2016; Ebert-May et al., 2011; Fournier et al., 2014).

### **Adult Learning Theory Guiding Faculty Development**

Before taking into full consideration the recommendations for faculty development to ensure the appropriate use of active learning pedagogy and technology, it is important to understand the key components of adult learning theory. Adult learning theory, or andragogy, can be defined as providing a learner-centric, constructivist, approach to learning in which the adult learners draw from their own experience to

connect old knowledge with new knowledge (Birdwell & Uttamchandani, 2019; Cox, 2015; Gilstrap, 2013). It is also known in adult learning theory that adult learners tend to come back for additional development, whether formal or informal because they are motivated internally (Kenner & Weinerman, 2011; Zepeda et al., 2014). Adult learners tend to see training as valuable when they perceive it as them adding value to the learning process (Vodhanel, 2011).

Along with active learning providing opportunities for students to place various contexts within the classroom, adult learning theory also calls for instructors to expand instructional strategies that take into consideration adult contexts (Brown & Thomas, 2011; Merriam, 2008). For example, Williams (2001) suggested that the sharing of learning contexts crucial in adult learning theory can be done by educators participating in a mentoring program where the veteran educator helps the novice educator transition to become more experienced. Mentoring or paired teaching is one of the various options that should be recommended due to their long-term effectiveness for continued faculty engagement (Holland et al., 2020; McQuiggan, 2012; Williams, 2001). While long-term faculty development to accommodate adult learners are ideal, it is also important to understand that adults tend to have less flexibility than traditional-age college students which provides more of a reason to ensure intentionality (McCray, 2016).

### **Faculty Development Recommendations and Results**

Considering there is a connection between faculty perceptions when it comes to active learning classrooms and technology, it is important to explore what components are needed to train faculty members appropriately for utilizing active learning classrooms. In general, components when training for technology can include focusing on

the learning environment, engagement, reflection, analysis, and application among others (Ertmer & Ottenbreit-Leftwich, 2010; Paige et al., 2015).

Some institutions may elect to have faculty development programs that allow the faculty from across disciplines and colleges the opportunity to forge new bonds with each other possibly creating a community of practice (Ebert-May et al., 2011; Florman, 2014). Along with building a community of practice, Holland, Sherman, and Harris (2020) suggest that paired teaching can benefit improving teaching practices. When executing active learning faculty development programs, they must be held before and during the semester in which the faculty members are using such technology and classroom configuration for the first time (Birdwell & Uttamchandani, 2019; Chiappe & Lee, 2017; Fournier et al., 2014). This would allow them to plan lessons that incorporate active learning strategies with on-site mentoring from support staff during the faculty development program (Langley & Guzey, 2014; Lumpkin et al., 2015).

In terms of specific program characteristics, facilitators who led active learning training included media services staff, instructional technology resource specialists, and classroom support staff (Bachen et al., 2014; Holt et al., 2013). These staff members also provided one-on-one demonstrations as needed by faculty members who requested extra training. Much of the research regarding the length of before-semester programs have suggested a two or three-day workshop to include active learning pedagogical training, classroom observation, intentional space planning, collaborative learning exercises, and open houses of active learning spaces (Burd et al., 2015; Florman, 2014; Frey et al., 2016). There also needs to be an emphasis during the faculty development program on



faculty members being facilitators in the classroom rather than lecturers (Connolly & Lampe, 2016; Kyu et al., 2014; McCray, 2016).

### **Connecting Faculty Development with University Management Practices**

With the diverse range of benefits and challenges when implementing active learning strategies, constructing active learning classrooms, and training faculty members for integrating both into their instruction, it is important to understand who is responsible for effective integration. First, training and effective active learning classroom integration will not work unless there is visionary leadership that makes faculty members accountable for poor quality teaching while rewarding those who provide high-quality teaching (Davis et al., 2013; Scott & Scott, 2016). Considering Chief Academic Officers (CAOs) and Chief Information Officers (CIOs) have separate responsibilities that are categorized through faculty development and technological infrastructure, it can be difficult for both parties to plan active learning classrooms that may encourage change in faculty teaching and technological integration (Brooks, 2011; Dahlstrom, 2015; Williams Van Rooij, 2011). For example, CAOs may consider providing incentives for deans to place policies that require new major courses to be taught in new active learning classrooms (Herman, 2013; Langley & Guzey, 2014). At the same time, the CIOs could require central information technology staff to provide preferred technology support to specific classroom technology and spaces in collaboration with academic and administrative units (Brooks, 2017; Dahlstrom, 2015).

Considering professional staff from departments like Information Technology-Instructional Services and Centers for Teaching Excellences will have an impact on designing and implementing active learning spaces, it is important to have a systematic

approach to faculty development (Florman, 2014; Graham, 2012). Such a systematic approach should include the professional staff building trust-based relationships through active listening, informal conversations, and summarization of consultation sessions that lead to communities of practice (Fox & Sumner, 2014; van Leusen et al., 2016). Aside from instructional professional staff, staff responsible for scheduling must also be in the active learning classroom integration process because such staff have to orchestrate course schedules based on time slots, courses, available classrooms, lectures, and working days (Brooks, 2011; Torres-Ovalle et al., 2014).

While both academic and administrative departments have responsibilities to integrate active learning classrooms, universities should be mindful of not pushing the initiative in a purely top-down approach forcing faculty members to teach in the classrooms without inviting input (Langley & Guzey, 2014). There needs to be a balance between leadership initiatives while also providing organic support to grow through active learning communities of practice (Brooks, 2017; Fox & Sumner, 2014; Holt et al., 2013). There also needs to be a discussion of what the responsibilities of students will be when integrating active learning classrooms into the campus footprint (Bachen et al., 2014; Florman, 2014). In particular, how will students take responsibility when there are different perspectives of technology based on students' cultural and socioeconomic backgrounds (Delcore & Neufeld, 2017; Nistor et al., 2014)? Woo (2016) suggests that student "techsperts" inside the classroom may help in these types of in-class situations to navigate through the technology when working with diverse groups of users.

## **Challenges to Consider when Constructing Faculty Development Programs for Active Learning**

While providing active learning faculty development programs produced research on the benefits of such programs, confidence in teaching is more directly tied to experience over having a support system to implement specific strategies (Ertmer & Ottenbreit-Leftwich, 2010; Gal & Nachmias, 2011). This may indicate the need to ensure long-term faculty development programs that focus on instructors reflecting on their direct teaching practices (Birdwell & Uttamchandani, 2019). Another challenge when providing faculty development includes finding the ideal format, location, and frequency of meetings with faculty considering their teaching responsibilities, and mandatory events they are required to attend (Torres-Ovalle et al., 2014; Woo, 2016). This often leads to increasing institutional cost of providing incentives for faculty participation that include technology rewards, monetary rewards, and time off from teaching to participate in such development activities (Herman, 2013; Keengwe et al., 2009).

**Student Experiences and Behaviors in Active Learning Classrooms.** Although the possible direct and immediate impact from this study will change how faculty development programs are executed at this study's university, gathering data solely based on faculty perceptions on active learning classroom experiences is not based on the recommended action research practice of using multiple sources of data to increase data consistency (Mertler, 2017). Therefore, it is important to also include students who were enrolled in courses that took place in active learning classrooms for their perceptions (Alexander et al., 2008; Bachen et al., 2014; Burd et al., 2015). For example, the Active Learning Classrooms Pilot Evaluation Team at the University of Minnesota executed a

research study to assess the experiences of both faculty and students that would help them understand the effectiveness of the new active learning classroom designs and pedagogy.

For those studies published that utilized triangulation to validate the findings of active learning classroom experiences, many of the articles did see similar perceptions and strengthened the relationship between students and faculty members (Alexander et al., 2008; Bachen et al., 2014; Burd et al., 2015; Coorey, 2016). For example, Bachen, Erlog, and Cutler (2014) noticed the similarities in perceptions between faculty and students regarding the active learning classrooms. They both indicated flexibility the classrooms had in implementing the pedagogy and facilitating interaction. They also both indicated limitations of the classrooms if the classroom affordances were not used. Along with faculty members and students strengthening their rapport, students also perceived having a better relationship with each other in terms of working in groups and participating in discussion (Coorey, 2016; Lumpkin et al., 2015) For example, Lumpkin, Achen, and Dodd (2015) reported that the majority of the student participants agreed that working in groups positively impacted their learning. Coorey (2016) also reported that students who participate in active learning pedagogical activities were comfortable asking their peers about accomplishing classroom activities and engaging in peer-to-peer learning. Similar to looking at student behavior when participating in active learning strategies, it is important to understand how students react to the new technology that is integrated in the new classrooms (Salter et al., 2013).

### **Summary**

To summarize the literature that guided this research, colleges and universities should consider having a well-researched extensive definition of active learning that

includes various group-related and self-motivating interactivity where students are more involved in the learning process (Dilmac, 2016; Nordquist & Laing, 2015). The consensus on classroom characteristics to implement active learning pedagogy include movable tables and chairs not solely facing the front of the classroom, television displays with power outlets and display cords for students to share content on their devices, and smartboards for annotation (Brooks, 2017; Fournier, Hornby, & Richards, 2014; Langley & Guzey, 2014; Mercier, Higgins, & Joyce-Gibbons, 2016).

Considering active learning pedagogy and classrooms are different than the traditional classroom structure used for lecture, it is important to provide faculty development opportunities to address how active learning classroom environments will challenge personal philosophies and demands on instructional responsibilities (Kazley et al., 2013; Kopcha et al., 2016). Considering faculty development can be challenging, it is important to provide faculty partners and advocates that can promote such two to three-day development programs related to active learning classrooms (Bachen et al., 2014; Florman, 2014; Langley & Guzey, 2014). Activities for such development programs include pedagogical training, classroom observations, and intentional space planning among others.

Given the resources that are necessary to construct active learning classrooms and training faculty for such environments, higher education institutions need to have support from visionary leaders such as the Chief Academic Officer and the Chief Information Officer (Brooks, 2011; Dahlstrom, 2015; Williams Van Rooij, 2011). Such leadership could provide directives to a learning spaces steering committee that brings stakeholders from various departments to ensure intentional classroom integration that meets the goals

of the institution (Baker & Baldwin, 2015; Painter et al., 2013). These steering committees can also provide foundational work for future action research activities to help measure the instructional enhancements that are done in the new active learning classrooms (Mertler, 2017).

## CHAPTER 3

### METHOD

The purpose of this action research was to identify participant experiences and needs of faculty when teaching in the active learning classrooms at a public regional southeastern university. Following research questions were addressed in this study:

1. What are the experiences of faculty members who have taught in the active learning classrooms?
2. What are the experiences of students who have taken a course in the active learning classrooms?
3. What are the faculty development, classroom technology, and technical support needs of faculty members who have taught in the active learning classrooms?

#### **Research Design**

Mertler (2017) describes action research as research done by practitioners to find results for immediate and direct application. In education, this type of research is a stance of inquiry that allows educators to improve teaching practices and student outcomes (Green & Johnson, 2010). Thus, such research brings together inquiry with application and calls for learning and collaboration from numerous stakeholders that may be interested in understanding the research questions posed by researchers (Kinash, 2006; Mertler, 2017). Along with bringing such stakeholders into the research process, the stakeholders and researchers involved may need to attempt different approaches based on

data collection, recommendations, and conclusions to solve a problem. Therefore, action research is designed to be cyclical so that progress can be made to solve a research problem (Manfra & Bullock, 2014).

In this study, I used action research to understand how faculty members in this local context implemented active learning strategies by exploring their experiences in the active learning classrooms and what further needs they may have to better integrate such strategies into their instruction. Such research was also used to understand how students reacted to faculty implementation. The results of this study helped shed light on the issues related to the implementation of active learning strategies in active learning classrooms which will possibly lead to future research cycles and to contextualize solutions helping institutional administrators with planning to better utilize such classrooms and train faculty members to implement such strategies appropriately (Manfra & Bullock, 2014).

The purpose of conducting an action research study is not to generalize findings to similar contexts. Although the applied setting of action research limits the ability to generalize results, the ability to share the results with stakeholders involved allows for a more direct connection to some of the educational problems that are occurring at the proposed research location (MacIntosh & O’Gorman, 2012). In this study, such research will benefit the participating faculty members because it will provide a holistic view of the experiences and needs that would less likely be shared in a less formal situation. The ability to implement a scholarly approach to gathering such data can lower the risk of another interdepartmental project ceasing to continue due to the lack of organization and resources.



In the context of this research, explanatory sequential mixed methods best suited the opportunity to answer the stated research questions (Creswell, 2013). In this method, the research planned out a two-phase project where a quantitative measure, aligning with intentional research questions, was sent out to potential participants to complete (See Appendices A and C) . After the initial quantitative measure is completed, a follow-up qualitative method was conducted to assist in explaining the responses given in the quantitative method (Morgan, 2014). For this proposal, I implemented a semi-structured focus group protocol that helped further explain survey responses regarding participant experiences and needs when teaching in the active learning classrooms utilizing active learning strategies (See Appendices B and D).

Considering the definition of the explanatory sequential mixed methods, the questions indicated in the focus group protocols changed slightly depending on the responses given by the participants in the survey. This approach has mirrored other research studies in which they started by distributing a survey to understand attitudes of faculty and students of the active learning classrooms and to gather feedback for what should be done for future classroom designs (Bachen et al., 2014; Fournier et al., 2014). For example, Fournier, Hornby, and Richards (2014) utilized a survey to gather how instructors were using the active learning classrooms followed by having a focus group protocol that described further how instruction behavior changed.

### **Setting**

When describing the university's initial emphasis on increasing active learning implementation among faculty on campus, it was best to start at the end of the Fall semester in 2014. This section will discuss the following: (1) active learning classrooms

built at the university and (2) faculty development programming to train faculty participants for the active learning classrooms.

### **Active Learning Classrooms Built at the University**

Before the Spring semester of 2015, the first active learning classroom was built in the Administration Building. The classroom was intentionally built on the first floor of the building to ensure prompt support from the Department of Learning Technologies or Information Technology and Data Services in case there were issues with the new furniture or technology. After the first classroom was constructed, one to two classrooms were constructed throughout campus during the summer months each academic year and continued to be constructed until the grant funds were no longer available. At the time of the dissertation proposal, there were nine classrooms constructed.

Constructing active learning classrooms during the summer months made it easier for Information Technology and Data Services staff to manage projects due to not as many classes being offered in the summer. Active learning classrooms can be described by (1) the furniture and (2) the technology installed in the classroom. Both sections will describe the typical characteristics configured with such classrooms. An example of a typical classroom will also be described after discussing furniture and technology.

**Furniture.** The majority of the furniture used in the active learning classrooms were purchased by a local furniture supply company. As part of the classroom design process, the consultants and interior designers inspected the classrooms to estimate potential furniture fittings. After analyzing the space and the availability of the classroom being refitting for active learning, an email was sent to the Director of Learning Technologies with a computer rendition of what the classroom could look like with the

furniture suggested or requested. Much of the furniture that was used for classrooms were made by a different furniture supplier that had a partnership with the purchasing furniture supply company.

Although there were slight variations of furniture chosen for active learning classrooms at the university, many of the classrooms had similar furniture. All active learning classrooms had movable chairs, storing space for backpacks underneath the chairs, and could swivel to direct their attention to where the instruction was happening in the classroom. Many of the tables that were installed seated between four to six students depending on the size of the classroom. Some classrooms had fully movable tables that allowed active learning classroom users to flip the tabletop sideways to assist in reorganizing the room for specific activities. Other classrooms had fixed tables from another furniture supply company that were not movable to accommodate fitted video outlet ports and power outlets for students to display and recharge their devices. These tables also allowed for the height to be adjusted depending on the type of seating that was purchased. Such tables were also positioned near either non-technological whiteboards that were mounted on the walls or individual whiteboards hanging on a shelf.

Aside from the seating and tables, a variety of supplemental storage units were purchased to store technology and other resources needed to instruct active learning pedagogical strategies. For those classrooms that did not have fixed podiums in the classrooms, a tall storage rack unit was placed in the corner of the classroom to store the matrix switching of different displays and media devices. For the classrooms that had a fixed podium in the classroom, the same devices and displays were stored underneath the

podium. The podiums also had a computer monitor to show what was being displayed with a digital touchscreen attached.

**Technology.** Considering tables in the active learning classrooms were meant to accommodate group-based learning, multiple 50-inch television displays were purchased to be placed at the end of each table. These televisions had the ability for devices to be connected using the standard selection of video/audio cables. Any technological devices that were plugged into the displays were sent through a matrix switch that controls what device could be shown on what displays. The matrix switch could also be connected to a touch screen panel to provide such control and to also control the power and volume of the technology. Outside of television displays, some classrooms had either a short-display projector or an interactive television with the ability to draw on a digital whiteboard and display a computer that is connected to the device.

**Active learning classroom example.** Once the furniture and technology were selected and installed, it was important to grasp how both were positioned in the classrooms being redesigned. As seen in figure 3.1, Library 238 (LIBR 238) was the second classroom that was installed for the Summer of 2015. This demonstrates how the chairs and tables were movable for active learning strategies. There also was plenty of whiteboarding furniture for group work to take place, taking notes, and answering discussion questions. Each station also had a digital display for when a student wanted to connect their device to show what was happening on their computing screen.



*Figure 3.1.* LIBR 238 active learning classroom that demonstrates electronic whiteboards, moveable chairs and tables, and additional whiteboard surfaces.

### **Faculty Development Programming**

When the first classroom was constructed for the Spring semester of 2015, the Director of Learning Technologies required the initial cohort to participate in a one-day active learning faculty workshop to prepare themselves for the new classroom. The initial training included introducing active learning strategies and conceptualizing what the active learning classroom would like. The classroom was not constructed in time for the training, which made it difficult to fully prepare the faculty members for teaching in such a classroom. Considering the first classroom was now constructed for the next faculty development program, the training allowed the instructors to implement the active learning strategies utilizing similar furniture and technology tools that would be in future classrooms to be constructed. While the following trainings from the first training was housed in an active learning classroom, classrooms being constructed for the Fall

Semester were never constructed in time for faculty members who were going to teach in the newly constructed classrooms.

After the Spring of 2015 when the second cohort of faculty members were selected to participate in the active learning initiative, a more extensive week-long summer faculty development workshop was designed to better prepare the faculty participants to implement active learning strategies. Making the workshop longer was done based on both the Steering Committee having an intentional staff member to better prepare for the training and due to the faculty feedback of wanting more training to prepare for such a new classroom experience. Such workshop included a required reading discussion with a book aimed at analyzing modern educational practices, a technology challenge to allow faculty members to test their efficacy in utilizing the classroom technology, and lesson plan building time to allow faculty participants to complete the workshop tasks of submitting five lesson plans for the active learning lesson plan library.

After the summer week-long workshop, the faculty participants were required to meet monthly in groups with the Instructional Designer. This allowed the Instructional Designer to train for any pedagogical or technology issues that needed to be addressed from complaints or observations while also receiving further feedback on the current renditions of the active learning classrooms. Once the faculty members fulfilled all requirements, they received a small stipend and first preference to which active learning classroom they wanted to teach in.

### **Participants**

For this study, purposive sampling was used to identify participants to address the research problem (Pyrzczak, 2014). Such a process required careful selection to ensure

participant responses were collected by those who understand the context of the research measures (Morgan, 2014; Rudestam & Newton, 2015). Considering the research problem of gathering data about the experiences and needs based on the active learning classroom experience, implementing random sampling of faculty and student participants would gather data from those who were not involved or exposed to the active learning classrooms at the university and thus could not be used.

The participants that were included in this survey were faculty participants who have taught in the new active learning classrooms funded by the Title iii Federal Grant Award. At the time of the study, there were approximately 41 potential faculty participants who have participated in the Title iii active learning faculty development program at the university. Approximately 66% of the faculty members in active learning classrooms can be identified as female. From the potential faculty participants, 26 faculty members were from the College of Arts, Humanities, and Social Sciences, seven were from the College of Science and Technology, seven were from University College, five from the School of Education, Human Performance, and Health, and no participants from the School of Nursing and the College of Business and Economics. While University College is not an academic department like the other colleges, those who taught University 101 under the oversight of University College were allowed to participate in the active learning initiative and teach in the new active learning classrooms. The students participating in surveys and focus groups came from the course rosters that correspond with the active learning classrooms on record for such courses.

From those potential participants who participated in the study, both faculty and students were asked to identify their gender and ethnicity. For faculty, 59% identified as

female and 41% as male. When looking at ethnicity, faculty were 88% Caucasian, 11% Hispanic or Latino, and 1% Asian. When representing academic programs, 41% identified primarily teaching in Arts, Humanities, and Social Sciences, 29% in University College (i.e. University 101), 18% in Science and Technology, and 12% in Education, Human Performance, and Health. No surveys were completed by faculty members who primarily taught in Business or Nursing.

For students, 70% identified as female, 29% as male, and 1% as other or did not wish to identify. When looking at ethnicity, 57% identified as Caucasian, 25% as African American, 8% as Hispanic or Latino, 3% as Asian, 3% as multiple or mixed ethnicities, and 4% as other or did not wish to identify. When looking at the representation of academic programs by college, 29% of students identified being in Arts, Humanities, and Social Sciences, 23% in Education, Human Performance, and Health, 18% in Nursing, 13% in Science and Technology, 11% being undeclared, in multiple schools, or are in dual enrollment, and 6% in Business.

From those who completed the survey, there were four focus groups. Two focus groups involved faculty participants and two focus groups involved student participants. The faculty focus group participants represented the colleges or schools of Arts, Humanities, and Social Sciences, Education, Human Performance, and Health, and Science and Technology. In the first focus group had three female participants and the second focus group had two male participants and two female participants. I also conducted two student focus groups with the first group having six female students and the second group have two male students and two female students.



## Data Collection

To answer the research questions of the study, both quantitative and qualitative data sources were used. As described in Table 3.1, I explored the experiences of faculty members when teaching in active learning classrooms. For all three research questions, participants were asked to (1) complete a quantitative survey, and (2) to participate in a focus group with fellow participants who participated in the active learning classrooms.

Table 3.1 *Research Questions and Data Sources Alignment*

Research Questions	Data Sources
RQ1: What are the experiences of faculty members who have taught in the active learning classrooms?	<ul style="list-style-type: none"><li>• Faculty Survey</li><li>• Faculty Focus Group</li></ul>
RQ2: What are the experiences of students who have taken a course in the active learning classrooms?	<ul style="list-style-type: none"><li>• Student Survey</li><li>• Student Focus Group</li></ul>
RQ3: What are the faculty development, classroom technology, and technical support needs of faculty members who have taught in the active learning classrooms?	<ul style="list-style-type: none"><li>• Faculty Survey</li><li>• Faculty Focus Group</li><li>• Student Survey</li><li>• Student Focus Group</li></ul>

### Survey

The quantitative method of survey research was utilized to gather data regarding the experiences and needs of faculty members in active learning classrooms. Two similarly constructed surveys were constructed based on participant groups. One survey was sent to the faculty participants identified for this study and a different survey was sent to the student participants for the same study.

The faculty survey included 58 items on a 5-point Likert scale from 1 (*strongly disagree*) to 5 (*strongly agree*) (see Appendix A). These items included which of the eight active learning classrooms they taught courses in, 15 identifying active learning

strategies implemented, 12 identifying integrated technology tools they found useful, 9 identifying their technology experiences, and eight identifying their overall experiences in the active learning classrooms. There were also three open ended questions that asked the participants to define active learning, what challenges they faced, and what recommendations they have since teaching courses in the active learning classrooms.

A similar survey was given to students but was minimally modified to better fit student experiences. While the faculty survey had 58 items, the student survey consisted of 52 items (see Appendix C). Four of the technology experience items and two overall experience items were more specific to faculty participants and were not relevant for student participants. For example, the statement “I think other faculty members in my department were inspired by my experience with teaching in active learning classrooms” was irrelevant to students and, therefore, was deleted from the student survey. For the items that were relevant to both participant groups, minor modifications indicating implementing teaching situations were asked as a learning experiences for students. For example, a Likert Scale statement for faculty that read “I instructed students to work together in groups on problem-solving tasks” was changed to “I worked together in groups on problem-solving tasks.”

The items described in the survey can be organized in the following subscales to best represent the experiences and needs of participants in the active learning classrooms: (1) active learning strategies implementation, (2) active learning classroom technology usage, and (3) overall experiences of active learning classrooms. After the description of these subscales, a description of additional survey questions will be given.

**Active learning strategies implementation.** The first scale of the survey was about what active learning strategies participating faculty members implemented in the active learning classrooms. As described in Appendix A, the first 15 items have been adapted from the Active Learning Questionnaire utilized to evaluate active learning methods and strategies when training preservice teachers for educational institutions (Niemi, 2002). The author placed the various items being used for this subscale to measure (1) independence and responsibility in learning and (2) metacognitive strategies when teaching with active learning strategies. For the independence and responsibility in learning items, the Cronbach alpha coefficient was reported as .82 for teachers and .81 for teacher educators (Niemi, 2002). The metacognitive strategies items were reported to have .88 for teachers and .83 for teacher educators. Examples of the items include indicating if students worked in groups and if they provided self-evaluation of their course work. Item statements were minimally modified only to better fit the context of the study.

**Active learning classroom technology usage.** The second section of the survey measured participant attitudes of active learning technology usage in the active learning classroom. This subscale was adapted from a 30 item survey used to measure barriers of utilizing educational technology among faculty members in a community college in Malaysia (Azlim et al., 2015). Nine items were utilized from this survey to ask participants about their perceptions of support, time to utilize the technology in the active learning classrooms, and confidence in implementing active learning strategies with the active learning classroom technologies. Four of the items were only asked to faculty participants that specifically targeted their training, troubleshooting skill building, and

support given from the university. The remaining items that did not cover those topics were not relevant to this study or were being covered in other subscale instruments.

Before distributing the survey, two experts who know about implementing active learning in higher education checked on the validity of the subscale. The reliability coefficient for this survey is reported in Chapter 4.

**Overall experiences in the active learning classrooms.** The final section of the survey had a subscale regarding participant perceptions of their active learning classroom experiences. This consisted of seven items that were adapted from a subscale of assessing instructor attitudes regarding the European Area of Higher Education (EAHE) (Fernández Díaz et al., 2010) (see Appendix A). This subscale included how the experience impacted faculty instruction planning, motivation to improve teaching skills, and faculty perceptions of whether the university conditions were ideal to train and support instructors appropriately to be successful in the active learning classrooms.

The instrument used for the subscale's initial study was validated by a group of experts. In terms of reliability, the attitudes subscale's Cronbach score was .63. The survey was initially a 49-item survey to improve instruction utilizing faculty development (See Appendix G). The 42 items that were excluded in this survey focused on competencies related to the objectives of the EAHE and not measuring active learning classroom results at the study's university. For example, competencies such as "the integration of knowledge with global perspective, based on analytical reflection, coherence within an argument and quality of contributions in order to find solutions or make decisions" was a specific competency that was part of the EAHE program and is not a specific competency connected to the active learning classroom project. Two

additional questions were added to this subscale to capture thoughts on how the faculty members would feel implementing active learning strategies in traditional classrooms and online courses. Aside from the statements that may have only been experienced by faculty, students were asked a modified version of the subscale to best fit their experience (see Appendix C).

**Additional questions added.** Two open-ended questions were added at the end of the survey to determine participants' perceptions of challenges in implementing active learning at the university and what recommendations do they have for the university to improve instructors implementing active learning strategies at the university. Also, I wanted to understand how much of the technology the instructors felt they used in the active learning classroom. Similar to the survey provided by Brooks (2011) in his study of formal environments, a list of the technology commonly installed in the active learning classrooms were provided for the participants to determine the usefulness of the technology using the Likert scale.

### **Focus Groups Protocol**

As part of the process to utilize explanatory sequential mixed methods, the qualitative method of conducting focus groups was used after the surveys were distributed (Creswell, 2013). The focus group protocol consisted of nine questions that were adapted from a study that was initially utilized at the University of Mississippi Medical Center to describe the transition of traditional classrooms into technology-rich active learning classrooms (Gordy et al., 2018). The goal of those classrooms was to accommodate the pedagogical concept of active learning. The initial organization of the questions separated the questions by lecturing, focus and attention, classroom

cohesiveness, and advice. Also, their version of active learning classrooms was termed “collaboratory”. Consider this term is not known to the study’s university, the protocol changed the term to “active learning classrooms.” According to Gordy, Jones, and Bailey (2018), they confirmed their validity by checking the focus group responses to class-recording transcripts and field notes. The questions were reorganized, restated to fit the particular instructional activities of the participants, and to have more detailed prompted questions to allow them to specify different aspects of the active learning classrooms.

There were two focus group protocols created based on participant type. One protocol was constructed for faculty participants and the other protocol was constructed for student participants. The faculty focus group consisted of 36 questions in which they were asked about teaching activities, changes based on the new environment, changes to student behavior, classroom satisfaction, faculty development experiences, fixable problems in the classrooms, recommendations, and final thoughts. As an incentive, the participants were provided food and had a chance to win a \$20-dollar Amazon gift card due to the focus groups being scheduled (see Appendix B).

A similar focus group protocol was used for students who enrolled in courses that took place in an active learning classroom (see Appendix D). As an incentive, the students were be provided food and had a chance to win a \$20-dollar Amazon gift card due to the focus groups being scheduled. Any questions associated with instructor-only activities or perceptions were eliminated. For example, the question asking about changes in learning objectives would be difficult for students to answer given they only have taken the course once and were not knowledgeable of learning objectives from the same course in a different semester or course section. Similar to modifications from the faculty

survey to the student survey, minor modifications were made in the focus group protocol to translate teaching statements to learning statements. For example, the set of questions faculty participants were asked about faculty development preparing them to teaching in active learning classrooms were changed for students by asking how their instructor prepared them to take courses in active learning classrooms.

The following question groups will be described: (1) active learning implementation experiences and (2) future needs based on classroom experiences were identified as question grouping.

**Active learning implementation experiences.** I asked four questions with 17 corresponding sub-questions to participants regarding their active learning implementation strategies. In particular, these questions asked about faculty members' activities they used in the active learning classrooms, what changes they needed to make in all aspects of instruction, what changes were observed with students, and satisfaction on components of the new classrooms that include furniture layout, technology installed, and overall satisfaction. As part of the explanatory sequential mixed methods approach, these questions were aimed to explain in more detail why and how faculty implemented or did not implement certain active learning strategies reported in the active learning strategies implementation subscale of the quantitative survey. One final open-ended question was asked to allow the participants to comment on their experiences that were not covered in the questions in the protocol.

**Future needs based on active learning classroom experiences.** After discussing the active learning implementation experiences, four questions and ten corresponding sub-questions were asked based on the participants' needs for future active learning

implementation. The first question asked the participants what fixable problems needed to be resolved regarding the active learning classrooms. The three sub-questions asked them to elaborate on the fixable problems related to active learning instruction, the utilization of furniture, and the utilization of technology installed in the active learning classrooms. The second question focused on what development activities impacted their success in the active learning classrooms and which development activities needed to be improved to be more successful in implementing active learning in active learning classrooms. Similar to the problems needing to be resolved, sub-questions were asked according to what development activities needed improvement to ensure proper implementation of active learning, the utilization of furniture, and the utilization of technology. The final two questions asked the participants to make recommendations on how new participants and the university needed to proceed utilize the active learning classrooms in the future.

### Procedures and Timeline

The procedure for this research was as followed: Phase 1: Participant Identification, Phase 2: Data Collection, and Phase 3: Data Analysis. Table 3.2 is included to detail the timeline of all the procedures.

Table 3.2 *Research Procedures and Timeline*

Phase	Expectation	Time Frame
Phase 1: Participant Identification	1. Requested faculty participation list of teaching in active learning classrooms 2. Requested student class roster of faculty teaching in active learning classrooms	2 weeks



Phase 2: Data Collection	<ol style="list-style-type: none"> <li>1. Distributed Faculty Survey to ALC Faculty</li> <li>2. Distributed Student Survey to ALC students</li> <li>3. Identified focus group participants (faculty &amp; students)</li> <li>4. Distributed consent forms for focus group participants</li> <li>5. Conducted Faculty Focus Group</li> <li>6. Conducted Student Focus Groups</li> </ol>	4 weeks
Phase 3: Data Analysis	<ol style="list-style-type: none"> <li>1. Executed Descriptive Statistics (Faculty Survey)</li> <li>2. Executed Descriptive Statistics (Student Survey)</li> <li>3. Transcribed Faculty Focus Groups</li> <li>4. Transcribed Student Focus Group</li> <li>5. Inductive Analysis (Faculty Focus Group)</li> <li>6. Inductive Analysis (Student Focus Group)</li> </ol>	5 weeks

### **Phase 1: Participant Identification**

At the beginning of Spring 2019, participants were identified based on the previously stated criterion. I contacted the Instructional Designer that was working for the Title iii Active Learning Initiative to provide the list of faculty members who have previously taught or who were teaching in the active learning classrooms. I also contacted Information Technology and Data Services to provide a full list of students organized by the courses they took in those active learning classrooms. After receiving the rosters, I started the data collection process.

### **Phase 2: Data Collection**

Through campus email, I provided a link for faculty members to fill out a survey that I constructed in Microsoft Forms as part of the university's Office365 account services. Along with the link to fill out the form, I also requested the potential participant to participate in a focus group in which I asked them to respond to the email directed at my institutional email account. This email was sent on February 12, 2019 to all potential

student participants to participate in the study. On February 20, 2019, an email was sent to individual faculty members teaching in the active learning classrooms to participate in the study and to encourage students to participate in completing the survey and participating in a focus group. All surveys completed were instantly recorded through the Microsoft Forms results interface to gather data from the survey. After the distribution of the emailed invitations to participate in the study, I corresponded to interested participants for the focus groups to schedule a date and time that worked for all wanting to participate.

After I recruited enough focus group participants from the email sent with the survey link, I scheduled two focus group appointments. The focus group was conducted at the university's main campus inside the Academic Affairs Conference Room located in the Administration Building. Each focus group appointment lasted approximately an hour that was guided by the focus group interview protocol. A mirrored process to collect focus group data occurred for the students who were taking a class or have taken a class in the active learning classrooms at the university.

### **Phase 3: Data Analysis**

After completing the survey data collection, I downloaded the data and executed descriptive statistics to quantify experiences and needs based on what survey questions were asked. After completing the focus group sessions, I transcribed each focus group session recording and analyzed them according to created categories. For analyzing the transcriptions, I used inductive analysis to code and identified themes from the participants involved (Creswell, 2013). Although the research questions focused mostly on faculty experiences and needs in the active learning classrooms, I also conducted

student focus groups, utilizing inductive analysis, to triangulate the data that was collected and analyzed from the faculty focus groups.

### Data Analysis

Both quantitative and qualitative data collection methods need to analyze the data in a systematic approach (Mertler, 2017). Such a systematic approach in this study started with matching the appropriate data analysis method with the corresponding data collections method. As mentioned in Table 3.3, the quantitative method of distributing surveys was analyzed through descriptive statistics. The qualitative method of focus groups came in the form of inductive analysis to gather themes and answer the research questions that are stated in Table 3.3.

Table 3.3 *Research Questions, Data Collection, and Methods of Analysis*

Research Questions	Data Collection	Methods of Analysis
RQ1: What are the experiences of faculty members who have taught in the active learning classrooms?	<ul style="list-style-type: none"> <li>Quantitative Faculty Survey including open-ended questions</li> <li>Faculty Focus Groups</li> </ul>	<ul style="list-style-type: none"> <li>Descriptive Statistics</li> <li>Inductive Analysis</li> </ul>
RQ2: What are the experiences of students who have taken a course in the active learning classrooms?	<ul style="list-style-type: none"> <li>Quantitative Student Survey including open-ended questions</li> <li>Student Focus Groups</li> </ul>	<ul style="list-style-type: none"> <li>Descriptive Statistics</li> <li>Inductive Analysis</li> </ul>
RQ3: What are the faculty development, classroom technology, and technical support needs of faculty members who have taught in the active learning classrooms?	<ul style="list-style-type: none"> <li>Quantitative Faculty Survey including open-ended questions</li> <li>Student Focus Groups</li> </ul>	<ul style="list-style-type: none"> <li>Descriptive Statistics</li> <li>Inductive Analysis</li> </ul>

The full description of quantitative and qualitative data analysis for this study is provided in Chapter 4.

### **Rigor and Trustworthiness**

Various methods of rigor and trustworthiness must be done to ensure the accuracy and believability of the research (Mertler, 2017). For this study, I executed several of such approaches that are utilized for research methods such as triangulation, member checking, and peer debriefing.

#### **Triangulation**

Triangulation calls for researchers to utilize multiple methods and data sources to explain what is happening in a research study (Creswell, 2013; Mertler, 2017). This method was implemented by gathering data in both a quantitative survey and a qualitative focus group from the faculty participants involved. Triangulation also occurred by having students who have been in the active learning classrooms to verify the data collected from the faculty participants. If a contradiction existed between the two sources, I further explored potential reasons why such contradictions occurred.

#### **Member Checking**

In focus groups, the researcher has to capture what the participants are saying through listening attentively, writing notes, and analyzing non-verbal behavior that could add meaning to any participant responses (Creswell, 2013; Mertler, 2017). Therefore, a rigor and trustworthiness method of member checking was used to limit the possibility of missing important events during sessions by sharing the data collection and analysis with the participants involved in the study. When sharing, I asked the participants to review the summaries so that they can validate the accuracy of the themes discovered (Mertler,

2017). If there were accuracy issues with the themes and summaries involving any of the participants, I asked for clarification so that I could revise the themes and summaries accordingly.

### **Peer Debriefing**

Lastly, Mertler (2017) discusses the method of recruiting other professionals, such as a colleague or critical friend, to reflect on the analysis and summaries that were produced during the research study. Under the guidance of this dissertation, I had the privilege to be advised by Dr. Fatih Ari and Dr. Michael Grant from the University of South Carolina's College of Education to assist me in reflecting on any issues or weaknesses that may have arise from the research study. Specifically, Dr. Ari was instrumental in assisting me in coding my focus group transcripts. My initial precoding process include a large number of codes that were hard to analysis after completing the coding. During one of our dissertation preparation meetings, he walked through a small portion of one of my transcripts to provide examples of how to code that would better assist in analyzing the definition of the code and why that part of the transcript was coded. For example, the initial 'gamification' code was transformed to 'gamification as a study tool'. By adding more contextual information, I was able to analyze that code in a more detailed approach as it related to other codes and themes.

### **Rich Thick Descriptions**

Using rich thick descriptions allows readers of this study to understand what the setting of the study was, how the study was conducted, and what was the experience to connect the data analysis with the discussion (Creswell, 2013; Mertler, 2017). For

example, when themes were discovered through inductive analysis, it is important to provide examples from the participants about why those themes were important.

### **Prolonged Exposure**

A benefit to action research in the educational setting allows for the researcher to conduct a systematic inquiry to understand what is going on in their educational setting and what else needs to occur to improve the educational setting (Mertler, 2017).

Naturally, action research allows the researcher to have prolonged exposure to the educational institution and the activities being explored. As an Instructional Designer looking to enhance faculty development programs, have had experience training faculty members through the active learning initiative at the university, and have taught courses in the active learning classrooms, I was able to properly analyze the data that is collected by all participants.

### **Plan for Sharing and Communicating Findings**

My plan to share and communicate findings started with identifying and inviting stakeholders who organize faculty development opportunities, provide classroom support, or administer academic units on campus to a meeting. Participants will be also able attend if they chose to participate in the meeting. The invitation will involve utilizing the FindTime tool in the university supported Microsoft Outlook Email System to establish a meeting time and place to discuss the findings of the action research. For this meeting, I will discuss background information, the purpose of the study, the research methods employed, results, and conclusions (Mertler, 2017). When discussing such information, any specific examples from the data to help support my findings will not have the participant's name associated with the comments.

A conversation will follow the findings regarding future steps the administrators can take based on what was discovered in the research. For those stakeholders who cannot attend the meeting, I will provide a live-recording through a lecture capture application so they have an opportunity to hear the results as if they were in the meeting. They will also be given a chance to submit their thoughts to me via email before the meeting takes place in case decisions are made at the meeting. After the meeting is over, I will send concluding notes of what was discussed after my presentation that might be valuable if decisions need to be made after the meeting is over.

## CHAPTER 4

### ANALYSIS AND FINDINGS

The purpose of this action research was to identify participant experiences and needs of faculty when teaching in the active learning classrooms at a public regional southeastern university. This chapter presents the study findings in two sections. First, quantitative findings will be reported that include the reliability report of the surveys administered and descriptive statistics calculated. Second, the qualitative findings will be presented. This will consist of the number of codes associated with each source, a description of the process collecting the qualitative data, and describing the themes discovered from the qualitative analysis. Both faculty and student participant data will be presented. The findings helped understand the experiences and needs of faculty and students when completing academic activities in the new active learning classrooms. In particular, these results aimed at answering the following three research questions:

1. What are the experiences of faculty members who have taught in the active learning classrooms?
2. What are the experiences of students who have taken a course in the active learning classrooms?
3. What are the faculty development, classroom technology, and technical support needs of faculty members who have taught in the active learning classrooms?



## Quantitative Findings

As part of implementing explanatory sequential mixed methods, I first conducted a quantitative survey (Creswell, 2013). The following will describe (a) the method of analysis, (b) the report of reliability, and (c) descriptive statistics to summarize the quantitative results.

### Method of Analysis

Seventeen faculty members and 319 students completed a survey that asked about their experiences in the active learning classrooms through a survey that consists of three subscales: (a) active learning strategies, (b) active learning technology, and (c) active learning experiences. Along with these subscales, participants were also asked to determine the usefulness of technology tools that were installed in the active learning classrooms at the university. Outside of the subscale questions, faculty and students were asked through a Likert Scale whether they believed active learning strategies could be implemented in traditional classrooms and online courses. Aside from the Likert Scale questions, faculty and students were asked demographic questions at the beginning of the survey and were asked two open-ended questions. JASP statistics program was used to calculate the descriptive statistics.

### Report of Reliability

Cronbach's  $\alpha$  was computed for the three subscales in both faculty and student surveys as indicated in Table 4.1. For the faculty survey, the Cronbach's  $\alpha$  for the active learning strategies subscale was .84, for the active learning technology subscale was .88, and for the active learning experience subscale was .81. For the student survey, the

Cronbach's  $\alpha$  for the active learning strategies subscale was .90, for the active learning technology subscale was .89, and for the active learning experience was .73.

Table 4.1 *Reliability Coefficients (Cronbach's  $\alpha$ ) for the Subscales of Faculty (n=17) and Student (n=319) Surveys*

Subscales	$\alpha_{\text{faculty}}$	$\alpha_{\text{students}}$
Active Learning Strategies	.84	.90
Active Learning Technology	.88	.89
Active Learning Experience	.81	.73

### Descriptive Statistics

**Active learning scales.** As seen in Table 4.2, results indicate that the majority of participants who completed the survey agreed their active learning classroom experience was beneficial considering the calculation demonstrated all the scales from both faculty and students were 4.00 or above.

Table 4.2 *Descriptive Statistics for the Subscales of Faculty (n=17) and Student (n=319) Surveys*

Subscales	Faculty		Student	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Active Learning Strategies	4.00	0.61	4.03	0.70
Active Learning Technology	4.41	0.62	4.22	0.75
Active Learning Experience	4.59	0.44	4.12	0.82

The following subsections of (a) active learning strategies subscale statistics, (b) active learning technology subscale statistics, (c) active learning experience subscale statistics, (d) technology usefulness statistics, and (e) active learning in traditional and online course environments statistics will be presented.

**Active learning strategies subscale.** In this scale, both faculty and students were asked to rate their agreement on 15 items shown in Table 4.3. The mean calculations and corresponding standard deviations for both faculty and students can be shown.

Table 4.3 Descriptive Statistics for the Active Learning Strategies Subscale for Faculty ( $n=17$ ) and Student ( $n=319$ ) Surveys

Statements	Faculty		Student	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
I worked together with other students when providing content of study units	4.71	0.47	4.20	0.91
I independently planned and carried out learning tasks	4.06	0.83	3.78	0.97
I sought out all knowledge independently seeking different information sources	3.06	0.83	3.63	1.03
I used electronic nets to seek knowledge for assignments	3.71	1.11	4.09	0.95
I worked in groups on problem-solving tasks.	4.71	0.47	4.25	0.84
I independently produced reviews, outlines of sessions, and presentations	3.77	0.83	3.50	1.08
I elaborated on my assignments based on a theme	2.94	0.90	3.78	0.89
I took responsibility for planning and carrying out fairly large projects	4.00	1.00	3.65	1.05
I used information very critically	4.12	0.60	4.08	0.82
I discussed together with other students the best solutions for assignments	4.29	0.77	4.25	0.86
I experimented and elaborated on new solutions to problems	3.94	0.83	3.94	0.87
I self-evaluated my own products	4.00	0.79	3.88	0.93
I sought additional knowledge outside of the required course content listed in the syllabus	3.88	0.93	3.82	0.96
I worked intensively with my assignments	4.29	0.47	4.10	0.78
I set objectives for myself and my learning	3.59	1.00	4.09	0.83

Faculty participants perceived themselves implementing a high level of instructing students to work together with other students when providing content of study units ( $M = 4.71$ ,  $SD = 0.47$ ) and using group-based problem-solving tasks ( $M = 4.71$ ,  $SD = 0.47$ ). While students believed they had a high level of group-based problem-solving tasks ( $M = 4.25$ ,  $SD = 0.84$ ), they felt faculty implemented a high level of discussion with other

students to complete assignments ( $M = 4.25$ ,  $SD = 0.86$ ). All four items with the highest means from faculty and students focused on collaborating with others to complete course tasks.

While faculty participants felt that many active learning strategies listed in the subscale were utilized, they felt elaborating assignments based on a theme was a strategy they did not use often ( $M = 2.94$ ,  $SD = 0.90$ ). They also felt that they did not implement the strategy of asking students to independently seek knowledge from different sources ( $M = 3.06$ ,  $SD = 0.83$ ). Students also indicated faculty did not instruct them to independently seek knowledge from different sources as often as other strategies ( $M = 3.63$ ,  $SD = 1.03$ ). They also believed faculty did not utilize much the strategy of independently producing reviews, outlines of sessions, and presentations ( $M = 3.50$ ,  $SD = 1.08$ ). These results suggest that faculty and students did not experience as much active learning strategies that required students to work independently as part of completing course activities.

**Active learning technology subscale.** After rating their level of agreement on active learning strategies, faculty and student participants were asked to rate their level of agreement for five items that related to their experiences with the active learning technology installed in the classrooms. Table 4.4 demonstrates the means of these items for both faculty and students and the corresponding standard deviation of each mean score.

Table 4.4 *Descriptive Statistics for the Active Learning Technology Subscale for Faculty (n=17) and Student (n=319) Surveys*

Statements	Faculty		Student	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>

Prior to the instructor teaching course-related content, I had enough hands-on experience with the technology installed in the classroom	4.06	0.66	3.65	1.15
I found the technology available in the active learning classroom(s) adequate for the learning that took place in the course	4.41	0.62	4.19	0.86
The internet access was adequate while I implement activities in the active learning classroom(s)	4.56	0.51	4.15	0.90
When participating in course activities, my computing (computer, display units, sound) needs were met	4.53	0.62	4.20	0.81
Overall, my technology needs have been met when taking a course in the active learning classroom(s)	4.65	0.49	4.25	0.78

Faculty members were also asked four additional items that relate to the support they received when preparing to use active learning technology. Table 4.5 shows the additional items.

Table 4.5 *Descriptive Statistics for the Faculty Only Active Learning Technology Subscale Items (n=17)*

Statements	<i>M</i>	<i>SD</i>
I received a sufficient amount of training on technology integration approaches for teaching in the active learning classroom	4.24	0.66
I received training on basic troubleshooting for technologies available in the active learning classrooms	3.88	0.99
Before starting to teach in the active learning classrooms, I received a sufficient amount of training in using the technology available in the active learning classrooms.	4.06	0.56
I had adequate technology support (e.g., troubleshooting) from the university to meet my teaching needs (e.g., need to use synchronous communication)	4.53	0.62

Overall, both faculty ( $M = 4.65$ ,  $SD = 0.49$ ) and students ( $M = 4.25$ ,  $SD = 0.78$ ) believed the technology installed in the active learning classrooms were beneficial to the learning experience. While there was overall agreement regarding the technology, student

participants felt more hands-on experience with the technology installed in the active learning classroom was needed ( $M = 3.65$ ,  $SD = 1.15$ ). Faculty participants suggested that more training for troubleshooting may be needed when the active learning classroom technology fails ( $M = 3.88$ ,  $SD = 0.99$ ).

**Active learning experience subscale.** Faculty and students were asked to rate their level of agreement regarding their general active learning experience. Both participant groups were asked four items that are reported in Table 4.6. The report includes the mean for each group and the corresponding standard deviation for each mean.

Table 4.6 *Descriptive Statistics for the Active Learning Experience Subscale for Faculty (n=17) and Student (n=319) Surveys*

Statements	Faculty		Student	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
I think my learning experience in the active learning classrooms have been a waste of time (reversed coded)	4.77	0.44	3.59	1.40
I improved my learning skills after taking a course in the active learning classroom(s)	4.47	0.51	3.94	0.96
I think teaching with active learning pedagogy makes sense to implement in higher education.	4.77	0.56	4.13	0.90
Overall, I think my student experience was adequate when taking a course in the active learning classroom(s)	4.35	0.49	4.18	0.84

Similar to the technology subscale, two additional items fit only the experiences of the faculty members. Table 4.7 demonstrates the additional items that were included in the faculty survey.

Table 4.7 *Descriptive Statistics for the Faculty Only Active Learning Experience Subscale Items (n=17)*

Statements	<i>M</i>	<i>SD</i>
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Preparing to teach in active learning classrooms created more administrative work for me (reverse coded)	4.06	1.35
I think other faculty members in my department were inspired by my experience with teaching in active learning classrooms	3.59	0.94

Overall, faculty ( $M = 4.35, SD = 0.49$ ) and students ( $M = 4.18, SD = 0.84$ ) both felt their course participation in the active learning classrooms was adequate. While their overall experiences between the two groups were similar, the results regarding whether the active learning classroom experience was a waste of time were different. Among faculty, they overwhelmingly disagreed with the notion that the experience was a waste of time ( $M = 4.77, SD = 0.44$ ). However, student participants had mixed perceptions on whether such an experience was a waste of time ( $M = 3.59, SD = 1.40$ ). When analyzing the influence of the experience to academic departments, faculty participants felt neutral that their participation in the active learning classroom experience would influence other faculty members in their department to enhance their instruction through active learning strategies ( $M = 3.59, SD = 0.94$ ).

**Technology usefulness.** Aside from the subscales in the surveys, both participation groups were asked how useful 12 technology tools were that were installed in at least one of the various active learning classrooms. The usefulness mean scores are presented in Table 4.8 along with their corresponding standard deviation.

Table 4.8 *Descriptive Statistics for the Technology Usefulness Scale for Faculty (n=17) and Students (n=319)*

Technology features	Faculty		Student	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Television Displays	4.65	1.22	4.33	1.18
Power Outlets built into Tables	3.88	1.58	4.00	1.67
Short-Display Interactive Projectors	3.06	1.92	3.74	1.71
Touch-Screen Display Switch	4.00	1.58	3.35	1.96
AppleTV Device	3.88	1.73	3.22	1.97

HDMI/VGA Display Inputs	4.41	1.23	3.80	1.73
iPads	3.12	2.00	2.86	2.17
Built-in Computer	4.12	1.50	3.03	2.14
Wireless Keyboard and Mouse	4.00	1.62	2.99	1.10
Sharp Aquos Interactive Display	2.53	2.04	2.95	2.03
Document Camera	2.35	2.00	2.51	2.12
Blu-Ray Video Player	1.71	1.93	2.24	2.09

For both faculty ( $M = 4.65$ ,  $SD = 1.22$ ) and student ( $M = 4.33$ ,  $SD = 1.18$ ) participant groups, the television displays were the most useful when completing activities in the active learning classrooms. Both faculty ( $M = 2.35$ ,  $SD = 2.00$ ) and student ( $M = 2.51$ ,  $SD = 2.12$ ) participants also agreed that the document camera was one of the least useful tools in the classrooms. Students ( $M = 2.24$ ,  $SD = 2.12$ ) also agreed with faculty ( $M = 1.71$ ,  $SD = 2.00$ ) that Blu-Ray video players were not useful for the active learning classroom experience.

***Active learning in traditional and online course environments.*** Faculty and students were asked if, after their experience in the active learning classrooms, active learning strategies could be implemented in other teaching and learning environments such as traditional classrooms and online courses. When asked about the possibility to implement active learning strategies in a traditional classroom, faculty members were slightly more mixed on whether such strategies can fit in the traditional environment ( $M = 3.71$ ,  $SD = 0.85$ ). Students reportedly agreed slightly more that such strategies could occur in that environment ( $M = 4.02$ ,  $SD = 0.94$ ). In regards to implementing active learning strategies in online courses, both faculty ( $M = 3.18$ ,  $SD = 1.07$ ) and student ( $M = 3.66$ ,  $SD = 1.17$ ) participants were mixed on whether the strategies could be implemented effectively.



## Qualitative Findings & Interpretations

I conducted separate focus group interviews with faculty and students to gain a thorough understanding of their experiences with active learning classrooms. This qualitative data was analyzed using inductive analysis. Before running through several cycles of coding, I started preliminary jotting and pre-coded to determine the best coding scheme (Saldana, 2016). After coding several transcripts, a coding scheme was developed, which was then used to code the rest of the faculty and student focus group interviews. During the initial coding, I used descriptive, in vivo, and process coding as the first cycle coding strategies. After the first cycle of coding, I used pattern coding to group the codes to create categories and themes. During the qualitative data analysis, I utilized Delve, an online qualitative analysis tool, and Microsoft Excel to create my codes, categories, and themes.

### Analysis of Qualitative Data

Each code that was created during the initial coding process was categorized as either *faculty*, *student* or *both* (see Figure 4.1). These 3 meta-codes helped me organize the initial codes according to their relative group. For example, when a faculty transcript snippet related to a student transcript code, I labeled the faculty transcript snippet as that code and was placed in the primary code family of both.

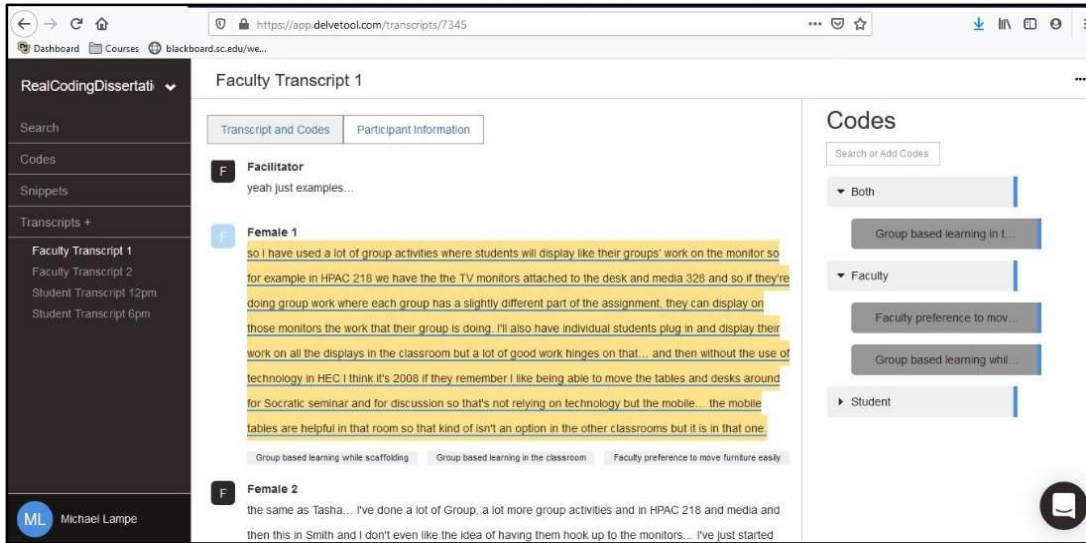


Figure 4.1. Use of Delve to create codes and organize them appropriately.

There were 459 total codes created between the 4 focus group transcripts. 242 codes were created specifically relating to what faculty members discussed about their experiences and needs in the active learning classrooms. There were 193 codes were created specifically relating to what students discussed about their experiences and needs in the active learning classrooms. 20 codes fell into the primary family code of both.

After holding a peer debriefing session with the dissertation committee chair, I regrouped many of these codes into new codes that were more comprehensive and representative of the participants' statements. As a result of this process, 49 new codes summarizing the initial codes were created. Table 4.9 presents the nien categories that were created from the second-round codes.

Table 4.9 *Categories and Codes Alignment*

Categories	Codes
1. Faculty development takeaways	<ul style="list-style-type: none"> <li>• Faculty development for assessment needs</li> <li>• Faculty development planning and preparation</li> <li>• Faculty development for technology needs</li> </ul>

2. Post-faculty development experience

3. Post-active learning experience

4. Preparing to teach in the active learning classroom

5. Diversification of content delivery

6. Active learning classroom impact on participant behavior

8. Active learning classroom technology

- The faculty development experience
- Initial implementation experience
- Instructional innovation
- Diversifying the university classroom
- Impact on online courses
- Online discussion
- Standardizing the university classroom
- Traditional classroom experience
- University infrastructure impact
- Content delivery experience
- Content preparation
- Lecturing as content delivery
- Orienting to new classrooms
- Student-based content delivery
- Class sharing
- Collaboration
- Discussion
- Flipped learning occurring in the classroom
- Group-based learning
- Information gathering
- Assessment issues in the classroom
- Impact on assessment
- Impact on learning outcomes, objectives, or standards
- Classroom distraction
- Classroom motivation
- Focus and attention span impact
- Moods and motivation
- Participation and engagement
- Social impact
- Student accountability
- Specific technology tools
- Technology experiences
- Technology failures

- Technology perceptions
- Technology requirements
- Technology updates impact
- Classroom design
- Comfortable and relaxing feeling
- Impact of classroom furniture
- Impact of whiteboards
- Line of sight
- Need for instructional backstage
- Physical space size impact

## 9. Active learning classroom features

To create the categories, I reorganized the exported codes from Delve into a Microsoft Word document. Then, I created a Microsoft Excel Workbook and created tabs for each category. For each code that fit the category, I chose up to five example snippets that represented the opinions expressed by the focus group participants (see Figure 4.2).

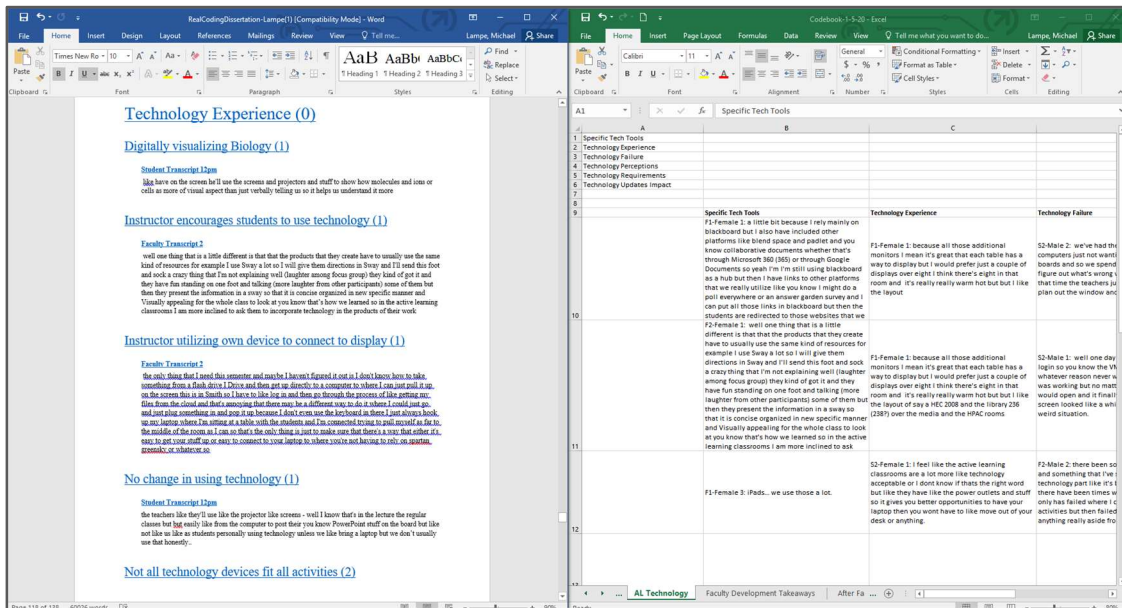


Figure 4.2. Importing Delve-generated codes and placing them into categories using Microsoft Excel.

## Presentation of Findings

After reviewing the categories aligned with the corresponding codes, three themes emerged. I will discuss the following themes: (a) faculty development impact to create a community of practice for academic innovation, (b) classroom impact to engage in collaborative practices, and (c) active learning classroom design. Considering the need to protect the anonymity of the participants involved with this study, the actual names of the participants were replaced with codes that represent each participant. The coding structure to identify the participant is based on whether they were a faculty or student, whether they went to the first or second focus group, their gender identification, and a number assigned to them in the order of when they started participating in the focus group. For example, F2-Male 1 means the participant quoted was a faculty member from the second faculty focus group who identified as the first male who starts sharing his experience.

**Faculty development impact to create a community of practice for academic innovation.** Faculty development can provide the institution an opportunity to create a faculty community of practice when trying to enhance the student learning experience (Ebert-May et al., 2011; Florman, 2014). For this study, this theme refers to the creation of new learning activities that is created when intentional university programming occurs that focuses around engagement, reflection, analysis, and application of the new learning environment (Bachen et al., 2014; Ertmer & Ottenbreit-Leftwich, 2010; Holt et al., 2013; Oblinger, 2006; Paige et al., 2015; van Leusen et al., 2016). During such intentional programming, faculty participants can start forging new bonds with each other to assist in improving teaching practices (Ebert-May et al., 2011; Florman, 2014; Holland et al.,

2020). It is also important for institutional leadership such as Chief Academic Officers and Chief Information Officers to initiate instructional and technological infrastructure change based on results occurring from faculty development initiatives (Brooks, 2011; Dahlstrom, 2015; Williams Van Rooij, 2011). This theme will cover (a) faculty development takeaways, (b) the post-faculty development experience, and (c) post-active learning experience.

***Faculty development takeaways.*** Participants in the focus groups had positive experiences, but also provided feedback on future active learning faculty development implementation. For this study, faculty development takeaways are defined as participant evidence indicating lessons learned from intentional university programming that focused on the new learning environment, engagement, reflection, analysis, and application (Bachen et al., 2014; Ertmer & Ottenbreit-Leftwich, 2010; Holt et al., 2013; Paige et al., 2015; van Leusen et al., 2016). This category will discuss (a) faculty motivations and (b) faculty being the student experience.

***Faculty motivations.*** An important factor for faculty development success is connecting teaching experiences with the content being discussed in a faculty development program (Cox, 2015; Gilstrap, 2013). In this study, faculty motivations mean training activities, related to improving teaching at the university, having a connection to faculty experiences and needs that have led them to participate in such training activities. In terms of connecting the motivation for faculty to participating in the active learning faculty development activities, one faculty member commented:

F1-Female 2: I think just the fact that I went to the training... that's what I wanted to do... to see if I thought it was better or worse or you know. I think so it was more for me just to learn to be a better teacher really more than anything.

In the same focus group, another faculty member also discussed the ability to try new strategies and building a community of practice with other faculty members:

F1-Female 1: So I think just the collegiality of it. Like, being able to have that time in the summer... that was specifically designated for exploring new methods. New instructional methods were really valuable, and being able to share ideas... I think we had to submit like lessons or something new this summer. I did it so that was really helpful and it gave me a lot of possibilities.

While there were faculty participants who indicated positive overall experiences with the faculty development programs, there were some participants who expressed criticisms. Such criticisms included a lack of utilizing the faculty development textbook and feeling that the content covered was not presented in an appropriate manner suitable for faculty members. This demonstrates a potential lack of intentionality when dealing with the limited time faculty can devote to faculty development (Morrison, Ross, Kalman, & Kemp, 2013, p. 58). For example, one faculty participant indicated:

F2-Male 1: I read the whole book and I think that's what just made me (agreement from Female Faculty 1) angry the whole time (ooooh from Female Faculty 2). I felt like, (a), my time wasn't being respected and, (b), if one of the fundamental ideas of active learning is you have to motivate people to do the work outside of class so that class time can be used effectively... then modeling it on the assumption that we hadn't done the work was a failure.

The same faculty member called for the faculty development experience to provide more examples to model implementing active learning strategies in the classroom:

F2-Male 1: Time to develop activities with feedback from others in the class and the class instructors was useful and I think more of that time would have been useful. Like, instead of the instructors spending a lot of time training us, I think a very quick rundown of types of activities and then just workshopping for the rest of the week would have been best.

Along the same subtheme of providing more examples when implementing active learning in collegiate courses, faculty members made recommendations to help them provide context on how active learning can enhance the student experience. One major recommendation about the faculty development structure was requiring faculty to experience the active learning classroom before deciding to participate in the faculty development program (Florman, 2014). One faculty member described an experience with a fellow colleague:

F1-Female 1: Where people can go and sit in on an active learning classroom. Like one of my visitors this year said that she was going to take the training this summer. So she's already been observing an active learning classroom before she even goes into the training. I think that's really valuable if you could require that.

Based on these findings from the participants discussing the faculty development experiences, it is important for those designing and facilitating the faculty development programs to be intentional when recruiting faculty to participate in specific faculty development activities to ensure you implemented the activities discussed in the recruiting process. This includes providing opportunities to see how instruction is done in the active learning classrooms, help other faculty members connect with those also interested in active learning strategies, and applying the required materials to implement active learning strategies effectively.

*Faculty being the student experience.* While faculty development programs should consider specific faculty motivations to participate, they should also integrate approaches such as interacting in informal conversations, active listening, and other trust-building activities (Birdwell & Uttamchandani, 2019; Fox & Sumner, 2014; van Leusen et al., 2016). In this study, faculty being the student experience means faculty feeling like



students while participating in active learning training activities. While the faculty development facilitators intended to train faculty in active learning using active learning strategies, there were mixed feelings among focus group participants regarding this approach. All of the faculty focus group participants that brought up the facilitation strategy expressed the feeling of being a student when participating. From a positive perspective, one faculty member indicated:

F1-Female 2: I felt like this is how I want my students to feel, you know? I love to talk as you can tell, so I like to work in a group and I just thought that was very helpful working in a group during active learning training.

While the facilitation aimed to help faculty trainees understand the collaborative nature of active learning, there were faculty members who felt negatively about such an approach. One faculty member criticized the facilitation strategy expressing:

F1-Female 1: We were placed in an approximately nineteen-year-old's position to have to do certain tasks and go through certain activities and that was, I think... in part... what was frustrating. you know? Like just give me a flashcard that says here's the thing you can do, and don't make me like play active learning duck duck goose. I know what duck duck goose is.

This may relate to the perception as indicated by F2-Male 1 as the classroom having “more comfort” and a “less formal atmosphere.” Such evidence creates a conflict between the participant statements of perceived formal interactions faculty expect and the active learning research defining active learning as informal and relaxed (Harrop & Turpin, 2013; Pates & Sumner, 2016). It may also suggest to intentionally explore how to balance formal interaction with informal pedagogy.

***The post-faculty development experience.*** After completing the active learning faculty development program, at least one course a faculty participant regularly teaches

was scheduled in an active learning classroom. For this study, the post-faculty development experience is defined as participant evidence indicating the effectiveness of implementing the newly created learning activities inspired from the intentionally programmed active learning training (Bachen et al., 2014; Ertmer & Ottenbreit-Leftwich, 2010; Oblinger, 2006; van Leusen et al., 2016). This category provides insights from faculty focus group participants regarding how they transitioned from the faculty development experience to implementing active learning strategies in their courses. This category will indicate (a) initial implementation experiences and (b) instructional innovation.

*Initial implementation experiences.* After attending a faculty training on active learning, it is important for faculty members to feel confident with implementing active learning strategies and using technology tools the new classrooms offer (Auerbach & Schussler, 2016; Ebert-May et al., 2011). For this study, initial implementation experiences mean what active learning activities faculty participants implement during their initial semester in the active learning classrooms. When F1-Female 3 stated, “the active learning classrooms open our minds of what you can and can’t do in a classroom... which is helpful, but it takes time,” she continued to recommend new faculty participants the following:

F1-Female 3: I would tell them to experiment as much as possible the first semester, even if it's a disaster (other participants say mm-hmm), to try everything and then they'll know when they plan their class the next time when it works and (when it) doesn't.

Parallel to faculty members' perception that it took time for them to implement active learning strategies confidently and effectively, the student focus group participants who took at least one course in an active learning classroom also emphasized that it took some

time for them to fully benefit from the new active learning classrooms. For example, S2-Male 2 described:

S2-Male 2: They just kind of modify their lesson plans a little bit better because we didn't recently start using the room to its full potential until after our second exam so we are already halfway through.

Later on, the same student described the faculty participants' first semester of teaching in the active learning classrooms as having a "get out of jail free card". Based on this evidence, there appears to be an implementation lag when integrating active learning strategies shortly following the faculty development program. While there were required faculty development activities once a month after the initial summer faculty development program, more intentional analysis may be needed to lower the challenges that shorten the implementation of active learning strategies in the initial semester of being in active learning classrooms (Chiappe & Lee, 2017; Fournier et al., 2014).

*Instructional innovations.* As faculty participants enter into a new environment to teach their instructional responsibility, Bachen, Erlog, and Cutler (2014) suggested that not utilizing the active learning classrooms to the fullest extent can limit instructional implementation. Considering these classrooms emphasize implementing new active learning strategies, there was evidence demonstrating instructional innovations in content delivery. For this study, instructional innovations mean faculty members being able to implement creative activities aligned with the definition of active learning pedagogy. In one instance where the classroom provided the affordance to be more creative, F2-

Female 3 indicated:

F1-Female 3: I just try to do a lot more creative things and have, like, a different activity every class period whereas if it was a regular class... like 'we're doing worksheets again' (laughter) or whatever. We're doing this again...

Considering one of the goals of the active learning faculty development program is for faculty members to implement active learning strategies, it is important to capture experiences when faculty members implement such strategies (Ertmer & Ottenbreit-Leftwich, 2010; Gal & Nachmias, 2011). Demonstrating a time where a faculty member adapted a faculty development activity into an active learning activity, F2-Male 2 described:

F2-Male 2: It was something with an entry ticket thing where it was... they had like a one or two question quiz. It was a very broad concept just to make sure that they understood like what we were talking about that day, because most of the time they don't know until we start like with the actual class activities. So last semester, to hopefully encourage them to do at least some of the reading and familiarize themselves with the content, I had these little questions. They're just on notecards just to start us off like hopefully all understanding the main concepts.

In his example of adapting the faculty development activity into his course, he implemented a constructivist approach of asking the students to elicit prior course knowledge to ensure his content delivery method for the day will work (Hartle, Baviskar, & Smith, 2012).

Evidence from the participants suggested that the classrooms' influence to collaborate more provided new forms of innovative activities. For example, F1-Female 1 suggested that collaborative student content creation technology, such as Microsoft Office365 or Google Drive, allowed easier implementation of her class podcast projects. She described:

F1-Female 1: I'm having a class create podcasts. I want them to go out and explore podcasts and then share what they feel are the best examples that we can use as models and mentor text. So I feel like having that document as kind of the tracks of our learning keeps

them invested and they have more of a stake in it. They're more responsible for each part of that assignment.

The evidence provided by the faculty participants suggests that the environment of active learning classrooms influence the instructional inputs of faculty content delivery that encourage the output of active participation from students (Astin, 1999). When determining the effectiveness of the active learning classrooms, university administrators should acknowledge the opportunities to discover new course activities that could enhance the learning experience.

***The post-active learning experience.*** Considering the faculty development experience builds a faculty community surrounding enhancing instruction through new strategies, such community starts affecting how participants perceive improvements needed at the university (Ebert-May et al., 2011; Florman, 2014; Ertmer & Ottenbreit-Leftwich, 2010; Gal & Nachmias, 2011). In this study, the post-active learning experience means participant evidence indicating a change in outlook in teaching based upon the intentional programming in the active learning pedagogy (Bachen et al., 2014; Ertmer & Ottenbreit-Leftwich, 2010; van Leusen et al., 2016). In this category, the topics of (a) diversification versus standardization in the classroom, (b) the active learning classroom impact on current university practices, and (c) the online course debate will be presented.

***Diversification versus standardization in the classroom.*** Among focus group participants, there was significant evidence favoring active learning classroom experiences over the typical, more traditional, classroom. For example, S1-Female 4 stated, “I feel there should be more active learning classrooms than there are right now.” S2-Female 2 also stated, “I think my overall experience is good. I think a lot more

professors should do it.” Some faculty participants shared the same feelings of the active learning classrooms. Here is a quick exchange between two faculty members in the first faculty focus group:

F1-Female 2: Now that I’ve taught, this one’s kind of corny, but now that I’ve taught in the active learning classrooms, I don’t want to go back to a regular (classroom).

F1-Female 1: Yeah, I agree. (Laughter from participants)

F1-Female 3: For sure, it’d be hard.

F1-Female 2: M-hm. (In agreement with F1-Female 3 statement)

While there was an overall agreement on continuing with teaching and learning in active learning classrooms, focus groups participants’ experiences and opinions varied about whether the university should diversify the overall classroom designs on-campus versus standardizing to a particular classroom design. In this study, diversification versus standardization in the classroom means the debate occurring among focus group participants regarding to what extent university classrooms should have similar characteristics from each other.

During one of the focus group exchanges identifying issues with the first active learning classroom constructed, S2-Female 1 described the mismatch of furniture stating administrators designing active learning classrooms should “just pick that one type of furniture and have it throughout.” During a faculty focus group, F2-Male 1 shared a similar opinion stating that “yeah, homogenizing makes life easier.” These align with other research suggesting that university leadership should provide preferred technology support to ensure classroom implementation success (Brooks, 2017; Dahlstrom, 2015).

Based on evidence made by S2-Male 2, it was recognized by the focus group participants

that newer classrooms were more “uniform” and that progress is being made based on participant feedback.

While some focus group participants are calling for more standardization in the classroom, some focus group participants expressed a preference for diversifying the overall classroom experience. Such focus group participants suggested that not one type of classroom fits all course activities. As an example, F2-Male 1, as a faculty member who had issues implementing individual assessments in class, indicated:

F2-Male 1: the university talked about a more flexible way of scheduling courses, you know with more hybrid (courses) and active learning classrooms. It would work well with that model, but that would also hopefully free up some traditional classrooms for test-taking. So you could have your class, you know, 80% of the time in the active learning (classroom) and then schedule the traditional classroom for exams.

F2-Male 1 suggested that the university should explore implementing an intentional approach to how courses are scheduled based on scheduled course activities.

*The active learning classroom impact on current university practices.* Universities need to have visionary leadership from their Chief Academic Officer and Chief Information Officer to ensure the active learning classroom experience fits with other initiatives and practices on campus (Brooks, 2011; Dahlstrom, 2015; Williams Van Rooij, 2011). In this study, the active learning classroom impact on current university practices means how the active learning classroom experiences led to discoveries regarding corresponding faculty development programs and traditional classroom experiences.

Faculty focus group participants recognized that various faculty development programs encouraged academic innovation. For example, F2-Female 2 shared how, “also

because of QEP (Quality Enhancement Plan)”, she now uses technology more often when delivering content in her class. F1-Female 1 also made a faculty development recommendation based on an institution-wide program that was facilitated by an instructional designer where it allowed faculty to observe other faculty teaching their course. Such evidence adds to similar studies that demonstrate a systematic approach to faculty development that impacts various parts of the academic experience (Florman, 2014; Graham, 2012).

When asking to compare the active learning experience to the other course environments at the university, it was clear the active learning classroom experience shed discoveries regarding traditional classroom experiences. While there was ample evidence to indicate the benefits of active learning classrooms, there was evidence that suggests active learning classrooms should not fully replace all classrooms. For example, S1-Female 4 believed that lecturing requires the student to only “focus on that one thing” versus the active learning classroom requiring more focus during collaboration and discussion. S2-Female 1 also described active learning classrooms increasing the ability to have “side conversations” which can lead to distractions.

Another issue F2 Female 1 observed aside from the side conversations, she shared that “students can’t take notes while they’re having so much fun” which required her to implement activities to capture the content through students presenting on topics to their peers. Evidence from the focus group participants suggests that intentionally planning faculty development experiences and providing various classroom designs that diversify pedagogical strategies can lead to students acquire a wide range of skills that include both focus, note-taking, and collaborating with others.



*The online course debate.* When asked about whether faculty can implement active learning strategies in online courses, focus group participants felt such strategies could only be implemented in a limited capacity. For this study, the online course debate means the varying degree of perceptions on how faculty members can integrate active learning strategies in the online course environment. For example, F1-Female 2 felt some of her face-to-face activities “were just disasters in my online classes.” S2-Male 2 also shared, “I don’t think they really work because the online classes... I’ve had the teachers just like, here’s the PowerPoint and the test is two weeks from now... have fun.” While F1-Female 1 also felt that it would be difficult to implement active learning strategies online, she thought it may be possible if “students were online at the same time.” Aside from the limitations of implementing active learning in online courses, F2-Male 1 believed his online non-major botany course was “quite fun” asking students to share lab results on Padlet and online collaborative spreadsheets. Such evidence suggest that the majority of online course offerings at the university may not align with the definition of active learning.

**Classroom impact to engage in collaborative practices.** Active learning as an instructional strategy can increase the number of collaborative activities such as discussion, project-based work, group work, and cooperative learning (Dilmac, 2016; Nordquist & Laing, 2015). In this study, this theme is defined as the change in faculty or student behavior to participate in learning activities such as discussion, project-based work, group work, cooperative learning, and peer-to-peer teaching based on the new classrooms’ positioning of technology and furniture (Brooks, 2011; Connolly & Lampe, 2016; Coorey, 2016; Dilmac, 2016; Fournier et al., 2014; Nordquist & Laing, 2015).

When a classroom is intentionally designed for such activities, it places a need for instructors to assess the congruency between objectives, methods, and evaluation (Amemado, 2014; Ruder et al., 2018). This theme emphasizes focus group participants describing (a) preparing to teach in the active learning classrooms (b) the diversification of content delivery, and (c) the impact of participants' behaviors.

***Preparing to teach in the active learning classrooms.*** Preparing to teach in an active learning classroom and use strategies to facilitate active learning requires planning for each class and orienting students in the new environment. In this study, preparing to teach in the active learning classrooms means participant evidence indicating teaching preparation activities occurring due to the collaborative nature of the active learning classrooms (Brooks, 2011; Connolly & Lampe, 2016; Coorey, 2016; Dilmac, 2016; Fournier et al., 2014; Nordquist & Laing, 2015). When participants were discussing content delivery preparation, they discussed (a) lesson planning and (b) orienting to the new active learning classroom.

***Lesson planning.*** Part of the lesson planning experience is the ability to match the course activities with the course objectives as mapped in the academic curriculum (Dilmac, 2016; Nordquist & Laing, 2015). Before implementing an active learning activity, many instructors felt the need to continuously improve future planning. For example, F1-Female 2 discusses trying to chunk time for her class activities:

F1-Female 2: I can't remember if it was (20)16 or (20)17 when I first finished active learning training over the summer. I was so excited and so I tried even though I should teach 50 minutes. I tried to devote like... I like to break it down in like okay 25 minutes of lecture and then you know 20-ish minutes of an active learning act(ivity). So I tried to structure it, but that didn't really work. Then we started discussing stuff, but just that didn't really work, but I do

incorporate more activities (mm-hmm from Facilitator and a participant) well.

F1 Male 2 also shared a similar sentiment when having issues applying active learning strategies with the length of a class period. As he was describing groups sharing with the entire class, he indicated:

F1-Male 2: You know, there are eight tables. There are times where it seems like that we're running out of time for the class, and I generally have cut back on some of the other, maybe, lecture part to leave more time to make sure that we don't just call on one person or one group. That we can actually go around and let everyone participate.

This example demonstrates that, even if the faculty member intends to implement the active learning activity, the potential extended time of an active learning activity can hinder completing course objectives.

*Orienting to the new active learning classrooms.* In higher education, it is a common practice for the university to provide an orientation to faculty and students, navigating them through the university experience. In this study, orienting to the new active learning classrooms means participant perceptions reflecting on the process of becoming familiar with the new active learning classrooms. Focus group participants discussed the limited degree faculty members oriented students to the new classroom environment. For example, S1-Female 4 described how students will notice the difference in participating in the course by stating:

S1-Female 4: You gotta get used to it more because I wasn't used to like working with others all the time and talking with them because usually, I mean you know, in class you sit in the chair and you're quiet the whole time. Then you know, you talk and you listen the whole time, take your notes. You know like you said earlier, and then you leave, but these active learning classrooms like are so different than that because it requires you to like talk more and work together.

Various student participants hinted toward not having such a needed new classroom orientation. For example, one student said:

S1-Female 5: We were just kind of like thrown into the active learning (classroom) without like know... or we knew beforehand that he was going to collaborate with us, but he wasn't like... oh... he didn't like slow the transition. It wasn't like the first day we know everything.

S2-Male 2 also expressed similar views indicating the faculty members “dropped us right in feet-first.” The evidence shared by the focus group participants indicates a potential need to enhance familiarity efforts of the new active learning classroom environments (Brooks, 2011; Connolly & Lampe, 2016; Fournier et al., 2014).

*The diversification of content delivery.* There was ample evidence that active learning classrooms influenced how the faculty members delivered their course content. In this study, the diversification of content delivery means participant evidence indicating instructional adjustments that were made due to the classroom’s features emphasizing collaborative practices (Brooks, 2011; Connolly & Lampe, 2016; Coorey, 2016; Dilmac, 2016; Fournier et al., 2014; Nordquist & Laing, 2015). The assertions made in this category will describe (a) the increase in active learning activities, (b) the lecturing debate, and (c) changing assessment strategies.

*The increase in active learning activities.* The new classrooms constructed at the university for the Federal grant was intentionally designed to integrate active learning as a pedagogy. In this study, the increase in active learning activities means focus group participants participating in more activities such as discussion, group-based learning, and other activities that fit the active learning definition. Parallel to the findings of previous research about active learning, many focus group participants indicated that they spent

more time discussing the content in class and participating in group-based activities (Dilmac, 2016; Nordquist & Laing, 2015). S1-Female 3 talked about how “Spanish is mainly discussion.” F2-Male 1 also described how “almost all of what they (students) do is discussion”. He describes later on in the focus group how he implemented “a lot of small group discussion and a lot of asking students to draw diagrams or to record lists or do problems on the many whiteboards” in his science courses. F1-Female 1 also suggested that “a larger percentage of students are engaged in discussion... more students talk.”

Going more complex in active learning strategies, participants discussed more group-based activities being implemented. For example, S1-Female 2 discussed how they would be grouped based on what table they were sitting in to summarize “little parts of the textbook”. Once they were done planning their presentation, she stated:

S1-Female 2: (we) share it with like the other groups and then we'll go write on the boards and like just talk about it and find other examples and it doesn't have to be straight facts either.

Similar with activities that would specifically fit the definition of active learning, some focus group participants indicated that the content delivery that occurred in the active learning classrooms were more constructivist in nature (Alt, 2016; Connolly & Lampe, 2016; Dennick, 2016). For example, F1-Female 1 described her English course wanting to be more “student-driven”. She continued stating:

F1-Female 1: whereas everything used to come from our textbooks or from whatever course materials I provided on Blackboard. Now, I have students finding things that are, you know, reliable and relevant to what we're discussing. So yeah, the students help drive the instruction in that way.

Based on the evidence provided by the focus group participants, the active learning activities taking place in this study is similar to other studies that demonstrated discussion, group-based learning, and other constructivist activities aligning with the active learning pedagogical definition (Alt, 2016; Connolly & Lampe, 2016; Dennick, 2016; Dilmac, 2016; Nordquist & Laing, 2015).

*The lecturing debate.* Content delivery in the active learning classrooms as described by most of the participants indicated the shift from lecturing to devoting more time for active learning strategies (Kyu et al., 2014). One of the goals of implementing more active learning strategies is to determine whether such strategies increase focus for students who may find it harder to focus when listening to a lecture (Kay et al., 2019). In this study, the lecturing debate means the perceptions of lecturing as a content delivery strategy in a course. From a student perspective, two participants indicated that lecturing goes “in one ear and out the other.” Aside from this sentiment, S1-Female 1 stated she believed some classes “need to be like straight lectures so you get all of the materials.”

While some participants viewed lecturing versus active learning as a binary situation, some participants noticed that they needed to balance lecturing with active learning strategies. For example, F1-Faculty 3 stated:

F1-Female 3: When I first started, I forced myself to change a lot. Like, we're doing this a hundred percent no lectures. Then, I've like had gone back. I'm like half and half because they need at least my subject area... some lecture because otherwise, they don't know if that's true.

While S1-Female 4 believed in “using the active learning room for what it’s supposed to be for,” she also believed that there should be a “mix” where it may be important to lecture depending on the day. F2-Male 1 described his approach to mixing by implementing “mini-lectures” or “15-minute lectures” before having the students engage

in active learning activities. The evidence regarding utilizing lecturing as a content delivery strategy was mixed. While mostly students, some participants indicated students having difficulty paying attention when faculty lecture. However, some participants believe that lecturing is necessary to ensure students know foundational content before moving on to the active learning activity (Kay et al., 2019).

*Changing assessment strategies.* Considering that the classrooms are arranged to facilitate active learning activities, changing assessment strategies were also needed. When switching from a traditional lecture-based classroom environment to an active learning classroom environment, various challenges related to assessment can occur such as having to assess group-based learning and more discussion activities (Ruder et al., 2018). For example, F2-Male 1 described the following challenges with assessing student-driven, constructivist-like, strategies, “any multi-section course, we all need to have the same learning objectives even if they’re not all in an active learning classroom.” In another exchange, when F2-Female 1 mentioned how she allowed students in her English course to “write their own outcomes and kind of the competencies that they’ve learned which will be a gradable assignment,” F2-Male 1 went on to ask, “how do you handle that on the syllabus? Have you not... we’ve been told that we need to have exactly the same ones for every section.” These responses indicate some tension between the university’s need to align student performance with set curricular learning objectives and active learning strategies that are more constructivist in nature.

Another assessment challenge that participants shared described the difficulty in individual assessment strategies such as implementing quizzes or exams. For example, F2-Male 1 discussed how the design of the active learning classroom created his “first

problem with cheating because it's really hard not to cheat when you're a foot and a half from the person next to them (See Figure 4.3).”



*Figure 4.3.* An active learning classroom having limited space when faculty members want to implement individual assessments such as exams

F2-Female 2 shared the same sentiment expressing that the individual tests “count a lot less in my classes because of the same reason. They are super close to each other.” This evidence suggests a challenge to maintain the current standard of academic integrity at the university when participating in a course that is in the active learning classroom.

While some faculty members shared issues with individual assignments in the active learning classrooms, some participants indicated increased use of creative assessment approaches. For example, S2-Male 2 described how their instructor utilized gamification tools, such as Quizlet or Kahoot, to build up their knowledge retention. When utilizing these tools, he explained, “the top three got maybe a couple of extra credit points towards their final that was kind of an incentive.” F1-Female 3 indicated how she implemented “reading quizzes every day” so she can “let them (students) work as



groups.” Some participants also brought up the increased use of formative assessments. For example, F1-Female 1 described how the active learning classroom experience helped her check in more with students on their assignment progress when they were working independently. She stated:

F1-Female 1: Whereas my feedback, before, might not have come until their rough draft of their paper. Now, they're getting feedback all along the way from the time they determine a topic... they end up doing a much better job in the long run because they've gotten that formative assessment, and then the cumulative assessment is easier for me because I've kind of gone along with them in that process.

The evidence provided by focus group participants suggest that, while active learning classrooms allow for increased formative and creative assessment strategies, faculty have difficulty implementing exams and other individual assessment strategies.

*Active learning classroom impact on participants' behaviors.* Considering active learning classrooms are designed to increase the number of activities such as discussions and group-based learning, there was overwhelming evidence regarding how the active learning classrooms impacted the relationships between peers and between students and the faculty who teach them (Coorey, 2016; Lumpkin et al., 2015; Stalp & Hill, 2019). In this study, active learning classroom impact on participants' behavior means perceptions of how participants behaved in active learning classrooms due to the new positioning of technology and furniture (Brooks, 2011; Connolly & Lampe, 2016; Coorey, 2016; Dilmac, 2016; Fournier et al., 2014; Nordquist & Laing, 2015). This subtheme will be discussed in the following categories: (a) the student accountability debate and (b) participant motivation and social impact.

*The student accountability debate.* Collectively, participants had mixed reviews on the ability to keep students accountable when completing course activities. In this

study, the student accountability debate means the varying perceptions among participants whether active learning strategies increase student participation or provides more distractions to complete an activity. F1-Female 3 stated when discussing an increase in student accountability, “I think they read more because they know that they’re going to have to discuss it as a group and they don’t want to let their group down.” F1-Female 2 also believed that:

F2-Female 2: students who typically wouldn't participate, who would just sit in the back on their cell phones or sleep... I feel like it forces them to, no I don't like that word that's... encourages participation.

S2-Female 1 shared a similar experience where “the time you spend in class is more of a time when you reflect on the material. Then, you’re responsible for teaching yourself the material out of class.” This provides evidence that active learning strategies influence students to complete course tasks due to increased peer pressure or because the new classroom design exposes student behavior that detracts from completing tasks.

While there was some evidence that there is more accountability among students to complete course tasks, there was equivalent evidence indicating an increased risk of distractions that, then, lowers the likelihood of students participating. For example, S2-Female 1 discussed how being in “groups, you’re facing each other and you’re more likely to talk to each other and just even have side conversations.” F1-Female 3 shared a similar sentiment indicating that she feels like she yells at them more because “they whisper a lot more” when attempting to have “one large group discussion.”

*Participant motivation and social impact.* A topic that many participants discussed was how being in the active learning classroom impacted their mood or motivation to complete course activities and work with others (Coorey, 2016; Lumpkin et al., 2015). For this study, participant motivation and social impact means participants’

perceived behaviors and feelings regarding wanting to complete course activities. While external factors still may impact motivation to participate, F2-Female 2 noticed how students “do participate a lot more” and that they appeared “more relaxed” (Harrop & Turpin, 2013; Pates & Sumner, 2016). Along with being more relaxed, S1-Female 6 discussed how she felt “lower stress” due to the “safe environment” allowing her to talk to others. She continued to elaborate on this thought of her increased motivation in the active learning classrooms by making a comparison with the lecturing experience:

S1-Female 6: I'm just sitting where they're lecturing and I have to like remember that I'm not supposed to talk and that I have to like focus on taking notes, but like in active learning (classrooms), I can like let my mind go places and not have to like focus on one task. Like, I can focus on those cool things and that just helps me.

F2-Female 2 also indicated how teaching in the classrooms changed her mood by stating that active learning classrooms:

F2-Female 2: made me happier. I realized, I myself, feel more comfortable. I still have new students too, but with me, I smile more. I don't know it's... and I can go around and there's the freedom I have or I feel. I love it.

Along with the active learning classrooms affecting an individual's motivation to participate in class activities, they also influenced student interaction in the courses both positively and negatively. When prompted by faculty, S1-Female 5 shared how the classrooms made it more conducive to “engage with other people in the class so it makes us branch out from our like small groups and then interact with all the other people in our class.” S1-Female 3 also shared a similar sentiment:

S1-Female 3: You know the first week of coming back from Christmas break, I was like, I was in a classroom with a lot of people I didn't know. So I was like, you know, being in the active learning (classroom), being in groups of four, I was like I really don't know anyone and so... by that time, like the second day of class, everybody was

talking getting to know each other and I met a lot of people in my class that I still talk to.

While there was evidence that the active learning classrooms positively impact the way students interact, some participants suggested that there were some limitations when encouraging interaction among those in the active learning classrooms. For example, S1-Female 4 indicated, “whether or not we’re like introverted or extroverted, we’re kind of require to, like put ourselves out there.” She suggested that introverted participants may have difficulty having to interact with other students through group-based activities. F1-Female 1 also shared this perception stating, “some students might shut down if they’re forced to have a new group with which to converse.” The evidence of the focus group participants suggest that, while active learning classrooms do provide a relaxed environment that encouraged social connections, there were concerns about students who may not be naturally wanting to socialize in course activities.

**Active Learning Classroom Design.** Active learning classrooms must have an intentional cohesion between the specific space characteristics, integration of technology, and pedagogical strategies (Harrop & Turpin, 2013; Pates & Sumner, 2016). In this study, active learning design means the positioning of technology and furniture with the intention to impact student behavior through a pedagogical approach that engages learners to be self-motivated, solve real-time problems, and learn in formal and informal authentic ways during interactions (Bachen et al., 2014; Brooks, 2011; Burd et al., 2015; Connolly & Lampe, 2016; Coorey, 2016; Dall’Alba & Bengtsen, 2019; Fournier et al., 2014; Park & Choi, 2014). In this theme, participants discussed the following categories: (a) active learning classroom features and (b) technology to facilitate active learning strategies.

*Active learning classroom features.* While different designs of active learning classrooms were built at the university, most classrooms were designed to allow students to be facing each other in collaborative activities and when interacting with the faculty teaching the course (Brooks, 2017; Florman, 2014; Langley & Guzey, 2014; Mercier et al., 2016). For this study, active learning features mean participant evidence indicating useful positioning of technology and furniture with the intention to impact student behavior (Brooks, 2011; Connolly & Lampe, 2016; Fournier et al., 2014; Park & Choi, 2014). This category will discuss (a) flexibility of seating arrangement, (b) line-of-sight, and (c) whiteboards.

*Flexibility of seating arrangement.* One of the key characteristics of the active learning classrooms is having movable furniture such as movable chairs and tables that increase interaction opportunities (Brooks, 2017; Florman, 2014; Langley & Guzey, 2014; Mercier et al., 2016). In this study, the flexibility of the seating arrangement means the ability to move around active learning classroom furniture that impact active learning implementation. In traditional classrooms, as described by F2-Male 1, “students are not facing each other and they are separated by rows.” He continued to share how challenging and time-consuming moving desks around in a traditional classroom was. A student focus group participant, S1-Female 5, mentioned how her ability to move around in the active learning classroom was to “roll around in my chair and like turn around, like you know, the whole 360. Instead of turning my head or my body, I’m just like turning my chair around.” This evidence suggests that students are aware of the new flexibility that active learning classrooms allow when comparing to traditional classrooms.

Considering the classroom characteristics include mobility of furniture, five participants discussed how such mobility provided benefits to their teaching and learning experiences in the active learning classrooms. For example, S1-Female 4 described how, in traditional classrooms, students are “just sitting there the whole time listening to someone.” In contrast relating to active learning classrooms, F2-Female 2 also talked about instructing students to “move around or they have to use materials they have around like the boards, the small boards. Something that keeps them entertained.” Connecting the technology in the classroom with such mobility, S1-Female 1 described how it did not “matter where you sit. You’re facing a television screen at some point.” Along with participants identifying the difference of the flexibility in the seating arrangement, they also suggest that such flexibility in seating arrangement provides an easier opportunity to interact during active learning implementation.

*Line-of-sight.* As part of the active learning classrooms allowing for increased interaction with flexible seating arrangements, this includes the ability for students to complete course activities in the most effective, comfortable position. In this study, line-of-sight means a course participant’s ability to see the course activity taking place in the classroom. Five participants pointed to some design flaws that were included in the first classroom built by having non-moveable chairs and the third generation of classrooms having lecterns installed in the middle. In regards to the first classroom, S1-Female 6 described how one half of the room had to “physically turn around and look” at content on the backside of the classroom because “the bar stools don’t move” (see Figure 4.4). This classroom also had physical space issues.



*Figure 4.4.* A classroom where some furniture was not movable which restricted the content being shown on either side of the room.

For example, S1-Female 5 thought the room was “really really cramped and the furniture was really cramped together”. F2-Male 1 also observed how some students were “so close to the wall that a good portion of the class” could not see one of the electronic whiteboards. This evidence suggests that students had a limited ability to have a clear line-of-sight to what was being displayed behind them and limited space to complete the required course activities.

With the second classroom design in question, the administrators involved with active learning classroom designs received similar feedback as to what was shared by F1-Female 3 and F1 Female 2 before this study. In the first part of the conversation, F1-Female 3 indicated, “if you wanted to pull something up and not show them yet, I can’t do it.” Later on in the conversation, F1-Female 2 agreed with her saying, “sometimes I’ll leave my computer at one of the tables, walk around, and then a student may start playing the video.” Given this feedback, the administrators installed a lectern in the middle of the

third generation of active learning classrooms as a way to ensure instructors have their own for content preparation (see Figure 4.5).



*Figure 4.5.* A classroom that has a lectern in the middle of the classroom that may block the line-of-sight for those sitting in the tables.

However, some faculty participants observed that the middle lectern blocked the line-of-sight of students limiting them to see and interact with other students on the other side of the middle lectern. F2-Female 2 best described such sentiment stating:

F2-Female 2: It didn't make me happy to see that the main computer was in the middle of the room because, then, I realized that some students cannot really see each other because that thing is right in the middle.

F1-Female 1 shared a similar sentiment describing that students on the other side of the lectern "can't see that student so they're not going to pay as much attention." Along with the evidence that suggested the active learning classroom design in question should lower



limitations that restrict movement toward the current course activities, this evidence suggest that the design of active learning classrooms should ensure intentional placement of furniture and technology that provides numerous open lines-of-sight.

*Whiteboards.* While many of the benefits and challenges come from the overall design of active learning classrooms, there were ten unique participant statements providing evidence indicating the positive impact of whiteboards on the active learning classroom experience. In this study, whiteboards mean regular, non-technological, whiteboards that are installed on the walls of the classrooms or are stand-alone whiteboards that participants could use individually. For example, F1-Female 1 stated when facilitating a discussion, “I’m keeping track of the discussion on the whiteboard”. She also mentioned that she loved “the individual whiteboards for students to, you know, make suggestions and record ideas.” Similarly, F2-Male 2 stated:

F2-Male 2: I've heard other people say this too a lot of times the most valuable thing to me has been the whiteboard and just doing very basic simple stuff, and there's something about writing things out. I think being able to erase and go back and do it again... it's helpful for the students.

There was similar evidence provided by students who believed regular whiteboards positively impacted their active learning classroom experience. S2-Female 1 indicated the little whiteboards “forces you to put your knowledge down and then, if there is something wrong with it, the teacher will tell you what to fix. Then, you’ll have to fix it.” S1-Female 5 went further in her positive views with the whiteboards by stating:

S1-Female 5: Being able to write on the whiteboards has made it easier because it moves the class faster, and you're able to erase your mistakes and like change everything and it's writing it down. It helps with memory and that's a lot of what biology is.

Such evidence suggests that whiteboards were perceived, both by faculty and students, as an effective tool to use during the active learning activities.

**Active learning technology.** Focus group participants described many of the same technology features mentioned in other studies (Burd et al., 2015; Painter et al., 2013; Fournier et al., 2014). In this study, active learning technology means the positioning of technology that was integrated into the active learning classrooms with the intention to impact student behavior (Brooks, 2011; Connolly & Lampe, 2016; Fournier et al., 2014; Park & Choi, 2014). Some of the features that focus group participants appreciated were the ease of displaying content, the accessibility to provide power for electronic devices, and the ability to use collaborative technology. For example, F1-Female 1, although she indicated that too many displays can make the room too warm, highlighted that “because of all those monitors, it’s great that each table has a way to display”. Similar to other studies that indicate power outlets as part of the classroom technology integration (Burd et al., 2015; Painter et al., 2013), S2-Female 1 said the following about what is installed in the active learning classrooms:

S2-Female 1: I feel like the active learning classrooms are a lot more like technology acceptable or I don't know if that's the right word. They have like the power outlets and stuff so it gives you better opportunities to have your laptop. Then, you won't have to like move out of your desk or anything.

With the foundation of having outlets to power electronic devices, participants discussed utilizing collaborative technology tools such as Padlet, Blendspace, Microsoft Office365, and Google Drive. For example, F2-Female 1 specifically described using Microsoft Sway as a creative tool to give directions for the students. F1-Female 3 indicated she utilized the iPads a lot for her courses.

There were mixed feelings among the faculty participants in regards to utilizing the upgraded technology tools in the classroom. While some faculty members saw a spark of creativity with utilizing the technology described above, others found such tools to be overwhelming and disruptive. S2-Female 1 described how traditional classrooms would have “basic rudimentary things.” She went on later to describe that the new active learning classrooms were “different” and required technology assistance from the students. Student focus group participants felt differently. For example, S2-Female 1 said, “I don’t really think it’s hard to figure out.” That statement was followed by laughter in agreement from the other student participants.

Regarding disruption from technology failure, F2 Male 2 shared:

F2-Male 2: I've struggled with the technology part, like it's been brought up before. There have been times where it's failed, and it not only has failed where I can't do individual activities but then failed to where we couldn't do anything really aside from me lecturing.

Students also noticed when there were technology failures. For example, S2-Male 2 described how the class spent “20-30 minutes trying to figure out what’s wrong with the computer” which resulted in the faculty member “chucking the lesson plan out the window.” This suggests that the potential of implementing active learning strategies could be lost when there is a technology issue that cannot be fixed quickly.

The connection between all focus group participants regarding using and implementing technology in active learning classrooms is ensuring ease of use. For example, S2-Female 1 indicated that the Apple AirPlay technology allowing wireless displaying of Apple devices is “a lot easier than having to log in through the whatever-it-is, like the monitor.” From a different perspective, F2-Male 1 recommended:

F2-Male 1: I would be happy to give up on all specialized technology and use all of that money just to pay for rolling traditional desks in every classroom and then suddenly, in every classroom, would basically have the capability of doing group work and that to me is the big difference.

However the university designs active learning classrooms in the future, F1-Female 1 recommended to “balance technology with traditional discussion and things like that, and use the whiteboards.” Similarly, S2-Male 1 added that “if the professor is taking good advantage of all this technology that is available in the classroom, then it helps with when you’re in there.” However, he further explained how it is not going to help the instructor at all if they do not try and use the classroom technology for instruction.

### **Chapter Summary**

The purpose of this chapter was to determine the current experiences of faculty and student participants in active learning classrooms. I also wanted to determine the needs for faculty to teach confidently in such classrooms. Both quantitative and qualitative data suggest that active learning classrooms, in general, improve the learning experience for both faculty and students when participating in collaborative activities. However, the focus group data suggests there are specific issues that need to be addressed for a better experience.

In this chapter, the quantitative results provided evidence on what active learning strategies were implemented, the technology experience of the participants, and participant perceptions on their active learning classroom experience. When analyzing participants’ perceptions of the active learning strategies used in the new classrooms, faculty and students both felt more strategies that involved collaborating with others and

fewer strategies of requiring students to work independently were used in the active learning classrooms.

When participants expressed their perceptions in their technology experiences, both faculty and students mostly believed they had a positive experience. However, students felt more hands-on training is needed to utilize the classroom and faculty felt more training was needed when they have issues with technology. Adding to the perceptions of their technology experiences, faculty and students both felt that display monitors and power outlets were among the most useful and felt document cameras and Blu-Ray players as the least useful.

When analyzing the overall active learning classroom experience, all participants felt their experience was adequate. However, there were mixed feelings about whether the active learning classroom experience was a waste of time. Faculty members strongly disagreed that the experience in the active learning classrooms was a waste of time. However, students felt more neutral on whether the active learning classroom experience was a waste of time. Faculty participants also felt neutral when asked whether their participation in the active learning faculty development program would inspire others in their academic department to implement active learning strategies in the future.

Along with the quantitative results, the qualitative results were represented through three themes that were identified based on participant responses. These themes included faculty development impact to create a community of practice for academic innovation, classroom impact to engage in collaborative practices, and active learning classroom design.

Faculty development's impact to create a community of practice for academic innovation included the categories of faculty development takeaways, the post-faculty development experience, and the post-active learning experience. For this theme, it was identified that faculty participants called for being more intentional when connecting previous teaching experience and faculty culture with faculty development programming. Participants also indicated faculty exploring creativity in implementing new course activities using the active learning pedagogy. Such implementation led to other discoveries that included calling for more classrooms to accommodate various pedagogical approaches and more consistency in the various active learning classrooms being constructed. Participants also shared about how active learning can be implemented in online courses.

The classroom impact to engage in collaborative practices included the categories of preparing to teach in the active learning classrooms, the diversification of content delivery, and the impact of participants' behaviors. Evidence provided by the participants suggests that both faculty and students need time to adjust to participating in active learning activities and the initial increased time for faculty to implement such activities. Participants also indicated that active learning classrooms increased the number of active learning activities taking place as a replacement to traditional teaching methods. While there was an increase in active learning activities, the evidence suggests participants also feel that some lecturing may be needed for scaffolding purposes. They also suggest that they had issues with implementing individual assessment activities such as distributing exams.

The theme of active learning classroom design included the categories of active learning classroom features and technology to facilitate active learning strategies. Participants indicated key active learning characteristics that include providing intentional placement of movable furniture that allows for flexible seating arrangements and clear line-of-sight when participating in active learning activities. Participants also provided evidence regarding the importance non-technological whiteboards have on organizing content whether for an instructor guiding class discussion or for a student group preparing to answer the questions prompted by the faculty member.

Participants also provided evidence that active learning classrooms provided the technological foundations to effectively display content and utilize collaborative technology such as Padlet and Microsoft Office365. While there was evidence indicating the benefits of utilizing the technology integrated for active learning activities, there were varying opinions of how easy it was to integrate the technology into instruction. While the students believed the technology was simple to use, faculty members felt that some of the technology was too complex and experienced active learning implementation issues when the technology failed.

## CHAPTER 5

### DISCUSSION, IMPLICATIONS, AND LIMITATIONS

The purpose of this action research was to identify participant experiences and needs of faculty when teaching in the active learning classrooms at a public regional southeastern university. This chapter will (a) summarize the study integrating both the quantitative and qualitative results, (b) provide implications that relate to me as a researcher and recommendations for contextual stakeholders, and (c) limitations of the study.

#### **Discussion**

It is important to integrate the quantitative and qualitative results utilizing the research questions of this study. The following research questions were used to guide the study:

1. What are the experiences of faculty members who have taught in the active learning classrooms?
2. What are the experiences of students who have taken a course in the active learning classrooms?
3. What are the faculty development, classroom technology, and technical support needs of faculty members who have taught in the active learning classrooms?

Due to the first two research questions asking about the experience in the active learning classrooms, I will attempt to provide a holistic narrative combining both faculty and student experiences that will assist in identifying future needs of faculty members



teaching in the classrooms. After discussing the two research questions together, the third research question of faculty needs will be answered.

### **Research Questions 1 and 2: What are the Experiences of Faculty Members and Students in the Active Learning Classrooms?**

For this study, experiences in the active learning classrooms include course activities, participant interactions with the technology and seating arrangements installed, and other experiences and support when participating in course activities within the classrooms (Azlim et al., 2015; Fernández Díaz et al., 2010; Gordy et al., 2018; Niemi, 2002). When analyzing the faculty quantitative results, faculty participants were positive about the active learning activities taking place in the classroom ( $M = 4.00$ ,  $SD = 0.61$ ), the technology installed ( $M = 4.45$ ,  $SD = 0.62$ ) and overall experiences ( $M = 4.59$ ,  $SD = 0.39$ ). Student participants similarly were positive about the active learning activities taking place in the classroom ( $M = 4.03$ ,  $SD = 0.70$ ), the technology installed ( $M = 4.22$ ,  $SD = 0.75$ ), and overall experiences ( $M = 4.12$ ,  $SD = 0.82$ ). When exploring similar questions utilizing the qualitative data, some challenges may need to be addressed for effective future experiences. After integrating both quantitative and qualitative data, the discussion is organized in two categories: (a) impact of active learning strategies implemented and (b) impact of active learning classroom features.

**Impact of active learning strategies implemented.** The instructional objective when building active learning classrooms is to encourage faculty members to implement active learning strategies. This study measured whether faculty members were implementing such strategies that included collaborative and independent activities (Niemi, 2002). The topics that will be discussed after integrating both quantitative and

qualitative results include (a) increased collaborative activities implemented and (b) lack of independent activities implemented.

***Increased collaborative activities implemented.*** When integrating more active learning strategies in a course, it is important to create an environment where students feel comfortable working in groups, participating in discussions, and solving problems that help better grasp course ideas (Coorey, 2016; Lumpkin et al., 2015; Niemi, 2002). Similar to other studies, qualitative evidence mostly aligned with the quantitative findings that included faculty ( $M = 4.71$ ,  $SD = 0.47$ ) and students ( $M = 4.25$ ,  $SD = 0.84$ ) indicating participating in group problem-solving activities occurred in active learning classrooms. Faculty ( $M = 4.29$ ,  $SD = 0.77$ ) and students ( $M = 4.25$ ,  $SD = 0.86$ ) also agreed engaging in discussions with other students to find the best solutions for assignments took place in the active learning classrooms. For example, faculty participants shared that “almost all of what they (students) do is discussion” and asked students to summarize “little parts of the textbooks” through an in-class presentation.

***Lack of independent activities implemented.*** While increased collaborative activities such as discussions and group-based learning are recommended, another aspect of implementing active learning activities include more independent activities such as independently producing course content or seeking knowledge from different information sources (Niemi, 2002). Such independent activities may provide a stepping stone for those who may feel initially uncomfortable being exposed to social interactions due to collaborative strategies (Cotterill, 2013; Krahenbuhl, 2016; Lumpkin et al., 2015). The challenges of implementing such independent activities include faculty members' habit of and need for lecturing even after participating in active learning faculty development and

faculty members' concern that students do not have the proper skills to identify academically appropriate sources to contribute to the course content (Auerbach & Schussler, 2016; Kay et al., 2019; Niemi, 2002).

Both quantitative and qualitative results of this study shared similar findings from studies regarding implementing independent activities. Within the active learning strategies subscale, faculty members scored asking students to independently seek knowledge through different information sources ( $M = 3.06$ ,  $SD = 0.83$ ) and independently producing reviews, outlines of sessions, and presentations ( $M = 3.77$ ,  $SD = 0.83$ ) among the lowest mean scores. Students also scored the strategies implementation of independently seeking knowledge through different information sources ( $M = 3.63$ ,  $SD = 1.03$ ) and independently producing reviews, outlines of sessions, and presentations ( $M = 3.50$ ,  $SD = 1.08$ ) among the lowest mean scores. Faculty focus group participants shared similar perceptions that students need foundational knowledge before implementing such active learning strategies. For example, Faculty participants shared how "students don't know if (the content) is true" which require at least some "mini-lectures or 15-minute lectures." While students believe that some lectures go "in one ear and out the other," faculty members struggled with the need to shift time away from lecturing to implementing active learning strategies (Kyu et al., 2014).

**Impact of active learning classroom features.** Considering active learning classrooms is an attempt to modify the environment and positively influence instructional inputs and learning outputs, this study measured the training and uses of classroom features that were meant to assist in implementing active learning strategies (H. S. Astin & Astin, 1996; Azlim et al., 2015; Brooks, 2011). After integrating both quantitative and

qualitative results in this study, the topics that will be discussed include (a) faculty exposure to new technology, (b) student lack of new classroom orientation, (c) collaborative technology use in active learning classrooms, and (d) increased importance of using regular, non-technological, whiteboards.

***Faculty exposure to new technology.*** Active learning classrooms are different from traditional lecture classrooms due to different technology that includes controlling what is being displayed in numerous visual displays and allowing active learning classroom participants increased access to numerous power outlets (Bachen et al., 2014; Fournier et al., 2014). When faced with newer and more technology tools integrated into a new classroom environment, Amemado (2014) shared evidence that faculty members may feel more overwhelmed about the new technology and want to have more control in sharing content rather than letting the students contribute to such content. Both quantitative and qualitative data demonstrate faculty members provided similar sentiment indicating they were not fully satisfied in the training they received regarding what to do when needing to troubleshoot technology issues ( $M = 3.88$ ;  $SD = 0.99$ ). A lack of proper troubleshooting technology training can lead to the lack of acting appropriately when technology fails resulting in solely lecturing. While troubleshooting training fell short of faculty participant expectations, faculty participants believed that they received sufficient troubleshoot support from the university when technology issues occurred ( $M = 4.53$ ,  $SD = 0.62$ ).

***Student lack of new classroom orientation.*** Given that implementing active learning includes students teaching other students about course content, it should be assumed that students will use the multiple displays to present content in a similar

approach to how faculty members present content (Coorey, 2016; Fournier et al., 2014). Similar to the importance of training faculty members to use active learning classroom technology and furniture configuration for the first time before teaching, it is recommended on the first day of class to have students reflect on the new space and share their feedback on how to best utilize the classroom (Chiappe & Lee, 2017; Fournier et al., 2014). Contrary to studies suggesting implementing student orientations for the new learning environments, student participants suggested that more could have been done to have hands-on experience with the technology installed in the classroom ( $M = 3.65$ ,  $SD = 1.15$ ). Faculty members should do what they can to ensure students do not feel like they “were kind of like thrown into the classrooms without like knowing” and “dropped (the students) right in feet first”.

*Collaborative technology used in active learning classrooms.* With active learning classrooms influencing more collaboration among course participants, such classrooms also influence the use of collaborative technology tools such as cloud-based applications (Nordquist & Laing, 2015; Salter et al., 2013). Similar evidence was discovered in this study. In general, both faculty ( $M = 4.41$ ,  $SD = 0.62$ ) and student ( $M = 4.19$ ,  $SD = 0.90$ ) participants agreed the technology tools available to participate in active learning activities were adequate. Faculty focus group participants also discussed utilizing similar cloud-based applications. Cloud-based technology supporting active learning strategies included “BlendSpace and Padlet and... collaborative documents whether that’s through Microsoft (Office) 365 or Google Documents.” Other technology tools identified for such strategies included gamification tools like Quizlet or Kahoot in

which students may receive “a couple of extra credit points” for their grade as incentive to participate.

***Academic integrity issues during traditional exams.*** Due to the flexible seating arrangement with students facing each other, it provides challenges to implementing traditional exams (Baepler et al., 2016). Such challenges require some faculty to utilize unique strategies such as collaborative exams or rearranging the weights of assessment grades. While the quantitative items did not specifically address the issues regarding traditional exams, faculty focus group participants indicated such challenges. For example, faculty members may have traditional exams “count a lot less” due to the students being “super close to each other” causing issues with academic integrity. While no faculty implemented collaborative exams, faculty members may consider implementing a constructivist-based approach where students “write their own outcomes and kind of competencies they’ve learned” that can impact their final course grade.

***Increased importance of using regular, non-technological, whiteboards.*** Part of the active learning classroom design includes multiple tables with regular non-technological whiteboards next to the tables (Burd et al., 2015). The use of such whiteboards allows for activities such as brainstorming and diagramming (Baepler et al., 2016; Brooks, 2017). While there were no specific quantitative items measuring whiteboard use, there was strong evidence similar to other studies that whiteboards were very important to the active learning classroom learning experience. Whiteboards give course participants the ability to “put (their) knowledge down” in terms of formative assessment and “keep track of the discussions” going on in the classrooms.

*The impact of multiple lines-of-sight.* With active learning classrooms being designed with multiple displays and movable furniture to participate in collaborative activities, there are more increased physical spots of the classroom that requires participants to pay attention (Brooks, 2017; Burd et al., 2015; Painter et al., 2013). For example, Brooks (2011) suggested that students facing each other in the classrooms provide a different experience than students facing all one direction in a traditional classroom. Along with students feeling their overall experience was adequate ( $M = 4.18$ ,  $SD = 0.84$ ), student focus group responses suggested movable furniture helped in engaging in course activities. Considering “there are six (chairs) at each table and like we have three screens”, participants may appreciate they do not “have to turn around.”

While there was evidence that having multiple lines-of-sight create more opportunities to engage, some participants also indicated that barriers to lines-of-sight hinder engagement. For example, “some students cannot really see each other” due to the middle lectern blocking the line-of-sight from one side of the classroom to the other side. Other students also mentioned potential distractions because students are “facing each other and (students) are more likely to talk to each other and just even have side conversations.”

**Research Question 3: What are the faculty development, classroom technology, and technical support needs of faculty members who have taught in the active learning classrooms?**

Different from traditional classrooms typically installed at universities, active learning classrooms require faculty development to train faculty members to utilize the learning environment and implement engagement and reflection activities when

preparing to teach in the classroom (Ertmer & Ottenbreit-Leftwich, 2010; Paige et al., 2015). It also requires teaching with technological enhancements that help the instructor grab the attention of the students (Beichner & Saul, 2003). Along with training faculty and providing technological enhancements, professional support staff must build relationships with faculty members teaching in active learning classrooms to ensure quality consultations and feedback sessions can occur (Fox & Sumner, 2014; van Leusen et al., 2016). After reviewing both quantitative and qualitative results, I will discuss the needs identified by the group participants that include (a) pre-active learning classroom experience observations, (b) more faculty development activity building, (c) standardization of active learning classrooms, and (d) need for instructional backstage without restricting lines-of-sight.

**Pre-active learning classroom experience observations.** Considering active learning classrooms are different from typical traditional lecture-style classrooms, it is important for university leadership to provide faculty development to encourage instructional change and technological integration (Brooks, 2011; Dahlstrom, 2015; Williams Van Rooij, 2011). It is also important for university stakeholders to engage in classroom observations to assess how active learning strategies are being implemented (Langley & Guzey, 2014). While quantitative results indicated that participants agreed they had positive experiences in active learning classrooms, faculty focus group participants suggested that faculty who want to teach in active learning classrooms should observe what active learning implementation looks like in the active learning classrooms. Perspective faculty members wanting to teach in active learning classrooms may find it



“really valuable” to ensure they know the benefits and challenges surrounding changing their instruction to take advantage of the new classroom environment.

**More faculty development activity building.** When faculty members are in the active learning classrooms, implementing active learning activities such as discussion and group-based activities will take up more time than traditionally lecturing (Dilmac, 2016; Nordquist & Laing, 2015). Those designing faculty development programs may consider creating content that focuses on the faculty members’ own experiences when teaching at the university (Cox, 2015; Gilstrap, 2013). Although quantitative results indicated faculty received adequate training before teaching in the active learning classrooms ( $M = 4.06$ ,  $SD = 0.56$ ), several faculty focus group participants had strong opinions about the need to restructure the active learning classroom faculty development program. For example, faculty development activities that were labeled as “active learning duck-duck-goose” may need to be reevaluated on the activities’ importance to active learning implementation. Faculty development facilitators may also consider a “quicker explanation of techniques and more time allowing faculty to build their materials in the workshop-style approach.” Another possible approach could be implementing paired teaching trainings where faculty members reflect on their experiences, then share their experiences with their assigned faculty partner (Holland et al., 2020).

**Standardization of active learning classroom.** What makes active learning classrooms different from traditional classrooms include round movable tables and chairs that require students to face each other rather than all facing one direction (Brooks, 2017; Florman, 2014; Langley & Guzey, 2014; Mercier et al., 2016). Along with the different furniture arrangements, there can be various technology tools that can be installed

including document cameras, smartboards, and digital displays (Burd et al., 2015; Painter et al., 2013; Fournier et al., 2014). At most universities, many classroom features are part of a standardized list that faculty members should expect when entering to teach in a classroom (Friel et al., 2009; Burd et al., 2015).

Along with faculty survey participants neutral on receiving adequate troubleshooting technology and had a wide range of opinions regarding technology usefulness, student focus group participants indicated the need to provide more standardization among active learning classrooms. University administrators designing active learning classrooms may want to “just pick that one type of furniture and have it throughout” that will allow course participants to have a “homogenizing” feeling with each classroom they enter. Standardizing active learning classrooms may help reduce costs and training time by choosing the most needed technology while not overwhelming faculty with high-technology classrooms (Nicol et al., 2018). For example, while document cameras have worked in active learning classrooms at other institutions (Alexander et al., 2008), document cameras were much less useful at this study’s institution.

**Need of instructional backstage without restricting lines-of-sight.** Along with many floor plans of active learning classrooms containing movable tables to accommodate group-based learning, most floor plans have some sort of an instructional podium to allow the faculty member the ability to control the technology when delivering course content (Burd et al., 2015; Baepler et al., 2016). Along with the importance of having an instructional podium for the faculty member to prepare and display content, stakeholders may want to analyze any changes in behavior when there is new positioning

of technology or furniture (Brooks, 2011; Connolly & Lampe, 2016; Fournier et al., 2014). While the initial active learning classrooms did not provide a designated instructional podium, university administrators involved in designing active learning classrooms may consider placing the designated instructional podium “up in the corner of the room so there’s nothing blocking” which allows students to “pay more attention to the whole group.”

### **Implications and Recommendations**

The findings of this study suggest implications of how to implement instructional experiences in a new classroom environment by providing the necessary faculty development training and support. This section will discuss (a) personal implications, (b) recommendations for academic affairs administrators, (c) recommendations for information technology administrators, and (d) recommendations for future research.

#### **Personal Implications**

Implementing action research into a contextual instructional problem provides a scholarly approach to solve such problems (Manfra & Bullock, 2014). Such research has helped me provide a systematic structure when tackling major instructional problems that have included implementing blended learning activities into curriculum or measuring the effectiveness of an accessibility checker tool within a learning management system. Along with strengthening the ability to solve problems in a scholarly way, I also learned the importance of utilizing qualitative methods to provide more context for quantitative results that needed further explanation (Creswell, 2013). Analyzing training faculty for troubleshooting issues as an example, the focus group data better understood why that statement mean score was lower than four. The focus group participants discussed how

the lack of troubleshooting skills of the new technology can completely derail any lesson planning that included active learning strategy implementation.

### **Recommendations for Academic Affairs Administrators**

For this study, academic affairs administrators are faculty and staff administrators who are supervised by the Provost and Senior Vice Chancellor of Academic Affairs. This includes the Vice Provost, the Director of the Center of Academic Innovation, Academic Deans, and Department Chairs, among others. Based on the results, the following recommendations for academic affairs administrators include (a) pre-faculty development observations, (b) solving the individual assessment issues, and (c) traditional and online course development.

**Pre-faculty development observations.** Considering faculty members identified other faculty development programs such as the “Open Doors” program that allowed faculty members to observe how other faculty members teach their courses, academic affairs administrators may consider tying these programs to ensure a cohesive progression of quality teaching (Brooks, 2011, Dahlstrom, 2015; Williams Van Rooij, 2011). Along with tying the programs together for a more holistic approach to faculty development, allowing such observation may provide more examples that will lead to quality implementation of active learning strategies in content delivery (Cox, 2015; Gilstrap, 2013).

**Solving the individual assessment issue.** While active learning classrooms are conducive to discussion and group-based activities, it is also known for being able to conduct individual activities such as independently producing presentations or seeking knowledge from different information sources (Niemi, 2002). In this study, faculty and

student participants indicated that less individual-based activities were implemented in active learning classrooms. During future active learning implementation trainings, academic affairs administrators may consider providing more focus on how to properly implement more independent-based active learning activities.

Faculty focus group participants also indicated that they had academic integrity issues with implementing individual exams. Other research has also identified similar problems in assessing students when not working in groups (Bachen et al., 2014; Baepler et al., 2016). Academic affairs administrators may consider either providing alternative test-taking environments such as testing centers, implementing online exams, or training faculty members on implementing unique assessment strategies such as collaborative group-based exams (Baepler et al., 2016).

**Traditional and online active learning course development.** In the faculty focus groups, many of the participants felt their active learning classroom experiences decreased their motivation for teaching in a traditional classroom. The quantitative results of faculty participants concur with such feelings indicating they are neutral about being able to implement active learning strategies in traditional classroom environments ( $M = 3.71$ ,  $SD = 0.85$ ). While an active learning classroom is a more conducive environment for implementing active learning strategies, cost and scheduling conflicts may require active learning-trained faculty members to teach in traditional classrooms (Brooks, 2011; Painter et al., 2013; Torres-Ovalle et al., 2014). While not the most conducive environment, academic affairs administrators may consider providing resources for faculty members to let them know proven active learning strategies that can occur in

traditional classrooms such as peer interactions, whiteboard parties, and problem-based learning (Reinholz, 2018).

Considering online courses are in a different, more virtual environment than active learning classrooms, it may be harder for faculty members to imagine group-based activities happening without meeting face-to-face (McQuiggan, 2012). When integrating quantitative and qualitative results, faculty ( $M = 3.18$ ,  $SD = 1.07$ ) and student ( $M = 3.66$ ,  $SD = 1.17$ ) participants felt neutral regarding being able to implement active learning strategies in online courses. This is due to previous experiences of face-to-face activities not working in an online environment and that some faculty members simply place a PowerPoint presentation for content delivery. Regardless of previous experiences, faculty members may consider implementing activities such as participating in service-learning projects, group-based activities using communication technology such as Blackboard Collaborate or Zoom, and participating in online class discussions (Carr et al., 2015). Combining this study's results with others, academic affairs administrators may consider extending active learning faculty development activities to apply to non-active learning classroom environments as well as active learning classroom environments.

### **Recommendations for Information Technology Administrators**

For this study, information technology administrators are support staff who are supervised under the Chief Information Officer and Vice Chancellor of Information Technology. Support staff includes the project manager overseeing the construction of classrooms and help desk staff in charge of request tickets when technology issues arise in classrooms. Based on the results of this study, the following recommendations for information technology administrators include (a) reallocation of classroom technology

funds based on usefulness, (b) standardizing active learning features and technology, and (c) technology tutorials for students.

**Reallocation of classroom technology funds based on usefulness.** As technology integration is a crucial part of building active learning classrooms, information technology administrators may consider providing effective solutions that will provide technology support for faculty members who are teaching in technology-enhanced classrooms (Brooks, 2017; Dahlstrom, 2015). While the technology support provided for faculty members are adequate, information technology administrators may consider reviewing the technology usefulness results to determine how to lower the cost of purchasing such technology and lessen the amount of technology that may overwhelm faculty members teaching in the active learning classrooms. For example, this study's university can provide the university's administrators the opportunity to replace the funds typically spent on Blu-Ray video players and document cameras with better quality television displays and room infrastructure upgrades to power and show personal device content on those displays.

**Standardizing active learning classroom features and technology.** While some institutions may have active learning classrooms with standardized characteristics, many institutions may not have standard technology or furniture used for such classrooms (Burd et al., 2015; Painter et al., 2013). Both faculty and student participants indicated the lack of one consistent layout. There were also complaints about the middle lectern blocking the line-of-sight during in-class activities. Information technology administrators may consider being aware of how technology integration and placement can impact classroom behavior (H. S. Astin & Astin, 1996; Painter et al., 2013). For

example, technology integration installed in the original middle lectern may need to be refitted somewhere else in the classroom that does not disrupt the line-of-sight while also providing space for faculty members to control the displaying of content. There may also be a need to have intentional conversations with academic affairs administrators to determine what basic rudimentary active learning classroom technology and furniture should faculty members expect to have in the active learning classrooms when teaching.

**Technology tutorial materials for students.** When introducing new active learning classroom environments to students, it is important to have students become familiar with the new classroom features (Baepler et al., 2016). It is also important to expose students to the technology that assists in implementing active learning strategies (Coorey, 2016). While student focus group participants did not find the technology integrated into the active learning classrooms difficult to utilize, they also indicated they were thrown into such classrooms without much training. Such comments can be tied to the mean score being lower than four when asking students about whether they received hands-on technology experience in the active learning classrooms ( $M = 3.65, SD = 1.15$ ). Considering some of the classroom technology tools may be new to the students when participating in a course, information technology administrators may consider providing resources to students registering for a course located in an active learning classroom to prepare them for a different type of learning experience.

### **Recommendations for Future Research**

After conducting this study, it is important to provide recommendations of future research (Creswell, 2013). For the purpose of this action research study, future research means providing recommendations of future cycles to improve the implementation of



active learning classrooms. Such recommendations include (a) future usefulness of furniture quantitative survey subsection and (b) measuring non-trained faculty perceptions of active learning classrooms.

**Future usefulness of furniture quantitative survey subsection.** A subsection of measuring the effectiveness of active learning classroom technology integration was the usefulness of specific technology tools. This subsection provided cohesion with the qualitative focus group responses such as confirming how important the digital displays were in the classrooms. For future cycles of this action research, a similar list of items should exist for determining the usefulness of furniture that may impact active learning implementation. For example, the qualitative results of focus group participants indicating whiteboards were very important could have been triangulated with quantitative data. If the quantitative data had a lower Likert scale mean score about whiteboard usefulness, it would provide context that the focus group participants were not fully representative of the larger participant sample completing the survey.

**Measuring non-trained faculty perceptions of active learning classrooms.** Since the completion of this study, an academic affairs administrator at the university indicated that the active learning classrooms will no longer be under the complete purview of the Title iii Federal Department of Education Grant Steering Committee. After the Instructional Designer schedules all possible active learning course sections, the Registrar's Office is now allowed to schedule courses in the classrooms regardless of whether faculty members are trained or not. This means some faculty members may not have the knowledge to implement active learning strategies and utilize the technology integrated appropriately. Considering this new group of non-trained faculty members

teaching in active learning classrooms, stakeholders could better understand the impact of these classrooms for those faculty members who do not intentionally choose to participate in a faculty development program and teach in the classrooms.

### **Limitations**

Every study that is conducted will have limitations and weaknesses. In general, one of the limitations of action research is that it is not meant to be generalizable (Mertler, 2017). While connections can be made from other studies involving active learning classrooms, it would be difficult to fully replicate for future studies. Along with the lack of generalizability, the careful selection via purposive sampling was meant to answer the research questions that were specific to the local contexts of this study's public regional southeastern institution (Morgan, 2014; Pyrczak, 2014; Rudestam & Newton, 2015). Due to the local contexts and limited time the active learning classrooms have been implemented at the university, the number of participants was small (faculty survey n=17; student survey n=319). Student participants were asked in a limited way how many active learning classrooms they participated in to determine the novelty of such classrooms (Lim et al., 2019). While this was not meant to be a comparative study, a lack of class standing question to student participants hinders the ability to determine whether active learning classrooms had more of an impact of underclassmen students who have limited traditional classroom experiences versus upperclassmen students who have more experiences in such traditional classrooms.

Also, student participants were more likely to be randomly placed in an active learning classroom considering there were no special designations in the online course registration system that indicated the classroom was an active learning classroom.

Contrastly, faculty participants fully chose to enter into the faculty development program and teach in active learning classrooms. Faculty participants may have also responded positively to this study to show academic affairs administrators their support for institutional initiatives. Some students who were asked by their faculty members to participate in the study may have been more positive in responding to data collection methods if they were asked before receiving a final grade for the active learning course.

While this action research study was meant to answer the research questions for the study's institution, there are various approaches to measuring the effectiveness of active learning classrooms and the implementation of active learning strategies. For example, a course instructor could provide a pre-test/post-test approach to determine whether active learning classrooms provide better knowledge comprehension (Coorey, 2016). Another approach could involve comparing overall grades and retention rates between students who took courses in active learning classrooms and those who took courses in traditional classrooms (Fournier et al., 2014; Oblinger, 2006). Lastly, other evidence suggests researchers observe classroom behavior to authenticate that such active learning activities were implemented effectively (Frey et al., 2016). While this study describes faculty and student experiences and provides insight on faculty needs to teach successfully in active learning classrooms, these alternative measures may better address to institutional leadership whether these classrooms are worth the cost in technology, furniture, and faculty development resources.

### **Conclusion**

The problem statement that initiated this action research study included capturing the experiences and needs of those who participated in active learning classrooms to

determine future resources. This study indicated that faculty and students noticed an increased number of collaborative activities implemented, a lower number of independent activities implemented, identified useful technology tools for such implementation, and useful staff support when needed during the learning experience. Connecting the results with the problem statement, it is evident that the university should maintain the level of training and support with the exception of providing more troubleshooting training and active learning implementation examples.

While university administrators may feel restricting classroom use to only trained faculty members can negatively impact course enrollments, not providing any sort of required training material may result in more initial frustrations from common technology and active learning implementation issues. Stakeholders may consider initiating alternative faculty development programs if required training is not possible such as paired teaching reflective practices utilizing online collaborative technology tools (Burgoyne & Chuppa-Cornell, 2018). Considering multiple variables between the positive results of active learning classrooms and the restricting factors such as fewer classroom seats and faculty members allowed to teach in the classrooms, the PLEAT team may want to ensure training materials are produced, distributed, and meets the needs of the faculty members teaching in active learning classrooms. They should evaluate similar practices to demonstrate the impact of active learning classrooms as it relates to enrollment and retention (Bachen, Elrod, & Cutler, 2014).

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APPENDIX A  
FACULTY SURVEY

You are being asked to participate in this study because you are instructors who have taught in at least one active learning classroom at the [REDACTED]. The purpose of this survey is to understand your experience in teaching in these active learning classrooms and what needs you may have to utilize active learning strategies in the future. Please know your participation in this survey is completely voluntary and your identity will remain anonymous. Also, know that you do not have to answer any question that you do not want to answer.

The survey will take approximately 10-15 minutes to complete. You will be asked about your demographic information, which active learning classrooms you have taught a course in, what active learning strategies you have used when teaching in the classrooms, what technology and development activities you found useful, and attitudes regarding your overall experience teaching in the active learning classrooms.

If you have any questions or concerns regarding this survey, feel free to contact Michael Lampe at [REDACTED].

**Demographic Information**

**Gender (M/F/Other)** \_\_\_\_\_

**Ethnicity** \_\_\_\_\_

**Academic Department** \_\_\_\_\_

1. Please select which active learning classrooms you have taught a class in (select any that apply):

Classroom	I have taught in this classroom
a. Admin 104	
b. Library 238	
c. Library 246	

d. HEC 2008	
e. HPAC 218	
f. Media 328	
g. Smith 320	
h. Magnolia 024	

2. Define active learning according to your experiences in the active learning classroom

3. Provide the level of agreement to which you implemented the following active learning strategies in the active learning classroom (1 = Strongly Disagree, 5 = Strongly Agree).

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
i. I instructed students to work together when providing content of study units.					
j. I instructed students to independently plan and carry out learning tasks.					
k. I instructed students to seek all knowledge independently seeking different information sources.					
l. I instructed students to use electronic nets to seek knowledge for assignments.					
m. I instructed students to work in groups on problem-solving tasks.					
n. I instructed students to independently produce reviews, outlines of sessions and presentations.					
o. I instructed students to elaborate on their assignments based on a theme.					
p. I instructed students to take responsibility for planning and carrying out fairly large projects.					
q. I instructed students to use information very critically.					
r. I instructed students to discuss together the best solutions for the assignments.					
s. I instructed students to experiment and elaborate on new solutions to problems.					

t. I instructed students to self-evaluate their own products.					
u. I instructed students to seek additional knowledge outside of the required course content listed in the syllabus.					
v. I instructed students to work intensively with their assignments.					
w. I instructed students to set objectives for themselves and their learning.					

**4. Please indicate the level of usefulness of each technology below when teaching in the active learning classrooms (1 = Strongly Disagree, 5 = Strongly Agree).**

	1 (Not Very Useful)	2	3	4	5 (Very Useful)	Did Not Use
a. Television Displays						
b. Power Outlets built into Tables						
c. Short-Display Interactive Projectors						
d. Touch-Screen Display Switch						
e. AppleTV Device						
f. HDMI/VGA Display Inputs						
g. iPads						
h. Built-in Computer						
i. Wireless Keyboard and Mouse						
j. Sharp Aquos Interactive Display						
k. Document Camera						
l. Blu-Ray Video Player						



5. Provide the level of agreement to the statements below that discuss your needs when utilizing technology in the active learning classroom (1 = Strongly Disagree, 5 = Strongly Agree).

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
a. Before starting to teach in the active learning classrooms, I had enough hands-on experience with the technology installed in these classrooms.					
b. I received sufficient amount of training on technology integration approaches for teaching in the active learning classroom.					
c. I received training on basic troubleshooting for the technologies available in the active learning classrooms.					
d. Before starting to teach in the active learning classrooms, I received sufficient amount of training in using the technology available in the active learning classroom.					
e. I found the technology available in the active learning classrooms adequate for implementing the learning activities I plan.					
f. The internet access was adequate while I implement activities in the active learning classroom.					
g. When implementing learning activities in the active learning classroom, my computing (computer, display inputs, sound) needs were met.					
h. I had adequate technology support (e.g., troubleshooting) from the university to meet my teaching needs (e.g., need to use synchronous communication).					

i. Overall, my technology needs have been met when teaching in the active learning classroom.					
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**6. Provide the level of agreement to the statements below that discuss your attitudes regarding your experience preparing and teaching in the active learning classroom.**

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
a. I think my teaching experience in the active learning classrooms have been a waste of time.					
b. Preparing to teach in active learning classrooms created more administrative work for me.					
c. I improved my teaching skills after teaching in the active learning classrooms.					
d. I think teaching with active learning pedagogy makes sense to implement in higher education.					
e. I think other faculty members in my department were inspired by my experience with teaching in active learning classrooms.					
f. Overall, I feel like I was adequately trained to teach in active learning classrooms.					
g. I can teach with active learning strategies in a traditional lecture classroom.					
h. I can teach with active learning strategies in an online course.					

**7. Based on your teaching experience in the active learning classrooms, what challenges have you had related implementing active learning at the university level?**

- 8. Based on your teaching experience in the active learning classrooms, what recommendations would you have to improve the active learning implementation at the university level?**

APPENDIX B  
FACULTY FOCUS GROUP

**Introduction:**

Thank you for participating in a focus group that discusses your experiences and needs when teaching in the active learning classrooms. Before we begin, please know that your participation is completely voluntary and you can decide at any point in time not to participate in the focus group. Also, know that I will be recording the focus group for the sole purpose of transcribing and gathering general themes that will not be connected to your identity. Also, know that your participation will place you in a drawing to win a \$20 Amazon gift card due to this focus group being scheduled.

**Questions:**

*Poll:* How many total courses have you taught in the active learning classrooms? What courses are they?

*Let's start out by talking about your teaching experiences within the active learning classrooms you taught in.*

Q1: Describe examples of activities you planned specifically for teaching in the active learning classrooms.

Q1.1: instructional activities?

Q1.2: discussion activities?

Q1.3: student assessment activities?

Q1.4: Which activities you described work well? Why?

- Q1.5: Which activities you described did not work well? Why?
- Q2: How were these activities different from you teaching in other classroom environments? What changes did you need to make in your teaching when in the active learning classrooms?
- Q2.1: Changes to the learning objectives in your course?
- Q2.2: Changes to the materials you used?
- Q2.3: Changes to the way you deliver course content?
- Q2.4: Changes to the technology you use in your instruction?
- Q2.5: Changes to the way you assess student performance?
- Q3: In what ways, if any, did the active learning classroom change student behavior that differ from being in traditional classrooms?
- Q3.1: Changes in paying attention?
- Q3.2: Changes in interacting with others?
- Q3.3: Changes in completing assignments?
- Q3.4: How did these changes in student performance impact the activities you planned?
- Q4: Overall, describe your satisfaction with your teaching experience in the active learning classroom.
- Q4.1: Satisfaction in the furniture layout? Could you elaborate?
- Q4.2: Satisfaction in the technology installed in the classroom? Could you elaborate?
- Q4.3: Satisfaction in teaching your course or courses in the active learning classrooms? Could you elaborate?

Q5: What other teaching experiences in the active learning classrooms would you like to discuss that were not covered from the previous questions?

*Now let's talk about in what needs as instructors you have regarding teaching in an active learning classroom and in what ways the university can fill those needs.*

Q6: Describe the faculty development that was provided to you to prepare teaching in the active learning classrooms.

Q6.1: What development activities impacted the way you implemented active learning?

Q6.2: What development activities impacted the way you use classroom technology?

Q6.3: What development activities impacted the way you use the classroom in general?

Q6.4: What activities met your needs?

Q6.5: What development activities need to be improved or offered to better prepare instructors for the active learning classrooms?

Q7: Based on your teaching experiences, what are the most important problems with the active learning classrooms that you think are fixable?

Q7.1: Could you give me an example when teaching with active learning?

Q7.2: Could you give me an example when utilizing the furniture?

Q7.3: Could you give me an example when utilizing the technology?

Q8: What would you tell new instructors who may be teaching in an active learning classroom for the first time?

Q9: What last thoughts, concerns, or questions you would like the university to know about regarding active learning classrooms?

Q9.1: What thoughts do you have about utilizing active learning strategies in a traditional classroom? Could you give me an example?

Q9.2: What thoughts do you have about utilizing active learning strategies in an online course? Could you give me an example?

## APPENDIX C

### STUDENT SURVEY

You are being asked to participate in this study because you enrolled in a course as a student that took place in at least one active learning classroom at the [REDACTED]. The purpose of this survey is to understand your student experience in these active learning classrooms and to determine future needs of implementing active learning strategies in the future. Please know your participation in this survey is completely voluntary and your identity will remain anonymous. Also, know that you do not have to answer any question that you do not want to answer.

The survey will take approximately 10-15 minutes to complete. You will be asked about your demographic information, which active learning classrooms you have been enrolled in as a student, what active learning strategies you have participated in the classrooms, what technology you found useful, and attitudes regarding your overall student experience in the active learning classrooms.

If you have any questions or concerns regarding this survey, feel free to contact Michael Lampe at [REDACTED].

#### Demographic Information

Gender (M/F/Other) \_\_\_\_\_

Ethnicity \_\_\_\_\_

Academic Major \_\_\_\_\_

#### 1. Please select which active learning classrooms you have taken a class in:

Classroom	I have taught in this classroom
a. Admin 104	
b. Library 238	
c. Library 246	
d. HEC 2008	



e. HPAC 218	
f. Media 328	
g. Smith 320	
h. Magnolia 24	

2. Define active learning according to your experiences in the active learning classroom

3. Provide the level of agreement to which you implemented the following active learning strategies in the active learning classroom (1 = Strongly Disagree, 5 = Strongly Agree).

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
i. I worked together with other students when providing content of study units.					
j. I independently planned and carried out learning tasks.					
k. I sought out all knowledge independently seeking different information sources.					
l. I used electronic nets to seek knowledge for assignments.					
m. I worked in groups on problem-solving tasks.					
n. I independently produced reviews, outlines of sessions and presentations.					
o. I elaborated on my assignments based on a theme.					
p. I took responsibility for planning and carrying out fairly large projects.					
q. I used information very critically.					
r. I discussed together with other students the best solutions for the assignments.					
s. I experimented and elaborated on new solutions to problems.					

t. I self-evaluated my own products.					
u. I sought additional knowledge outside of the required course content listed in the syllabus.					
v. I worked intensively with my assignments					
w. I set objectives for myself and my learning.					

**4. Please indicate the level of usefulness of each technology below when learning in the active learning classrooms (1 = Strongly Disagree, 5 = Strongly Agree)**

	<b>1</b> <b>(Not Very Useful)</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b> <b>(Very Useful)</b>	<b>Did Not Use</b>
m. Television Displays						
n. Power Outlets built into Tables						
o. Short-Display Interactive Projectors						
p. Touch-Screen Display Switch						
q. AppleTV Device						
r. HDMI/VGA Display Inputs						
s. iPads						
t. Built-in Computer						
u. Wireless Keyboard and Mouse						
v. Sharp Aquos Interactive Display						
w. Document Camera						
x. Blu-Ray Video Player						

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5. Provide the level of agreement to the statements below that discuss your needs when utilizing technology in the active learning classroom (1 = Strongly Disagree, 5 = Strongly Agree).

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
a. Prior to the instructor teaching course-related content, I had enough hands-on experience with the technology installed in these classrooms.					
b. I found the technology available in the active learning classrooms adequate for the learning that took place in the course.					
c. The internet access was adequate while I implement activities in the active learning classroom.					
d. When participating in course activities, my computing (computer, display inputs, sound) needs were met.					
e. Overall, my technology needs have been met when taking a course in the active learning classroom.					

6. Provide the level of agreement to the statements below that discuss your attitudes regarding your experience preparing and learning in the active learning classroom.

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I think my learning experience in the active learning classrooms have been a waste of time.					
I think I improved my learning skills after taking a course in the active learning classrooms.					
I think teaching with active learning strategies makes sense to implement in higher education.					
Overall, I think my student experience was adequate when taking a course in the active learning classrooms.					
I think active learning strategies can work well in a traditional lecture classroom.					
I think active learning strategies can work well in an online course.					

7. Based on your learning experiences in the active learning classroom(s), what challenges have you had when taking a course in an active learning classroom?
8. Based on your learning experiences in the active learning classroom(s), what recommendations would you have to improve the active learning implementation at the university?

APPENDIX D  
STUDENT FOCUS GROUP

**Introduction:**

Thank you for participating in a focus group that discusses your experiences and needs when taking courses in the active learning classrooms. Before we begin, please know that your participation is completely voluntary and you can decide at any point in time not to participate in the focus group. Also, know that I will be recording the focus group for the sole purpose of transcribing and gathering general themes that will not be connected to your identity. Also, know that your participation will place you in a drawing to win a \$20 Amazon gift card due to this focus group being scheduled.

**Questions:**

*Poll:* How many total courses did you take in the active learning classrooms? What courses are they?

*Let's start out by talking about your student experiences within the active learning classrooms you were in.*

Q1: Describe examples of activities the instructors asked you to participate in when in the active learning classrooms.

Q1.1: instructional activities?

Q1.2: discussion activities?

Q1.3: student assessment activities?

Q1.4: Which activities you described work well? Why?

Q1.5: Which activities you described did not work well? Why?

Q2: How were these activities different from other activities you participated in when in other classroom environments? What changes did you need to make when being a student in the active learning classrooms?

Q2.1: Changes to the materials you used?

Q2.2: Changes to the way you saw your instructor delivering course content?

Q2.3: Changes to the technology you use when participating in activities?

Q3: In what ways, if any, did the active learning classroom change your behavior that differ from being in traditional classrooms?

Q3.1: Changes in paying attention?

Q3.2: Changes in interacting with others?

Q3.3: Changes in completing assignments, projects, or tests?

Q4: Overall, describe your satisfaction with your student experience in the active learning classroom.

Q4.1: Satisfaction in the furniture layout? Why?

Q4.2: Satisfaction in the technology installed in the classroom? Why?

Q4.3: Satisfaction in taking your course or courses in the active learning classrooms? Why?

Q5: What other student experiences in the active learning classrooms would you like to discuss that were not covered from the previous questions?

*Now let's talk about in what needs as students you have regarding being in an active learning classroom and in what ways the university can fill those needs.*

Q6: Describe how the instructor prepared you to learn in the active learning classrooms.

Q6.1: How did the instructor help you participate in active learning?

Q6.2: How did the instructor help you use the classroom technology?

Q6.3: How did the instructor help you use the classroom in general?

Q6.4: What activities met your student needs to be successful in the course?

Q6.5: How can instructors better improve or offer instructions to be successful in these active learning classrooms?

Q7: Based on your student experiences, what are the most important problems with the active learning classrooms that you think are fixable?

Q7.1: When participating in active learning activities?

Q7.2: When utilizing the furniture?

Q7.3: When utilizing the technology?

Q8: What would you tell new students who may be taking a course in an active learning classroom for the first time?

Q9: What last thoughts, concerns, or questions you would like the university to know about regarding active learning classrooms?

Q9.1: What thoughts do you have about active learning strategies in a traditional classroom?

Q9.2: What thoughts do you have about active learning strategies in an online course?

APPENDIX E

IRB APPROVAL LETTER



UNIVERSITY OF  
**SOUTH CAROLINA**

OFFICE OF RESEARCH COMPLIANCE

**INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH**

**APPROVAL LETTER for EXEMPT REVIEW**

Michael Lampe

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Re: **Pro00083998**

Dear Mr. Michael Lampe:

This is to certify that the research study *Exploring the Experiences And Needs of Faculty when Implementing Active Learning at a Public Southeastern Regional University: A Mixed-Methods Approach* was reviewed in accordance with 45 CFR 46.101(b)(1), the study received an exemption from Human Research Subject Regulations on **11/21/2018**. No further action or Institutional Review Board (IRB) oversight is required, as long as the study remains the same. However, the Principal Investigator must inform the Office of Research Compliance of any changes in



procedures involving human subjects. Changes to the current research study could result in a reclassification of the study and further review by the IRB. Because this study was determined to be exempt from further IRB oversight, consent document(s), if applicable, are not stamped with an expiration date.

All research related records are to be retained for at least three (3) years after termination of the study.

The Office of Research Compliance is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). If you have questions, contact Lisa Johnson at [lisaj@mailbox.sc.edu](mailto:lisaj@mailbox.sc.edu) or (803) 777-6670.

Sincerely,



Lisa M. Johnson  
ORC Assistant Director and IRB Manager

## APPENDIX F

### ORIGINAL UNADAPTED ACTIVE LEARNING STRATEGIES IMPLEMENTED SURVEY SUBSCALE

1. Students planned together the contents of study units.
2. Students independently planned and carried out learning tasks for which they were Responsible.
3. Students had to seek almost all knowledge independently from different information Sources.
4. Students used electronic nets to seek knowledge for their assignments.
5. Students worked in groups on problem-solving tasks.
6. Students independently produced reviews, outlines of sessions and presentations.
7. Students had to elaborate on their assignments independently or in peer groups only, based on a general theme.
8. Students took the responsibilities for planning and carrying out fairly large projects.
9. Students used information very critically.
10. Students discussed together the best solution for the assignments.
11. Students experimented and elaborated on new solutions to problems.
12. Students self-evaluated their own products.
13. Students sought knowledge off campus.
14. Students were tutored, if needed, but otherwise they worked independently or in peer groups.
15. Students knew how to develop their own learning.
16. Students sought much additional knowledge.
17. Students worked intensively with their assignments.

18. Students set objectives for themselves and their learning.

## APPENDIX G

### ORIGINAL UNADAPTED ACTIVE LEARNING EXPERIENCES SURVEY SUBSCALE

1. I know the changes that will affect me as a teacher, during the integration process into the EAHE.
2. The EAHE is a waste of time for teachers, more administrative work on top of the usual workload.
3. The EAHE will give me the opportunity to improve my teaching skills...
4. The education model proposed by the EAHE is unsuitable for university level.
5. I think a change in teaching methods is necessary at university level.
6. The structural conditions within my faculty favour a positive adaptation to the EAHE teaching system.
7. I feel that it is necessary to receive training in order to develop the competences demanded of my students from the EAHE framework.
8. Ability to analyze information, cases, documents, processes, graphs, tables, conceptual maps...
9. The integration of knowledge with a global perspective, based on analytical reflection, coherence within an argument and the quality of contributions in order to find solutions or make decisions.
10. Value situations, facts, texts, case studies, ideas...with a critical capacity.
11. Ability to analyze information, undertake tasks, activities and jobs, literary creation creatively.
12. The development of logical reasoning, reflection and argument in the analysis, search and creation of new ideas and solutions.

13. Capacity to analyze and find solutions through similarities, relationships or resembling situations with an interdisciplinary character.
14. Skill to find a practical means for learning strategies.
15. Analyzing situations, problems, cases, practices...applying criteria, norms and rules, valuing the advantages and disadvantages of issuing a judgement or applying solutions.
16. Capacity to work as a team member, to be able to partake in debates using different points of views, propose solutions and make decisions.
17. Organize and distribute time, prioritizing objectives and designing activities in order to fulfill planning.
18. Problem solving, starting with the basis of identifying the necessary elements, following the adequate procedure until reaching a plan of action.
19. Decision making according to the application of coherent methods, case studies, in order to resolve problems and make decisions on an individual and joint basis.
20. Learning by questioning theoretic models, integrating theories or own scientific models which show the professional needs of the students.
21. Planning and organizing activities, resources, time management and duties in order to undertake the activities and learning tasks.
22. The command and use of IT resources (data bases, access to libraries, journalistic archives, websites).
23. Ability to use the basic computer applications (archives, creating documents, data processing, the use of different windows...).
24. A good command of programs in order to make presentations in large groups.
25. Use of computer programs linked to their studies and to the job market.
26. The capacity to express properly themselves both verbally and written.
27. The command of at least one foreign language, useful within the job market.
28. The use of resources in foreign languages.
29. The capacity to analyze problems in order to find the causes and the search for possible solutions.
30. The initiative to confront critical and conflictive situations.

31. The capacity to overcome problems and to set new challenges.
32. Fulfillment of obligations and respecting the rules.
33. Capacity to self-criticize and accept the assessment of others.
34. Self-control and objectivity in problem solving situations.
35. Accept and respect the ideas of others
36. Capacity to adapt to new situations.
37. Capacity to work in a group, participate actively in group tasks.
38. Respect and support decisions made collectively.
39. Ability to contribute to ideas and efforts made between all group members.
40. Ability to listen and accept the contributions of all the group members.
41. Capacity to plan, organize and direct group activities.
42. Capacity to negotiate and collectively search for solutions.
43. Creativity, innovation and originality of the students.
44. Enterprising spirit and initiative of the students.
45. Ability to plan tasks in order to achieve personal or group objectives, efficient management of resources and decision making.
46. Ability to direct and evaluate projects or complex tasks until reaching a specific product.
47. Personal and academic excellence and the continuous search for improvement.
48. Undertake activities which will lead to the achievement of new successful results.
49. Student leadership ability in order to work as a team and to have good interpersonal relationship skills.

## APPENDIX H

### ORIGINAL UNADAPTED FOCUS GROUP PROTOCOL

Introduction: Brief introduction of the researcher. Brief explanation of the current study and the purpose of the interview.

Questions: Poll: How many total courses have you taught in the Collaboratory? What courses are they?

Lecturing Questions: We know that the design of the Collaboratory is very different from the traditional classrooms. Students do not sit in rows at fixed tables all facing the instructor.

Q1: What in particular makes lecturing in these spaces challenging?

Q2: In your opinion, what are the biggest fixable problems with the room?

Q3: Can you articulate what is important about the active learning space?

Q4: Can you give me an example of what worked particularly well in the room?

Q5: Did the room change how you addressed your teaching objectives?

Q6: How did having a technology-enabled room – wireless access, plasma screens for every table, projection capability – prompt you to change your previous teaching practice?

Q7: Has the room and the way that you teach in it changed anything about your assessment practices? Do you do more group assessments, for example? Do you collect different data or evidence of achievement?

Q8: Generally, did the room change what you do in other classrooms? That is, did you or do you intend to carry over anything you do in the Collaboratory to teaching in more traditional rooms?

Focus and Attention Questions: We've heard that some students have difficulty focusing on who is speaking or keeping track of what is going on. The sight lines are such that they don't always face the same direction and can lose track of who is speaking or what is being written on the board or referred to on the screen.

Q9: Did you find this to be true? How did you recognize that students were unable to focus? Do you do anything to help them with this problem? Q10: In contrast to more traditional styles of rooms, do you find students to be more easily distracted in the Collaboratory? Again, have you tried to address this in any way?

Classroom Cohesiveness:

Q11: What was your sense of the classroom community? In your opinion, did the students in the Collaboratory seem to be more friendly or collegial with each other than in other rooms? What did you notice that would suggest this?

Advice:

Q12: What physical features of the room do you think need to be improved?

Q13: What do you wish you had known before teaching in the Collaboratory for the first time? What advice would you give instructors teaching in the room for the first time?