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# Impact of a Practicum in Education Course Designed to Recruit Stem Majors into a Teacher Education Program

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IMPACT OF A PRACTICUM IN EDUCATION COURSE DESIGNED TO RECRUIT  
STEM MAJORS INTO A TEACHER EDUCATION PROGRAM

by

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## DEDICATION

In loving memory of my grandmother, Oneta Ezell Cash (1936-2016). I miss our long conversations during my drive home each week from Columbia. Your encouraging words, loving spirit, and wry sense of humor helped to make the journey bearable. I miss you more than words can express; however, your strength, wisdom, and love live on in the hearts and minds of all of your children, grandchildren, and great-grandchildren. “She openeth her mouth with wisdom; and in her tongue is the law of kindness” (Proverbs 31:26).

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## ABSTRACT

Research suggests that the most efficient way of improving students' performance, in mathematics and science, is by recruiting and retaining highly qualified mathematics and science teachers. This study augments the body of research aimed at the recruitment of STEM majors to the field of education.

The purpose of this study was to determine how a practicum course, developed to recruit freshman and sophomore STEM majors into a teacher preparation program, impacted participants' perceptions of teaching as a profession. The impact of this course, which utilized a reflective cycle framework for evaluating participants' reflections as the foundation of the program, was studied from a phenomenological research approach that focused on the emic and etic perspectives of the practicum students.

This study sought to answer the following research questions: 1) How do STEM majors enrolled in a one-hour practicum course perceive teaching within a high school or middle school classroom environment; 2) How do college students' experiences in the course, and stages of reflection following classroom observations, affect their perception of teaching as a profession and the possible decision to enroll in a teacher preparation program; and 3) How do practicum students relate their participation in the practicum in education course to their past, current, and future career decisions?

Data from four cohorts of college students, who took the Practicum in Education Course from 2012 – 2015, (n=54) were collected from reflection journals, pre-course information sheets, exit surveys, post-course questionnaires, and follow-up interviews.

Findings suggest early education practicums should focus on implementing semi-structured reflection journals with feedback from the instructor. College students should be encouraged to participate during classroom observations by helping school-aged students, designing assignments, or co-teaching lessons. Programs should offer the opportunity for college students to observe in two different classroom environments, and also encourage these students to ask questions within journal entries to which the instructor responds. In order to guide the development of future courses, research should explore the view of participants who do not plan to teach after taking an education practicum course. This exploration will help researchers and course designers in determining why college STEM majors choose not to enter teaching.



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## CHAPTER I

### INTRODUCTION

Improving student achievement in mathematics and science is a paramount concern for the United States. The National Commission on Mathematics and Science Teaching for the 21<sup>st</sup> Century (2000) conveys the importance of improving American students' performance in mathematics and science in a national report aimed at ensuring student success and competition in today's global economy. Former President, Barack Obama, affirmed that "we must educate our children to compete in an age where knowledge is capital, and the marketplace is global" (White House, 2010); however, test scores in STEM (Science, Technology, Engineering, and Mathematics) subjects are mediocre. Students show a lack of interest in STEM fields and there are a "lack [of] teachers who know how to teach science and mathematics effectively—and who know and love their subject well enough to inspire their students" (President's Council of Advisors on Science and Technology, 2010, p. viii). Due, in part, to a lack of highly qualified STEM teachers, the "United States now lags behind other nations in STEM education at the elementary and secondary levels" (President's Council of Advisors on Science and Technology, 2010, p. vii). The most efficient way of improving students' performance, in mathematics and science, is by recruiting and retaining highly qualified mathematics and science teachers (Ingersoll & Perda, 2010; Department of Education, 2000).

## Background of the Problem

The most recent nationwide Teacher Shortage Areas Report (TSA) for the 2017-2018 school years lists 44 states (86%) with teaching shortages in science and 48 states (94%) with teaching shortages in mathematics within the United States (U.S. Department of Education, 2017). Elementary and secondary student enrollments have grown steadily since the mid-1980s, with a concurrent rise in high school graduation course requirements for mathematics and science. Student enrollment has increased by 69% for mathematics and 60% for science, while teacher retirement has increased by 141% (Ingersoll, 2011). These factors have led to an increased need for highly qualified mathematics and science teachers (Ingersoll, 2011). Sausner (2002) illustrates this need when she proposes that someone could “throw a dart at a map of the United States and...likely hit a district that is having trouble finding qualified math and science teachers” (p. 5).

Research shows that students are more likely to attain academic gains, graduate high school, attend college, and experience monetary success later in life if they have effective teachers in school (U.S. Department of Education, 2013). Various studies reveal that teachers have more of an impact on student learning than other factors, including race, socioeconomic level, prior academic record, or school (Darling-Hammond, 2000). Zientek and Thompson (2008) report that “providing students with high-quality teachers who offer rigorous and challenging mathematics courses will be a major factor in closing the achievement gap and ensuring the future success of students” (p. 1). According

to Ingersoll (2011), the supply of new teachers mostly comes from a “reserve pool,” consisting of former teachers who left the field for various reasons and have returned to teaching. A smaller source includes teachers who enter the field with non-education degrees in either mathematics or science through alternative certification programs. An even smaller source, constituting less than a quarter of new mathematics and science teacher hires, is from the traditional “pipeline” of new college graduates with education degrees. The small percentage of teachers who come directly from college teacher-preparation programs may be due, in part, to the amount of newly prepared teachers who obtain a teaching license and never teach (Ingersoll, 2011). This vast array of teacher supply keeps many districts from reporting teacher vacancies; however, this is often due to the legal requirements for filling teaching positions, even if the teachers occupying the positions are teaching out of area or are underqualified (Ingersoll & Perda, 2010). When class sizes for other teachers are increased, due to the unsuccessful hiring of new teachers, vacancies are often not reported.

Mathematics and science courses serve as an indicator of future success, yet many college and high school students have gaps in their mathematics and science preparation. Empirical research suggests that teacher quality is the most important factor affecting student achievement (Goldhaber, 2016). While teacher quality impacts student success in mathematics, many students do not receive instruction from highly qualified teachers (Zientek & Thompson, 2008). Clotfelter and colleagues (2007) found that student achievement was significantly higher if taught by a qualified teacher who was a graduate from a competitive college,

who entered the profession with licensure and certification in his or her teaching field, and who had two or more years of experience. The researchers also found that having a teacher with most of these qualifications affected achievement gains more than the influence of race and parent education combined. These findings suggest that minority students' access to highly qualified teachers could help in reducing the achievement gap over time. While quality teaching is essential for all students, it is the low-income and minority students who may see the most gains from having access to effective teachers (Adamson & Darling-Hammond, 2012).

It is clear that “teachers have enormously important effects on children’s learning and that the quality of teaching explains a meaningful proportion of the variation in achievement among children” (National Research Council, 2010, p. 22). While some STEM teachers are retiring, many leave the teaching profession citing job dissatisfaction (Ingersoll & Perda, 2010). In traditional university and college teacher education programs, teachers are rarely prepared by both STEM and education departments, often resulting in teachers who lack a strong background in STEM subjects (Ingersoll & Perda, 2010). Universities with STEM teacher recruitment programs often use internships and courses, which offer early field experience, as a way to encourage STEM majors to pursue a career in teaching (Brainard, 2007; Luft, Fletcher, & Fortney, 2005; Mervis, 2007; Scott, Milam, Stuessy, Blount, & Bentz, 2006; Newton, Jang, Nunes, & Stone, 2010; Otero, 2005). Exposing STEM majors to early field experience in the classroom allows these students to get an idea of what a career in education entails.

Internships and practicum courses are an integral part of teacher education programs because first-hand involvement within a classroom is a compelling learning experience for future teachers (Darling-Hammond & Bransford, 2005).

Ingersoll (2011) suggests that a long-term solution for filling mathematics and science teaching positions is through continued recruitment of new teachers and by an effort to make teaching more attractive, especially in settings which are traditionally harder to staff. Current research indicates that mathematics and science teachers are in short supply, due mostly to the attrition or migration of early career teachers (Borgerding, 2015; Ingersoll, 2011; Ingersoll & Perda, 2010). Ingersoll (2011) found that turnover is higher in the teaching profession, especially when compared to what is often perceived as higher-status occupations, such as lawyers, engineers, architects, professors, and pharmacists. Research shows that high-poverty, high-minority, and urban public schools have the highest rates of teacher turnover and staffing problems (The Hechinger Report, 2010).

Many states are filling teaching positions through alternative certification programs aimed at recruiting college graduates. The American Board for the Certification of Teacher Excellence (ABCTE) is a national organization aimed at providing an online and self-paced alternative certification path to professionals who already hold a bachelor's degree (ABCTE, 2017). Many states offer specific programs aimed at the recruitment of professionals; for example, South Carolina uses the Program of Alternative Certification for Educators (PACE) for prospective teachers who hold a bachelor's degree in eligible certification areas.



This three-year program allows individuals to obtain teaching credentials while teaching. While such programs are successful with filling the current need for teachers, alternatively certified teachers tend to have higher attrition rates than traditionally prepared teachers (Alt & Henke, 2007; Heilig, Cole & Springel, 2011), leading to yet another cycle of new teachers entering and leaving the classroom. Research suggests that teachers who are prepared through programs that focus "on the work of the classroom and provide opportunities for teachers to study what they will be doing, produces teachers who are more effective during their first year of teaching" (Boyd et al., 2008, p.26). The opportunity to review curriculum, engage in actual classroom practices, and participate in student teaching was found to be positively associated with student learning (Boyd et al., 2008). Such opportunities are found in traditional and fast-track university programs; however, alternative programs do not always provide such occasions, especially since many programs put teachers in the classroom before they receive adequate training. While alternative programs increase the teacher-supply, there needs to be a focus on recruiting students into university programs, where students can have access to teacher education courses before entering the classroom.

### **Statement of the Problem**

There is currently a dire need for high-quality STEM teachers to help improve K-12 STEM instruction for students across the nation. The scarcity of qualified teachers has been a predominant concern in the United States for decades (Ingersoll & Perda, 2010). At a time when many teachers are teaching

out-of-field, (Ingersoll & Perda, 2010; The Education Trust, 2008) it is essential to provide highly qualified teachers that can motivate students in STEM courses.

### **Purpose of the Study**

The purpose of this study is to determine how a practicum course, developed to recruit college freshman and sophomore STEM majors for a teacher preparation program, impacts participants' perceptions of teaching as a profession.

### **Significance of the Study**

The use of internships, as part of University fast-track teacher education programs, has been successful in the recruitment of STEM majors in the field of education. However, current research does not explicitly address the outcomes of a practicum course designed to recruit freshman and sophomore STEM majors into a traditional teacher preparation program. Field experience is one of the most influential learning experiences for future teachers (Darling-Hammond & Bransford, 2005; Wilson, Floden, & Ferrini- Mundy, 2001). Early field experiences, in particular, have proven beneficial for preservice teachers (Gomez, Strage, Knut- son-Miller, & Garcia-Nevarez, 2009) and often serve as a "reality check," for some who are not yet committed to pursuing the profession (Malone, Jones, & Stalling, 2002). A recruitment program, with an early practicum course, could be beneficial to students who are interested in education but need hands-on experience before making a decision. More research is needed in the area of teacher recruitment strategies and methods, specifically for the recruitment of mathematics and science teachers.

## Context

The University of South Carolina offered a one-hour elective course, intended for freshman and sophomore STEM majors who did not currently have a career plan for their STEM degree. It was the goal of this course to provide STEM majors with experience in secondary classes and offer them the opportunity to see if the teaching profession may be a potential career option for them. The course was partially funded by the National Science Foundation's Robert Noyce Teaching Scholarship Grant, hereafter referred to as the Noyce grant ("The Robert Noyce Scholarship Program," n.d.). The goal of the Noyce grant is to increase the number of highly qualified science and mathematics teachers through a scholarship-based program that enables academically qualified students to complete a bachelor's degree in mathematics, science, or engineering sciences and a one-year Master of Teaching (MT) certification program. This program was created in response to the current critical need for K-12 STEM teachers, and is intended to "encourage talented STEM students and professionals to pursue teaching careers in elementary and secondary schools" ("The Robert Noyce Scholarship Program," n.d.). This program provides higher education institutions with the funds necessary to offer scholarships, stipends, and programmatic support for the recruitment and preparation of STEM majors who wish to pursue teaching as a career.

The Practicum in Education course is designed to recruit freshman and sophomore students into the Robert Noyce Teacher Scholarship program, where they will receive incentives during their junior, senior, and Master of Teaching

years at USC. At the time of this study, the Noyce program had provided up to \$10,000 a year in scholarship funds for students, while also offering support in the form of monthly meetings, professional conferences, mentorship, and support during their induction years. For each year of funding, a Noyce Scholar receives, he or she must teach for two years in a high needs district. The University of South Carolina's Noyce Program was funded in 2010 for \$1.45 million and ended in 2017. A new Noyce grant was funded in 2018 to continue the work of the previous grant.

In the one-hour course, participants spend about half of the class time on the University campus learning about teaching, and half of the class time observing in local schools. The class time within middle and high school classrooms ranges from sole observations to the teaching of lessons, depending upon the comfort level of the participant and his or her host teacher. The college students observe and participate in classrooms for a minimum of 12 hours while keeping a time log and writing reflective journals after each site visit. Participants upload these journals to Blackboard to obtain credit for completing them and for receiving feedback from the instructor. They receive one-credit hour and a monetary stipend upon completion of the course. A copy of the syllabus for EDSE 210 can be found in Appendix C.

### **Research Questions**

To address the aforementioned purpose, this study asks three questions:

- 1) How do STEM majors enrolled in a one-hour practicum course perceive teaching within a high school or middle school classroom environment?

- 2) How do college students' experiences in the course, and stages of reflection following classroom observations, affect their perception of teaching as a profession and the possible decision to enroll in a teacher preparation program?
- 3) How do practicum students relate their participation in the practicum in education course to their past, current, and future career decisions?

### **Sources of Data Collection**

For this study, the researcher focused on five data collection instruments: (a) reflection journals, (b) pre-course information sheets, (c) exit surveys, (d) post-course questionnaires, and (e) follow-up interviews. The methods section, in chapter 3, will focus on more detail for each of the data collection instruments.

### **Theoretical Framework**

A qualitative approach, from a phenomenological perspective, was used to analyze written reflection journals, exit surveys, post-course questionnaires, and follow-up interviews. Phenomenology was used as the foundation of this study as this design seeks to capture the “meaning for several individuals’... lived experiences of a concept or a phenomenon” (Creswell, 2007, p. 57), the shared experience being college students’ participation in the practicum in education course (EDSE 210). The data collection instruments were analyzed from a phenomenological perspective and more specifically through a lens framed by Gibbs’ Reflective cycle and Kenneth Pike’s theory of Emic and Etic Perspectives. An initial analysis of reflection journals led to the selection of Gibbs’ Reflective Cycle and emic/etic perspectives as the guiding lenses for this phenomenological

study since preliminary findings suggested that students who reflected from an emic perspective also reflected at more stages of Gibbs' Reflective Cycle. Participants who reflected at more stages and took on an emic (insider) perspective within the classroom appeared to find the practicum course more beneficial in helping them determine a career path. Phenomenology, Gibbs' Reflective Cycle, and Emic/Etic perspectives were used to determine the impact of the practicum in education course, EDSE 210, on participants' perceptions of teaching as a profession and on their intent to teach.

### **Definition of Terms**

The following terms and their definitions will lead to a better understanding of this research study.

**Achievement Gap.** If students are grouped by factors such as race/ethnicity and gender, and one group of students outperforms another group by a statistically significant (larger than the margin of error) amount (NAEP, 2015).

**Effective Teachers.** Properly certified teachers that positively affect student achievement by "providing students with...rigorous and challenging" learning experiences (Zientek & Thompson, 2008). Effective teachers are qualified to teach their subject, while unqualified teachers are "uncertified, not fully prepared, or teaching outside their field of preparation" (Adamson & Darling-Hammond, 2012, p. 4).

**Emic Perspectives.** First coined in 1954 by linguist, Kenneth Pike, this perspective "attempts to capture participants' indigenous meanings of real-world

events” (Yin, 2010, p. 11) and “looks at things through the eyes of members of the culture being studied” (Willis, 2007, p. 100).

**Etic Perspectives.** The term, etic perspective, is used to describe how one views a specific culture as an outsider (Headland, Pike, & Harris, 1990).

**Fast-Track Certification Programs.** University programs in which students earn an undergraduate bachelor's degree in a non-education field, while simultaneously obtaining teaching credentials, within a 4-year term (Newton, Jang, Nunes, & Stone, 2010; Scott, Milam, Stuessy, Blount, & Bentz, 2006).

**Inductive Analysis.** Allows information and categories to emerge from the data without imposing predetermined categories on them (Patton, 2002).

**Inquiry learning experiences.** The teacher acts as a facilitator and begins by posing a question, problem, or scenario that leads to exploration and investigation by the students. This type of learning allows students to acquire knowledge instead of being given facts to memorize (Bischoff, Castendyk, Gallagher, Schaumloffel, & Labroo, 2008; Toolin, 2003).

**Learning Assistant.** College students who are paid a stipend for working a set number of hours by “assisting faculty in classes, leading group recitation sessions, and tutoring in the labs” (Fineus & Fernandez, 2012, p. 54).

**Phenomenology.** Grounded in the study of experiences from the perspective of the individual. Phenomenology allows for the interpretation of individual experiences, and an aim to discover how people create meaning from their experience (Babbie & Benaquisto 2010).

**Practicum Course.** A course designed to give students insight into the field of teaching through seminars, discussions, reflections, classroom observations, and limited teaching opportunities.

**Reflective Journals.** Defined as "written documents that students create as they think about various concepts, events, or interactions over a period of time to gain insights into self-awareness and learning" (Thorpe, 2004, p. 328).

**STEM.** Science, Technology, Engineering, and Mathematics are subjects collectively known as STEM (U.S. Department of Education, 2017). When referring to the participants of this research study, STEM only includes students majoring in science, engineering, and mathematics.

### **Conclusion**

In order to ensure that American students are receiving a high-quality STEM education, accredited programs must actively recruit STEM teachers. It is also essential that universities encourage a partnership between Education and STEM departments for recruiting, training, mentoring, and rewarding STEM majors in the field of education. In an effort to increase the amount of highly qualified mathematics and science teachers throughout the state of South Carolina, a course was developed at the University of South Carolina to recruit STEM majors during their freshman and sophomore years of college. Participation in the education practicum course gave these college students the opportunity to learn more about the teaching profession. The impact of this course, which utilized a reflective cycle framework for evaluating student reflections as the foundation of the program, was studied from a



phenomenological research perspective that was focused on the emic and etic perspectives of the participants.

## CHAPTER II

### LITERATURE REVIEW

#### Introduction

The President's Council of Advisors on Science and Technology (2010) issued a report to the president that provided a strategy for improving K-12 STEM education, which included cultivating, recruiting, and rewarding STEM teachers as an overarching priority. According to a study conducted by The National Science Foundation, almost 35% of STEM majors drop their major between their freshman and sophomore years of college (National Science Foundation, 1990, as cited in Plecki, John, & Elfers, 2013). The drop in undergraduates enrolled in STEM programs, and the subsequent decrease of degrees awarded in STEM fields led to a national initiative (100K in 10) launched by 28 educational and corporate partners with the intention of recruiting, developing, and retaining 100,000 outstanding mathematics and science teachers over the course of 10 years (Carnegie Corporation of New York, 2011). Plecki, St. John, and Elfers (2013) argue that "recruitment strategies are most advantageous when aimed at those undecided about the profession rather than toward those already intent on pursuing a career in teaching" (p. 740). In an effort to understand the impact of practicum courses, aimed at recruiting freshman and sophomore STEM majors to the field of education, the researcher reviewed research that focuses on five main areas: Undergraduate STEM majors' views on

teaching as a profession, teacher recruitment, recruitment of STEM majors, early practicum courses and field experiences, and reflection.

### **Undergraduate STEM Majors' Views on Teaching as a Profession**

Plecki, St. John, and Elfers (2013) explored how undergraduate students enrolled in STEM courses view K-12 teaching as a profession. The researchers sought to investigate the level of interest in K-12 teaching among STEM majors, STEM majors' perceptions of teaching as a profession, the aspects of K-12 teaching that STEM majors find essential in a future career, and policy measures that might encourage these students to consider a career in K-12 teaching. The researchers surveyed 26 undergraduate mathematics, science, or engineering students who were attending four Washington community colleges or universities.

The researchers found that half (51%) of the students were definitely not considering a career in education, 40% of the undergraduates would consider a career in K-12 teaching, and 9% were undecided. They also found that juniors and seniors were more likely to consider teaching as a career when compared to freshman and sophomores. Salary, a need to be challenged, and job stability were mentioned among the main reasons for not choosing a career in K-12 teaching. The researchers found that over half of the participants (62%) would consider a career in K-12 education if their college loans were paid off after teaching for two years. Other policies that would help STEM students consider teaching as a career include a salary comparable to engineering and technology positions, an increase in the quality of materials and supplies for teaching, a

lower interest loan for the purchase of a home, opportunities for advancement, and a reduction in class size.

This research indicates that there is the potential for recruitment of STEM undergraduates to K-12 teaching. The researchers suggest that teacher preparation programs include alternative-route programs to allow STEM majors to become certified teachers. They also recommend that the recruitment of STEM majors begin after their first year of college and focus on mathematics and natural science majors. Partnerships with universities and businesses which allow these students the opportunity to continue researching as teachers, along with policies that offer loan forgiveness for mathematics and science teachers, are other practices that might increase STEM majors' desire to become K-12 teachers.

Kyriacou and Coulthard (2000), explored undergraduates' views of teaching as a career choice by having 298 students complete a questionnaire in which they were asked to rate the importance of 29 factors, which may influence their choice of career. Researchers compared answers between three groups of students: Students who were definitely not considering teaching (N = 102), students who were seriously considering teaching (N = 40), and students who were currently undecided (N = 155). All three groups rated "a job that I will find enjoyable" as the most important factor influencing their career choice. When asked what would encourage them to consider teaching, the undecided students indicated that a fast-track program, increased teacher autonomy, ongoing training, and an increased number of classroom assistants are motivators for

becoming a teacher. Salary and salaries based on performance were the top reasons for students not considering teaching as a career choice. These findings have significant implications for developing teacher recruitment campaigns.

Fineus and Fernandez (2012) conducted a study on the learning assistant (LA) program at Florida International University. They investigated the points of view of mathematics LAs. Specifically, they sought to understand the LAs thinking about the program, and how the experience influenced their thinking about becoming a mathematics teacher. At the time of the study, 51 STEM undergraduates joined and completed the LA seminar for the first time. The seminar focused on issues of teaching and learning of mathematics and provided participants with initial training to support their LA teaching/tutoring experiences.

Researchers administered surveys to STEM LAs to gather demographic data, background information and LA's thinking about teaching. Of the thirteen who completed the survey, three participants were selected for interviews using purposeful sampling. One participant was interested in teaching, one was not interested, and one was not sure.

The analyses of these three cases reveal similarities and differences that can be used to inform the implementation of similar programs. For students with a positive history that includes family influence, teacher influence, peer-influences, and teaching experiences (Shutz, 2001 as cited in Fineus & Fernandez, 2012), the program may have confirmed if teaching was the correct career choice for them. For students who are not sure and do not have a positive or negative history of influences, the program may have provided a positive

history of influences to help them decide to become a teacher. However, for students who are undecided and have a mix of positive and negative influences, the program may not have been a useful recruitment tool, but rather a clarification tool for what it takes to be a teacher.

### **Teacher Recruitment**

School districts across the nation have struggled to recruit and retain mathematics and science teachers for decades (Ingersoll, 2011; Ingersoll & Perda, 2010; Levin, 1985; Sausner, 2002). High-poverty and high-minority schools have the highest rates of under-qualified teachers (Hechinger Report, 2010; Ingersoll, 2011; The Education Trust, 2008; Zientek & Thompson, 2008). This problem is augmented in science and mathematics, where as many as 50% of mathematics and science teachers lack proper certification or degrees in the field in which they teach (Darling-Hammond, 2000). The Education Trust (2008) asserts that a "failure to prepare, recruit, and assign skilled and competent teachers to high-poverty, high-minority schools denies students critical resources, perpetuates achievement gaps, contradicts our democratic principles, and threatens our economic vitality" (p.1). Since high-poverty students are more likely to receive their education from novice teachers, it is essential that more novice teachers be recruited, prepared, and retained to guarantee an equitable education for all students (Zientek & Thompson, 2008). Recent research focuses on the recruitment of career changers and high school, college, and non-traditional students to the field of teaching.

**Summer science camps.** Several studies specifically deal with the recruitment of high school students. Two of these studies focus on summer science camps as a recruitment tool for current secondary students. Bischoff and colleagues (2008) targeted 11<sup>th</sup>-grade students who had not yet decided on a college major by offering a one-week camp, free of charge. A one-time \$1000 scholarship was offered as an incentive for students who attended the camp and successively enrolled at the summer camp host-college as either a science or science education major. The researchers report that more high school students are majoring in physical sciences in college as a result of the summer science camps. They also indicate that twenty-two percent of the camp alumni are attending the college that hosted the camp, while other camp attendees are majoring in science at other colleges and universities. In an end of the camp survey taken by 64% of camp alumni, 59% of the survey respondents indicated that they were interested in pursuing a career in chemistry/biochemistry (17%), engineering (16%), physics (9%), biology (6%), science education (6%), or behavior sciences (5%). Eighty-three percent of respondents said, "the camp made [them] think seriously about studying science in college" (Bischoff, Castendyk, Gallagher, Schaumloffel, & Labroo, 2008. p. 139).

Toolin (2003) investigated the influence of summer science experiences and a teacher-mentoring program on African American and Hispanic high school students' overall interest in science and their possible career goals for teaching science. Toolin recruited underrepresented high school juniors and middle school students from six designated school districts. These students were selected in

hopes that they would pursue science or science teaching as a career, thus filling a critical need for underrepresented scientists and science teachers. Fifty percent of students enrolled in summer camps expressed interest in a career in teaching science, and 33% expressed interest in a career in science.

Both summer camp programs offered inquiry learning experiences and challenging science and engineering tasks. Researchers reported an overall excitement about science as a result of these camps. The experience of inquiry learning and “real” science proved to be motivation for secondary students to seek a career in science or science education.

**Grow-your-own programs.** South Carolina's Center for Educator Recruitment, Retention, and Advancement (CERRA) employs recruitment programs such as proteam, teacher cadets, and teaching fellows. These programs, designed to alleviate the teacher shortage in South Carolina, are targeted at middle and high school students. Over thirty-eight other states have used such programs as a model for their teacher recruitment programs. Other states, including Illinois and Georgia, have also had research-based success with grow-your-own programs (CERRA, 2016).

**ProTeam.** CERRA (2016) reports that ProTeam is a program designed to offer positive learning experiences for middle school students before they become “turned off” to the idea of teaching as a career option. Current 7<sup>th</sup> and 8<sup>th</sup> graders, performing in the top 40% of their academic class, can join the program with a favorable recommendation from their current teacher. This program is offered as either a semester or yearlong hands-on course and focuses on the



following areas: Self-discovery, cooperative group work, service learning, goal setting, career exploration, family involvement, and teaching-like experiences. Since its inception in 1989, more than 15,300 South Carolina students have participated in ProTeam, and it is currently offered in 25 South Carolina Middle Schools. There is a lack of empirical research on the impact of this program.

**Teacher Cadets.** According to CERRA (2016), the primary objective of the Teacher Cadet Program is to encourage academically gifted, accomplished, and intrinsically motivated high school students, with communication and leadership skills, to consider teaching as a career. The program is taught as a dual credit accrual course for a minimum of one class period per day for a year. Beginning as a pilot program in four South Carolina high schools during the 1985-1986 school year, the program has grown to include 170 South Carolina high schools, over 200 classes, and an average of 2,700 juniors and seniors each year. In its 30 years, over 60,000 students have participated in Teacher Cadets. Students participate in classroom instruction before being assigned to an elementary or middle-level classroom where they observe, plan lessons, assist teachers, and teach lessons.

The Teacher Cadet Program was developed in response to the growing attrition rates of teachers, especially beginning teachers, one of the leading contributing factors to the national shortage. This program has become the national model for the recruitment of pre-collegiate teachers across the United States. As the only national model, thirty-eight states have implemented this program by infusing South Carolina's curriculum into their future teacher

programs. Thirty-four percent of the current teacher cadets plan to pursue teaching as a career, while 16.86% intend to study medicine, 12.63% are undecided, 5.64% plan to study business management, 4.58% expect to study engineering, and 20% are classified as pursuing other career options. The students conveyed the following reasons for pursuing a career in teaching: Being able to influence the future (47.09%), working with young people (27.88%), the love of content area (13.51%), and a desire to serve the community (5.7%) (CERRA, 2016).

**Teaching Fellows.** According to CERRA (2016), the mission of the South Carolina Teaching Fellows Program is for the recruitment of accomplished high school seniors into the teaching profession. The program provides up to 200 high school seniors with a fellowship each year. Recipients must exhibit exceptional academic achievement, a desire to teach in South Carolina, leadership qualities, and a history of service to their school and community. As a teaching fellow, participants receive up to \$24,000 in fellowship funds while they complete a degree that will lead to teacher licensure. These funds provide them with \$5700 for tuition and board and \$300 for enrichment programs directed by CERRA. Teaching fellows must agree to teach in South Carolina public schools for one year for every year he or she received funds.

**GOY Illinois Initiative.** Illinois' "Grow Your Own Teachers" (GYO) initiative, established in 2005, was designed to improve the new teacher pipeline across the state of Illinois. The program has had success with increasing the pipeline of highly effective teachers of color, improving teacher retention in low-

income schools, and improving the academic achievement of low-income students. GYO has increased the ratio of teachers to students of color with 84% of its candidates being of color. The program has helped to reduce teacher turnover rates since participants must teach for at least five years after graduation. The program also helps fill hard-to-fill positions, with almost 40% teaching in bilingual or special education classrooms. As of March 2015, the program had produced 105 graduates and given financial assistance of over \$1,000 to 288 candidates. The graduates and current candidates have enrolled in the following certification programs: Elementary education (n=74), bilingual education (n=26), early childhood education (n=19), special education (n=16), secondary language arts (n=9) secondary mathematics (n=8), secondary social studies (n=8) and secondary science (n=6) (Perona, LaSota, & Haeffele, 2015). Jimmy Lugo, the principal of a Chicago public school, says that GYO teachers "tend to stay," because many of them grew up in surrounding neighborhoods and are invested in their school and community (Lugo, 2015, p.1).

**FEA.** Georgia has several teacher recruitment organizations, including *Pathways to Teaching Careers*, *Teacher Cadets*, and *Troops to Teachers*; however, Phi Delta Kappa's *Future Educators of America* (FEA) is the only pre-collegiate extracurricular program available to students interested in exploring a career in education. The goal of this program is to help middle and high school students gain a realistic view of education as a profession. Students who are already interested in a career in teaching are recruited into the program, where they learn about professional mobility, diversity, job security, classroom

management, student engagement, and instructional strategies. There are currently 96 chapters of FEA in Georgia (Swanson, 2011).

Swanson (2011) studied students (N=262) participating in 19 different FEA chapters in rural and suburban schools within the state of Georgia. Students ranged in age from 13 to 19 years with more females (n=208) participating than males (n=54). Forty-four percent of the participants expressed interest in teaching in an elementary school, 38% indicated that they would like to teach in a high school, 13% showed interest in teaching in a middle school, and 5% were undecided. When asked about content area specialty, most students were interested in teaching language arts (34%) followed by interest in social studies (21%), mathematics (12%), foreign language (4%), special education (3%), and science (2%).

In August 2015, the Phi Delta Kappa Education Foundation partnered with NEA and other organizations to establish *Educators Rising*. Since the refocusing of the program, more than 15,000 students and teachers from 1,200 schools have joined the program. *Educators Rising* “provides passionate young people with hands-on teaching experience, sustains their interest in the profession, and helps them cultivate the skills they need to be successful educators” (Educators Rising, 2016).

### **Alternative Certification Programs.**

Alternative certification programs are fast-track recruitment programs used to target professionals from various backgrounds, including paraprofessionals, military workforce, and professionals with STEM degrees (Dickey, Oliver,

Andreasen, & Fernandez, 2013). The National Center for Alternative Certification (NCAC) reported that in 2010, there were nearly 600 programs that offered over 136 different paths to certification (Heilig, Cole, & Springel, 2011). Although alternatively certified teachers have higher attrition rates than traditionally prepared teachers (Alt & Henke, 2007; Heilig, Cole & Springel, 2011), national programs like American Board for the Certification of Teacher Excellence, Teach for America, and The New Teacher Project (TNTP) Teaching fellows offer alternative paths to professionals across the nation.

***American Board for the Certification of Teacher Excellence.*** Founded in 2001, the American Board is a non-profit organization designed to provide an online and self-paced alternative certification path to professionals who already hold a bachelor's degree (ABCTE, 2017). ABCTE (2017) reports that 32% of current students are pursuing certification in mathematics or science. They also indicate an average retention rate of 85% within the first three years of teaching; however, there is a 3-year teaching requirement as part of the certification process. After teaching for three years and passing the Praxis exams, the alternative certification can be upgraded to a Professional Teaching Certificate (ABCTE, 2017).

***Teach for America.*** In the past 27 years, Teach for America (TfA) has produced over 55,000 alumni and corps members (Teach for America, 2017). Teach for America is a national organization aimed at recruiting college graduates from across the country to serve as teachers for a minimum of two years in low-income areas. TfA reports that 90% of recruits stay for the two-year

commitment, while 68% of recruits leave education by the fifth year of teaching. When TfA corps received training and certification beyond the required two-year commitment, they showed a positive effect on student achievement; however, recruits with less training had an adverse impact on student mathematics achievement (Heilig, Cole, & Springel, 2011).

***TNTP Teaching Fellows.*** Teachers who believed in providing excellent teaching for all students founded the New Teacher Project (TNTP) in 1997. The TNTP Teaching Fellows program has recruited over 35,000 teachers since its inception. The program begins with an intensive summer training program, which focuses on the fundamentals of teaching. Upon completion of the summer training program, recruits are placed as full-time teachers in the classroom while simultaneously receiving continued support in the form of seminars and personalized coaching. Recruits receive teaching certification upon successful completion of the course (Leap Year, 2013).

### **Recruitment of STEM Majors**

Hubbard and associates (2015) studied the impact of recruiting and training practices, which were developed by the *Talented Teachers in Training for Texas (T4) program*. Specifically, they examined the STEM Master Teacher Job Shadow Program, a STEM Day, and a NASA Aerospace Teachers Program on recruiting current STEM students to the field of teaching. During the first two years, over 100 students participated in the programs.

The job shadowing experiences were developed to give students a realistic view of the teaching profession and to help them develop an authentic

working relationship with a master mathematics or science teacher. Students were asked to write daily reflections, which helped them determine if teaching was an appropriate profession for them. Researchers found that the participants and master teachers found the experience extremely rewarding.

STEM Day, which included 12 school districts, 243 students, and 34 teachers, was designed to recruit high school students as future STEM majors and to expose current university STEM students to the possibility of teaching high school. The researchers found that 81% of high school students indicated an interest in STEM subjects; however, 96% of STEM majors stated that their interest in teaching had not changed. Since many of the STEM majors had small roles in the program during the first year, the second year was planned with fewer participants, each having a more substantial part in the day. This approach proved successful with 42% of STEM majors indicating interest in secondary high school teaching after participation in the second annual STEM Day.

The NASA Aerospace Teachers Program allows current STEM majors to work as an apprentice alongside certified teachers in NASA's High School Aerospace Scholars program, designed for talented high school students in Texas. Exit interviews indicated that 60% of STEM majors were seriously considering teaching as a career choice, while it allowed others to solidify their prior commitment teaching.

STEM educators, called T4 Scholars, are at the heart of these programs. They commit to teach in STEM fields within high-needs school districts for four years in exchange for a \$30,000 scholarship, preservice mentoring, and three years of in-

service induction support and mentoring once in the classroom. The researchers recommend their program as a model for the recruitment of STEM teachers and the encouragement of student interest in STEM fields (Hubbard, Embry-Jenlink, & Beverly, 2015).

**Science Internship programs.** Worsham and colleagues (2014) investigated the effectiveness of a paid summer internship, for freshman and sophomore STEM majors, as a recruitment tool for science teachers. Participants attended support seminars while also completing a 10-week internship at either a nature center or science museum. Researchers examined exit surveys, reflective papers, and application materials before concluding that the internships were not a useful tool for immediate recruitment into a science education program. However, several participants indicated that they would consider a career in teaching science later in life. Reasons given by students for not pursuing teaching included: The rigidity of teacher education programs, teacher salary concerns, classroom management, and an overall indecisiveness about their future career. The researchers concluded that the internships attracted many students with only secondary interests in teaching. They recommend that future recruitment efforts carefully screen applicants and give preference to those with prior educational related experiences. They also suggest a focus on helping interns make connections between their internship and actual high school science classrooms, an emphasis on promoting reflection, and the development of more flexible education programs (Worsham, Friedrichsen, Soucie, Barnett, & Akiba, 2014).



Tomanek and Cummings (2000) examined the impact of science teaching internships on the recruitment of science teachers. Undergraduate STEM majors (n=15) were recruited and spent ten hours per week for ten weeks assisting exemplary secondary science teachers in a high school setting. Twenty percent of the participants committed to a secondary science-teaching career.

Researchers found that the following positive experiences impacted these participants' decision to pursue a teaching career: A positive classroom experience, positive interactions with the students and teacher, prior beliefs about teaching as a profession with promising job availability, an understanding of the importance of motivating students, and a view of teaching as a form of additional career preparation rather than a departure from their STEM major.

Researchers noted that participants not interested in pursuing a teaching career had concerns about classroom management and also perceived teaching as a career of low prestige.

#### **Non-traditional and fast-track university certification programs.**

Jeffery Mervis (2007), the author of "A New Twist on Training Teachers," believes the current problem with training mathematics and science teachers is grounded in how universities treat these students. Students who have done well in high school mathematics and science are channeled into undergraduate programs that emphasize research instead of teaching, while "STEM majors who choose a career in elementary or secondary [education] are regarded as washouts" (p. 1274). Alternative teaching programs for STEM majors are being implemented at the University of California, Berkeley (UCB), University of Texas

(UT), Texas A&M University, Brigham Young University (BYU), University of Colorado, Boulder (CU-B), and the University of Missouri-Columbia (UM).

**Cal Teach.** The University of California, Berkeley, offers an alternative approach to secondary mathematics and science teaching certification through a program called Cal Teach. Newton and colleagues (2010) examined the impact of this program, which was designed to recruit, prepare, and retain highly qualified secondary mathematics and science teachers. The unique design helps STEM majors smoothly transition to the field of teaching by allowing them to study their STEM major, while simultaneously being trained to teach. Cal Teach is designed to give students a cohesive experience that combines their content instruction with pedagogy and best teaching practices.

Recruitment begins when students enter as freshmen or transfer students, as part of an early intervention strategy, which is designed to build awareness of the program. While these students are being pulled from their STEM fields, as potential educators, they could inspire dozens to become STEM majors. Students are placed in student teaching or internship positions with partner school districts that have a high need for mathematics and science teachers. This program allows students to graduate in four years with a bachelor's degree and teaching credentials (Newton, Jang, Nunes, & Stone, 2010).

**UTeach.** Brainard (2007) studied the UTeach program, developed by Mary Ann Rankin, Dean of the University of Texas at Austin's College of Natural Sciences. The program was established in 1997 as a way to recruit mathematics and science majors to the field of teaching. Professors in the science and

mathematics departments work together with local mathematics and science secondary teachers, called "master teachers," to cultivate courses that allow for hands-on exercises, an understanding of the scientific method, and the development of critical-thinking skills. Two master teachers remain available to students as mentors during their induction year of teaching. Students enrolled in the UTeach program are allowed to begin practice-teaching as early as their freshman year, while students enrolled in traditional education programs often do not begin teaching in a classroom until their junior or senior years. Seventy-five percent of students that complete the introductory UTeach course end up completing the program. No systematic research has been conducted to confirm that UTeach is producing high-quality teachers or improving learning; however, this current lack of research is due to a lack of money and time because all staff members have been focused on establishing and developing the program.

"Congress and the National Academy of Sciences have singled out UTeach in recent years as a promising model to help fill a national shortage of qualified schoolteachers in science and mathematics" (Brainard, 2007, p. A9). The former president, Barack Obama, recommended the UTeach program as part of his "Educate to Innovate" campaign for excellence in STEM education (Robelen, 2010). The UTeach program has already been replicated at 13 universities in nine states, and six more universities are planning to incorporate this program.

Luft, Fletcher, and Fortney (2005) examined the experiences of 17 UTeach students from their inception into step one of the program through their second year in the classroom. These students were randomly selected from

participants who indicated that they were science majors. Students were interviewed twice, once at the beginning of step one of the program and once during the following semester. Student responses to the interview questions were coded and categorized to look for trends among the participants.

While the program is geared toward freshman and sophomore students, this study revealed that most participants were more advanced in their coursework and considering another major. Researchers characterized students' interest in teaching as either primary or secondary. The students with primary interest had prior experience with tutoring, teaching, or coaching and showed a desire to work with children and share their love of science. These students were less likely to leave the program after step one. Students with a secondary interest liked the idea of having a flexible career, living close to home, improving instruction of specific concepts, and having a career while waiting for entry into another profession.

All participants appreciated the field experiences; however, it did not necessarily impact their decision to continue with the teacher education program. Students with positive experiences felt the program confirmed their decision to teach, and while some students had negative experiences, they opted to stay in the program until its completion. The researchers suggest that future studies focus on students' commitment to education, which might be an essential factor in their ability to persist as a teacher.

**MASS.** Scott and colleagues (2006) report on the Mathematics and Science Scholars (MASS) Program, offered at Texas A&M University, which is

designed to recruit and retain preservice mathematics and science teachers. MASS was initially modeled after the UTeach program at the University of Texas; however, it has developed into a new and innovative approach to teacher certification. Through this program, students have the opportunity to complete their bachelor's degree in mathematics or science, while simultaneously completing teacher certification courses; which allows them to graduate in four years with a bachelor's in mathematics or science and teaching certification. Incoming students are recruited by several methods: A letter from the dean's office, student conference presentations, tuition waiver and scholarship opportunities, and student advising.

During their initial year in the MASS program, students are provided a tuition-free course that allows them to gain the perspective of a new teacher through a public school internship with a carefully selected mentor teacher. Students are offered “academic support, field-based experiences, mentoring, and financial incentives” during the completion of the MASS program (p.394). Research suggests “that the earlier potential teacher candidates are partnered with master, in-service teachers in the content areas of mathematics and science in their public school classrooms, the more likely they are to seriously consider teaching as a career” (p. 396). The MASS mentor teachers are paid a stipend for their work and offered workshops that emphasize mentoring, inquiry-based teaching, assessment, and learning for understanding. MASS students spend a total of 10 weeks observing in his or her assigned classrooms. Students complete a 5-week internship in both middle and high school classrooms;

allowing them the opportunity to design their undergraduate program according to the grade level they prefer. Students are asked to observe, assist teachers, write reflective journals, and teach mini-lessons.

Students are offered support, additional education courses, and a reduced tuition rate while they complete their bachelor's degree in mathematics or science. Since the programs' inception in 2001, it has seen significant growth in the recruitment and retention of students. Researchers plan to investigate how the MASS program could be used across the state and nation as a model for teacher recruitment and preparation (Scott, Milam, Stuessy, Blount, & Bentz, 2006).

**BYU.** Brigham Young University (BYU) in Provo, Utah, “graduated roughly 5% of all the new physics teachers produced by U.S. colleges and universities in 2006” (Mervis, 2007, p. 1270). This program is grounded in the belief that responsibility for training future teachers should be taken on by the science and mathematics departments, allowing future mathematics and science teachers the opportunity to work with “master classroom teachers who know how to combine content and pedagogy” (p. 1271). As BYU is a private institution run by the Mormon Church, many of the students enrolled in the program participate in a 2-year mission for the Mormon Church, which gives them first-hand experience with teaching before they enter the program. BYU administrators describe these students as “more certain of their career goals...and ready to take advantage of a program that combines research and education objectives” (p. 1273).

**CU Teach.** Otero (2005) studied CU Teach, a program at the University of Colorado, Boulder, that begins with students taking a 1-credit hour course that allows science, engineering, and mathematics majors to explore teaching as a possible career path. The program provides them with first-hand experience with co-teaching science and mathematics lessons in local elementary classrooms. Once students complete this course, they go on to another course that gives them experience in a middle school classroom. Both courses provide students with ongoing support and feedback from master teachers. Once students complete the two pre-requisite courses, they may enter the CU Teach program, a four-year degree/licensure program that allows students to obtain a science, engineering, or mathematics degree and fulfills the requirements for a Colorado initial teaching license in Secondary Science or Mathematics. Several scholarship opportunities are available to students through Americorps and Noyce Fellowships. After graduation, CU Teach provides continued support for its graduates through regularly scheduled professional development opportunities.

**SMAR<sup>2</sup>T.** Abell and colleagues (2006) developed a proposal for the Science and Mathematics Academy for the Recruitment and Retention of Teachers (SMAR<sup>2</sup>T). The National Science Foundation funds SMAR<sup>2</sup>T as part of a plan to alleviate teacher shortages by developing alternative programs for teaching. Students at the University of Missouri-Columbia can choose from an Accelerate Post-Baccalaureate (APB) program or the Alternative Certification (ALT) program. Both programs require that students hold an undergraduate

degree in mathematics or science, which lead to a master's degree in education. The APB participants complete the program in 15 months as a full-time student, while the ALT participants complete the program in 24 months as a full-time teacher.

**BGSU ACTION.** Science and Mathematics Education in ACTION, funded through a grant from *Choose Ohio First*, is a 4-year scholarship program offered at Bowling Green State University (Brahier & Bostic, 2015). This program was designed to recruit high school seniors who are interested in teaching either middle or high school mathematics or science. Transfer students from other institutions can also enroll in the program as rising sophomores. Students enrolled in ACTION are provided with four-year academic scholarships that increase in value each year, an all-expense paid residential summer bridge experience before freshman year, a sophomore year science or mathematics practicum experience, and a junior and senior year pedagogical research project. The goal of the program is to "increase the number of science and mathematics education graduates and to improve their effectiveness at teaching these subjects" (BGSU, 2017). Since its inception during the summer of 2009, 25 students have been accepted into a cohort each year. The competitive scholarship program requires an extensive application process, is only available to residents of Ohio, and is subject to continued state funding (Brahier & Bostic, 2015).

Recruitment efforts included brochures, a website, career fairs, and poster displays, which showcased financial and academic incentives for joining the



program. Students were selected based on their GPA and GRE scores, phone interviews, and application essays. The authors' current research is focused on who is successful in their program and why, what support systems are needed for students as they begin teaching, and more efficient recruitment methods (Abell et al., 2006).

### **Early Practicum Courses and Field Experiences**

The American Association of Colleges of Teacher Education (2010) released a policy brief citing the relationship between increased clinical practices and student achievement, teacher retention, and teachers' perceptions of preparedness. It is clear that field experiences are a critical component of teacher education programs. In particular, "early experience," defined as "field experience that occurs within the first two years of traditional preparation programs" (Wasburn-Moses, Kopp, & Hetttersimer, 2012, p. 8) was added to teacher education curriculum as a response to an increase in school diversity and in an attempt to strengthen partnerships between K-12 and higher education institutions (Huling, 1998).

Ghaye (2011) emphasizes the importance of practicum settings because they allow prospective teachers the opportunity to construct concepts and understandings by reflecting upon their experiences. Classroom observations and practice teaching allow students the opportunity to gain confidence while learning pedagogical skills. Classroom placements give trainees first-hand experiences with student-teacher relationships, classroom environment, student behavior, pedagogy, and how they work in an environment with professionals

and managers (Khanam, 2015). Malone, Jones, and Stalling (2002) believe that early field experiences can also serve as a type of "reality check" for prospective teachers who are still trying to determine if teaching is the appropriate career.

Research conducted on exemplary teacher education programs, identified by graduates and employers as preparing beginning teacher significantly better than other programs, found that what makes these programs successful is how coherently integrated the clinical work is with coursework (Darling-Hammond & Bransford, 2005). Howey and Zimpher (1989) studied teacher education programs and found that strong programs "have one or more frameworks grounded in theory and research as well as practice" (p. 242). Candidates cannot focus solely on coursework and theory; they need hands-on experiences with students, where they can then reflect on and interpret their experiences with the guidance of a university instructor, mentor teacher, or other experts in the field (Wilson et al., 2001).

Darling-Hammond and Bransford (2005) stress the importance of providing early clinical experiences that continue throughout teacher education programs. This early experience will help prospective teachers develop an idea of what teaching involves and requires. Research suggests that an early practicum experience "provides a conceptual structure for [novice teachers] to organize and better understand the theories that are addressed in their academic work" (Darling-Hammond & Bransford, 2005, p. 398). These early experiences help students see teaching from a new perspective, given that their only prior perceptions of teaching are most likely from that of the student. Preservice

teachers can use these early experiences to scaffold their learning; thus making connections between theories, they are learning as part of their coursework and observations they are experiencing in real classrooms. (Yost, Sentner, & Forlenza-Bailey, 2000). This idea of a "spiral curriculum," suggested by Bruner (1960), is that a "continual deepening of one's understanding of [basic ideas] comes from learning to use them in progressively more complex forms" (p. 13). An iterative design, which allows ideas to be taught in multiple contexts, such as practicum courses that incorporate lectures and field experiences, provides an environment where learners are more likely to abstract, vital ideas and develop more flexible knowledge about teaching (Gick and Holyoak, 1983).

### **Reflection**

Reflective journals, given during the practicum course, an exit survey, a post-course questionnaire, and a follow-up interview are used as the primary data collection tools for this study. These instruments focus heavily on the use of reflection – a specialized form of thinking that allows learners to see connections between various experiences and idea, resulting in a deeper understanding of the situations experienced (Dewey, 1933). Fitzgerald (1994) describes reflection as "the retrospective contemplation of practice undertaken in order to uncover the knowledge used in practical situations, by analyzing and interpreting the information recalled" (p. 67). Reflection is a process that allows individuals to increase self-knowledge and achieve personal development (Johnson & Bradley, 1996) through an exploration of personal values and beliefs (Zeki, 2012).

Dewey (1910) refers to reflection as a progressive thread, which is

intertwined through reflective experiences, with continuous segments of reflective thought interconnecting in harmony. Rodgers (2002) builds on Dewey's criteria of reflection:

Reflection is a meaning-making process that moves a learner from one experience into the next with a deeper understanding of its relationships with and connections to other experiences and ideas. It is the thread that makes continuity of learning possible and ensures the progress of the individual. (p. 845)

While experience is the primary factor in this meaning-making process, Dewey affirms that experience alone is not enough. It is the interweaving of meaning through the threads of experience that incites the reflection process. Therefore, the ultimate function of reflection is to make meaning out of experiences (Rodgers, 2002). Thus, reflection is the act of drawing from prior experiences in order to actively make sense of each new experience.

Dewey (1933) defined reflective inquiry as the "active, persistent and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it and further conclusions to which it tends" (p. 9). This purposeful reflection allows an individual to gather information from various experiences and make cautious, informed decisions. Dewey (1933) also said, reflective thinking "involves a state of doubt, hesitation, perplexity, mental difficulty in which thinking originates and an act of searching, hunting and inquiring to find material that will resolve the doubt and settle and dispose of the perplexity" (p. 12). This definition of reflection corresponds with Flavell's (1979)

work, which focused on metacognition, the knowledge one possesses of one's cognitive processes. This theory focuses on helping practitioners think and reflect on their thought processes (Ferrari & Steinberg; Flavell, 1999). Schön (1987) builds on this work with his model, reflection on action, which takes place after actions have been carried out. Schön says, “we may reflect on action to discover how our knowledge-in-action may have contributed to an expected outcome” (p. 26). Schön also coined the term, reflection in action, for referencing the type of reflection that happens while actions are taking place. Schön said, “we may reflect in the midst of action without interrupting it” because “our thinking serves to reshape what we are doing while we are doing it” (1987, p.26).

Van Manen (1977) refers to reflection as a hierarchical scale that consists of three levels: technical, practical, and critical. The lowest level of reflection is technical rationality, which focuses on past experiences, student behavior, and content. The next level, practical action, focuses on analysis and evaluation of the strategies being used. Teachers reflecting at this level can link theory and practice. The highest level is the critical reflection, where practitioners consider ethical and political issues as they relate to instructional planning and implementation. Van Manen's framework is intended to help practitioners reflect on past teaching experiences in an effort to enhance future teaching approaches.

Kolb (1984) developed a four-stage learning cycle that focuses on the learner's internal cognitive processes and learning styles. Concrete experience, reflective observation, abstract conceptualization, and active experimentation

make up the four cycles. Kolb believes that effective learning only takes place when a person progresses through all four of the stages.

Shulman (1987) refers to reflection in education as, "reviewing, reconstructing, reenacting, and critically analyzing one's own and the class's performance, and grounding explanations in evidence" (p. 15). The use of reflection in teacher education programs can increase pre-service teachers' awareness of teaching and learning and aid in their development as reflective practitioners (Rodgers, 2002).

Gibbs (1988) added to the theories of reflection as levels and cycles with his six-stage reflective cycle. Description, feelings, evaluation, analysis, conclusion, and action plan are the stages that can help the reflector think through all of the phases of an experience. This cycle can be used to help preservice teachers make sense of observations and teaching experiences by allowing them to understand what went well and what could be changed to improve similar situations in the future. The use of levels and cycles, to structure reflection, could be beneficial when helping preservice teachers make sense of observations and practice teaching experiences. This type of purposeful reflection could also help practitioners when linking theory to practice. Gibbs' Reflective Cycle (1988) is used as part of the framework for this study, which will be described in more detail at the end of this chapter.

**Reflective journals.** Journals are used in this course as a way to allow students to reflect on their feelings and experiences during classroom observations. Reflective journals are defined as "written documents that students

create as they think about various concepts, events, or interactions over a period of time to gain insights into self-awareness and learning" (Thorpe, 2004, p. 328). Lee (2008) identified four types of reflective journals: dialogue, response, teaching, and collaborative/interactive. Dialogue journals are used to facilitate open communication between the teacher and student. Response journals encompass students' reaction to their experiences. Teaching journals are a recording of the students' thoughts and reactions while teaching and collaborative/interactive journals are a way of documenting the interactions between groups of students.

Journals have been used across various academic disciplines and professions; including teacher education (Otienoh, 2009), nursing (Epp, 2008), psychology (Sutton, Townend, & Wright, 2007) and business (Johnson & Barker, 1995). Research indicates that the use of reflective journals can be used to create a stronger student/teacher relationship (Spalding & Wilson, 2002), facilitate students' freedom of thought and personal expression (Hiemstra, 2001), and enable students' critical reflection (Lauterbach & Hentz, 2005). Reflection journals make use of Schön's *reflection on action* by having students reflect on their experiences and observations. Reflection on action has become the standard in teacher education programs and research on teaching (Korthagen, Kessels, Koster, & Lagerwerf, 2001; Lyons, 2010).

***Reflection journals in teacher preparation programs.*** Richards and Lockhart (2005) explained that reflection "involves examining teaching experiences as a basis for evaluation and decision making and as a source for

change” (p. 4). This concept validates the importance of using reflection journals, for pre-service teachers and education students, when observing and teaching in classrooms during practicum and internship experiences. Reflection journals are a way to increase student success and maximize the benefits of practicum courses for participants (Camacho Rico et al., 2012).

Reflective journals are one of the main instruments used to encourage reflective thinking in preservice teacher education programs (Lee, 2008). These journals are a way for university instructors to maintain continuous communication with their students (Rodgers, 2002) while also providing the instructors with insight into their students’ ability to reflect on experiences (Bean & Stevens, 2002). This type of access to students’ thoughts and experiences allows the instructors to facilitate learning by helping students connect theory and practice (Taggart & Wilson, 2005). Krol (1996) agreed that journal writing “is an approach that fosters reflection and is an effective source of dialogue between student and teacher” (p. 1).

The use of reflective practice in teacher preparation programs is integral to the development of preservice teachers (Morrison, 2009). There are many benefits of using reflective journals in teacher preparation programs. Reflective journals allow students the opportunity to create a dialogue with themselves and their instructors (LaBoskey, 1994). They can also serve as a forum for developing questions to which preservice teachers can freely respond (Crème, 2005). Journals also serve as a self-assessment and evaluative tool for the use of educational philosophy and classroom instructional approaches (Hume, 2009).



Schön (1991) discussed the importance of using reflection during practice teaching opportunities as a way of determining the link between prospective teachers' beliefs and practices. Garmston (2011) added to this body of literature by discussing how critical reflection could be used to help prospective teachers develop their knowledge.

Camacho Rico and associates (2012) used Schön's (1987) and Van Manen's (1977) philosophies as the theoretical framework for their study, aimed at understanding how the process of reflection helped foreign language student-teachers during their first teaching experiences. To identify the type of reflection experienced by the student teachers, the researchers used Schön's (1987) concepts of reflection in action and reflection on action. Van Manen's (1977) model was used to organize participant's reflections into one of three levels: technical, practical, and critical. Through the analysis of reflection journals, classroom observations, semi-structured interviews, and lesson plans; the researchers found that reflection gave the student teachers the "opportunity to analyze how and why they acted as they did and how they could think of changes or new ways of teaching" (p.56)

While journal writing has been found to aid preservice teachers in reflection, researchers have determined that there is a need for teaching preservice teachers how to reflect more appropriately as to allow for the connection of theory to practice (Beeth and Adaden, 2006; Davis, 2003; Knapp, 2012; Moore, 2003)

Moore (2003) examined the reflective practices of preservice teachers through reflective journals, field notes, and surveys given to student teachers and their mentor teachers. Moore found that the students reflected mostly on issues related to time management, classroom management, and lesson planning; resulting in missed opportunities for mentor teachers and university instructors to link theory and practice with thoughtful responses. Moore said opportunities to "examine the theoretical constructs behind the pedagogical decisions made by the preservice teacher were often overlooked in lieu of procedural concerns" (p. 40).

Davis (2003) analyzed the reflective journals of 25 preservice teachers for any connections they were able to make between their university coursework and their teaching practices. The study revealed that further training is needed to help preservice teachers efficiently reflect on their experiences.

Beeth and Adadan (2006) also found a gap between theory and practice after examining reflective journals of 42 preservice teachers. The researchers suggest that university instructors need to "understand the problems that preservice teachers experience as embedded in practice and find ways to address them as they occur, rather than questioning how to lessen the tension or bridge the gap that exists between theory and practice" (p. 118).

Knapp (2012) incorporated reflective journals in a college course, where she found that they allowed instructors to be more supportive of student teaching experiences. She suggested that teacher educators could make reflection journals a more efficient experience if instructors would guide their students in

more purposeful reflection instead of having them complete the journals on their own.

Beeth and Adadan (2006), Davis (2003), Knapp (2012), and Moore (2003) discussed the need for teacher educators to enhance preservice teachers' reflection by guiding them to reflect more purposefully, and by finding ways to bridge the gap between theory and practice. Practicum courses and internships framed by the work of Schön, Van Manen, Kolb, and Gibbs could help teacher educators in the development of questions to help structure reflective journals, thus guiding students through the reflection process.

### **Theoretical Framework**

Reflection journals, exit surveys, post-course questionnaires, and follow-up interviews were analyzed to gain insight into the perceptions and experiences of program participants. A qualitative approach, from a phenomenological perspective, was employed in the analysis of the data collection instruments. Gibbs' Reflective cycle (1988) and Kenneth Pike's (1967) theory of Emic and Etic Perspective were chosen as the frameworks for this phenomenological study after a pilot study that conducted an initial analysis of reflective journals. This pilot study will be described in the next chapter.

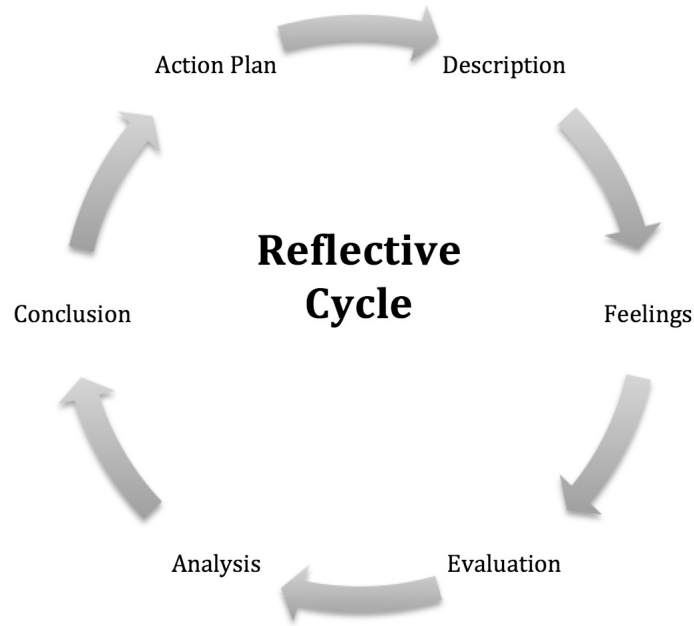
**Phenomenology.** Phenomenology is used for the foundation of this study as the design seeks to capture the "meaning for several individuals'... lived experiences of a concept or a phenomenon" (Creswell, 2007, p. 57). Philosophers such as Kant, Hegel, Heidegger, and Husserel have used phenomenology in a variety of research studies; however, Immanuel Kant first

coined the term phenomenology in 1764. Phenomenology originated from constructivist philosophy and has evolved into a process for seeking individuals' lived experiences of a common phenomenon (Cilesiz, 2009; Husserl, 1970, Moustakas, 1994). Phenomenologists concentrate on the commonalities of shared experiences by all participants regarding their participation in a mutual event or phenomenon. The common lived experience, or phenomenon, for this study is participation in EDSE 210.

Transcendental phenomenology (Moustakas, 1994) allows the researcher to reduce "information to significant statements or quotes and combine the statements into themes" (Creswell, 2007, p. 60). Moustakas (1944) elaborates on Husserl's (1995) idea of transcendental phenomenology, saying, it "is a rational path; knowledge that emerges from transcendental or pure ego, a person who is open to see what is, just as it is, and to explicate what is in its own terms" (Moustakas, 1994, p. 41). Husserl (1995) developed the concept of bracketing, or epoche, which allows the research to set aside his or her own experiences to allow for a clear perspective when analyzing the phenomenon under investigation. This process of setting aside preconceptions about the phenomenon being studied enabled the researcher to reflect upon personal experiences which are relative to the phenomenon, in an effort to acknowledge their existence for the purpose of setting them aside. Transcendental phenomenology guided the analysis of student reflective journals, post-course questionnaires, and follow-up interviews, by allowing the researcher to set aside preconceptions related to the study (Moustakas, 1994).

**Gibbs' Reflective Cycle.** Van Manen (1977) and Schön (1983) were the first to define levels or types of reflection. Van Manen proposed a hierarchical approach composed of technical, practical, and critical reflection; while Schön distinguished between reflection in action and reflection on action. Kolb (1984) defined "learning [as] the process whereby knowledge is created through the transformation of experience" (p. 38), which led to his development of an experiential four-stage learning cycle based on the learner's internal cognitive processes. Gibbs' Reflective Cycle, modeled after Kolb's experiential learning cycle, proposes that theory and practice enrich each other in a never-ending circle, as illustrated in figure 2.1.

The six stages include: (1) Description of the event in which the participant describes the event in detail; (2) Feelings and Thoughts where the participant tries to recall and explore what they were thinking and feeling; (3) Evaluation or judgment of what has happened; (4) Analysis or making sense of the observation; (5) Conclusion or synthesis of what could have been done differently; and (6) an action plan for what should happen next time. Gibbs' Reflective Cycle was used as the lens for interpreting the journal entries from each participant. Gibbs' Reflective Cycle (1988) was chosen to frame this study because the six-stage cycle can be used to help students to acknowledge how their personal feelings can influence the situation and their reflection on it. The stages encourage students to challenge assumptions about teaching practices and link theory to practice (Forrest, 2008).



*Figure 2.1* Gibbs' Reflective Cycle (1988)

**Emic and Etic Perspectives.** Linguist, Kenneth L. Pike is most famous for using the terms emic (insider) and etic (outsider) to describe individuals' perspectives. According to Pike (1967), the emic perspective is how one views his or her own culture from within, while the etic perspective is how one views a culture as an outsider. This study seeks to understand the emic and etic perspectives of participants' lived experiences, which were obtained while observing in mathematics and science classrooms. Since Gibbs' Reflective Cycle does not take into account the assumptions held by individual reflectors, Pike's theory (1967) was used to supplement the framework, allowing for a more in-depth analysis of reflections based on personal experiences. Classroom observations that coincide with university coursework about pedagogy and teaching principles allow the observer to see teaching from a different perspective than they may have perceived in the past. Pike (1957) describes "a

stereoscopic window on the world," which describes the outside observer who is trying to understand the inside point of view. In the case of this study, the outsider (EDSE 210 student) is trying to understand the point of view of the insider (classroom teacher). Acquisition of knowledge through university coursework while concurrently undertaking teaching roles or jobs within the classroom may help students see what teaching is like from the teacher's (insider/emic) perspective. This shift in perspective may be the key to helping students determine a career path.

The framework of this study and how it addresses each of the research questions is illustrated in Figure 2.2. Data collection instruments will be analyzed from a phenomenological perspective and more specifically through a lens framed by Gibbs' Reflective cycle and Kenneth Pike's theory of Emic and Etic Perspective.

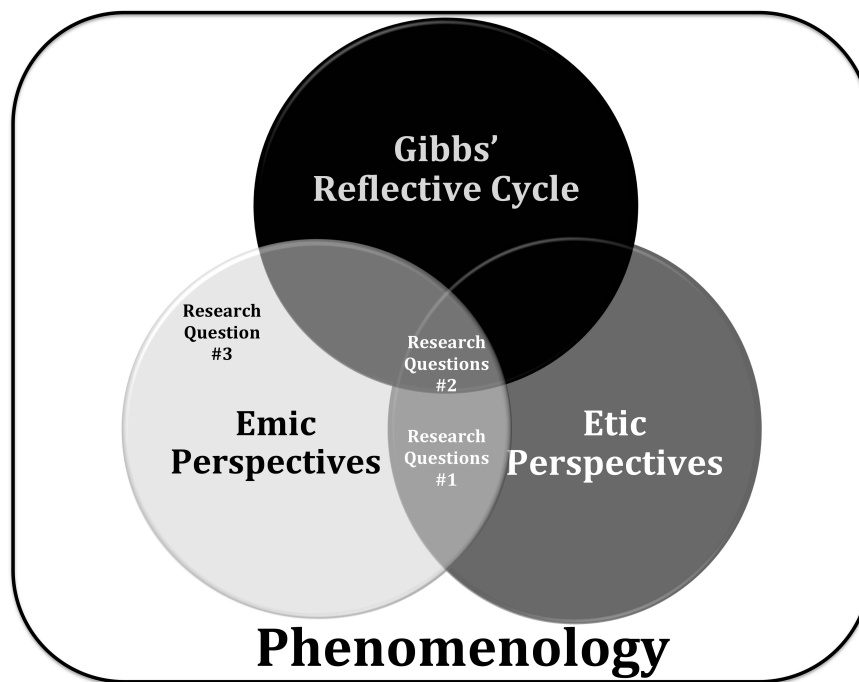


Figure 2.2 Theoretical Framework

## Summary

Existing research focuses on programs for the recruitment of middle and high school students through summer science camps and grow-your-own programs. Middle school recruitment programs focus on providing learning experiences that will help students see the advantages of teaching as a profession. Inquiry-based learning experiences and engineering tasks are the foundation of summer science camps designed to encourage high school students to major in science or science education in college. Research suggests that these programs have been successful in increasing students' interest in science and science education fields (Bischoff, Castendyk, Gallagher, Schaumlöffel, & Labroo, 2008). South Carolina Teacher Cadets and other programs, using similar models, are designed to recruit high school students into teaching. Research suggests that these types of programs are successful in producing students who are interested in entering the teaching profession. South Carolina Teaching Fellows focuses on the recruitment of high school students through fellowship programs. These programs have been successful in increasing the number of students enrolled in teacher education programs. While many students have participated in such courses, these programs do not specifically focus on the recruitment of STEM majors, and many students participating in such programs may already have interest in teaching; therefore, such programs may not be the best recruitment tools for mathematics and science teachers.

Recent research suggests that recruitment strategies focus on first-year



college students majoring in mathematics and natural sciences (Plecki, St. John, & Elfers, 2013). Recruitment programs can help students determine if teaching is an appropriate career choice by giving them the opportunity to observe and teach in classrooms (Fineus & Fernandez, 2012). Programs developed to recruit STEM majors have focused on job shadowing, STEM days, NASA Aerospace teacher programs, and science internships. Findings suggest that these programs are successful recruitment tools for future STEM teachers and STEM majors (Hubbard, Embry-Jenlink, & Beverly, 2015; Worsham, Friedrichsen, Souci, Barnett, & Akiba, 2014; Tomanek & Cummings, 2000).

Fast-track certification programs and participation in classroom observation-based courses are research-based recommendations for attracting STEM majors to join teacher education programs (Kyriacou & Coulthard, 2000). These non-traditional or alternative programs are successful with the recruitment of STEM majors because they allow students to earn a STEM degree, while simultaneously being trained to teach (Newton, Jang, Nunes, & Stone, 2010; Scott, Milam, Stuessy, Blount, & Bentz, 2006) instead of requiring students to complete a second degree and spend more than four years preparing for a profession. Most of these programs contain introductory courses used to recruit students into the program, which are sometimes offered tuition-free (Brainard, 2007). Research indicates that these programs are successful with the recruitment of STEM majors through an introductory course and subsequent enrollment in a fast-track education program. These programs also offer incentives not available to students in traditional education programs. These

incentives include; 1) Internships with master teachers; 2) induction year assistance; 3) professional development opportunities; 4) tuition-free courses; and 5) student loan forgiveness (Brainard, 2007; Scott, Milam, Stuessy, Blount, & Bentz, 2006). Noyce scholars, at the University of South Carolina, receive incentives similar to those offered by other STEM recruitment programs.

Programs used to recruit students into general education, programs used to recruit STEM majors, and the recruitment of STEM majors into fast-track certification programs have proved successful; however, there is a lack of empirical research on the impact of using a teaching practicum course for the recruitment of STEM majors into the field of teaching. Research indicates that field experiences are essential to any education program for the efficient development of prospective teachers (Ghaye, 2011). Field experiences are crucial; however, it is the intertwining of university coursework and field experience, through practicum and internship programs, which allows students the opportunity to make connections between theory and practice (Darling-Hammond & Bransford, 2005). Having an early practicum or internship experience can help students solidify their decision to enter the teaching profession or seek another major (Malone, Jones, and Stalling, 2002).

The use of reflective journals is a research-based strategy for the development of preservice teachers (Camacho Rico et al., 2012). Reflective journals increase the benefits of practicum courses by allowing an open forum between the course instructor and teaching candidates (Rodgers, 2002). This type of open dialogue is a way for instructors to ensure that students are making

the connections between theory and practice (Taggart & Wilson, 2005).

Research suggests that reflective journals are most beneficial when instructors guide students in purposeful reflection, which allows for the connection between what they are learning in their coursework and their classroom observations (Beeth & Adadan, 2006; Davis, 2003, Knapp, 2012; and Moore, 2003).

Phenomenology was chosen as the lens for guiding this study, which focused heavily on the use of reflection within a practicum course setting, to capture the lived experiences of students taking the course, EDSE 210. Like other phenomenological studies, this study sought reality in the lived experiences, perceptions, and feelings of the participants toward a common phenomenon. The purpose of this study was to understand how an early practicum course (EDSE 210) impacted participants' perceptions of teaching as a profession and their possible decision to enter the teaching profession. The phenomenological lens allowed the researcher to study these participants' lived experiences of the phenomenon; thereby, giving insight into their experiences, feelings, and perceptions about the impact of the course on their career decisions. Transcendental phenomenology guided the analysis of student reflective journals, post-course questionnaires, and follow-up interviews, by allowing the researcher to set aside preconceptions related to the study (Moustakas, 1994).

Gibbs' Reflective cycle (1988) and Kenneth Pike's (1967) theory of Emic and Etic Perspective were chosen as the frameworks for this phenomenological study, following an initial analysis of reflection journals during a pilot study. The

researcher used these theories when analyzing journals for common codes and themes to determine if there was a link between the participants' viewpoint and stage of reflection when writing reflective journals.

## CHAPTER III

### METHODS

#### **Introduction**

A qualitative approach, from a phenomenological perspective, was used to analyze pre-course information sheets, written reflection journals, exit surveys, post-course questionnaires, and follow-up interviews. An initial analysis of reflection journals led to the selection of Gibbs' Reflective Cycle and emic/etic perspectives as the guiding lenses for this phenomenological study since preliminary findings suggested that students who reflected from an emic perspective also reflected at more stages of Gibbs' Reflective Cycle. The blending of phenomenology, Gibbs' Reflective Cycle, and Emic/Etic perspectives was used to determine the impact of the practicum in education course, EDSE 210, on participants' perceptions of teaching as a profession and on their intent to teach.

#### **Research Questions**

This study focused primarily on three research questions: 1) How do STEM majors enrolled in a one-hour practicum course perceive teaching within a high school or middle school classroom environment; 2) How do college students' experiences in the course, and stages of reflection following classroom observations, affect their perception of teaching as a profession and the possible decision to enroll in a teacher preparation program; and 3) How do practicum

students relate their participation in the practicum in education course to their past, current, and future career decisions?

### **Research Design**

In an effort to ascertain the impact of a practicum course on participants' perceptions of teaching as a profession, the researcher employed a qualitative approach from a phenomenological perspective. The practicum in education course (EDSE 210) is the common phenomenon experienced by participants in this study, and their lived experiences are shared through reflective journals, surveys, questionnaires, and interviews. Using a phenomenological perspective, the researcher looked for common themes that appeared from an analysis of student reflection journals, exit surveys, post-course questionnaires, and follow-up interviews.

### **Selection of Participants**

This study examined the experiences of students enrolled in a one-hour elective course (EDSE 210: Practicum in Education) designed for STEM majors who do not currently have a career plan for their STEM degree. College students learn about this course from email messages sent to STEM majors and through a foot campaign at the beginning of the Spring semester, where up to 3,000 fliers are passed out to all students entering a freshman or sophomore mathematics or science course. Selection for this course is on a first – come, first – served basis and is typically reserved for current STEM majors; however, some exceptions for students with interest in STEM fields have been made.

## **Participants**

The participants in this study included four cohorts of college students who completed the Practicum in Education course between 2012 – 2015. All college students enrolled in this course were informed that their information might be used for research purposes; however, they were given the option to exclude their data from any research. Fifty-two percent of participants (n=28) observed in a mathematics classroom, while forty-eight percent of participants (n=26) observed in a science classroom. Demographic information for participants in the study (n=54) is included in table 3.1.

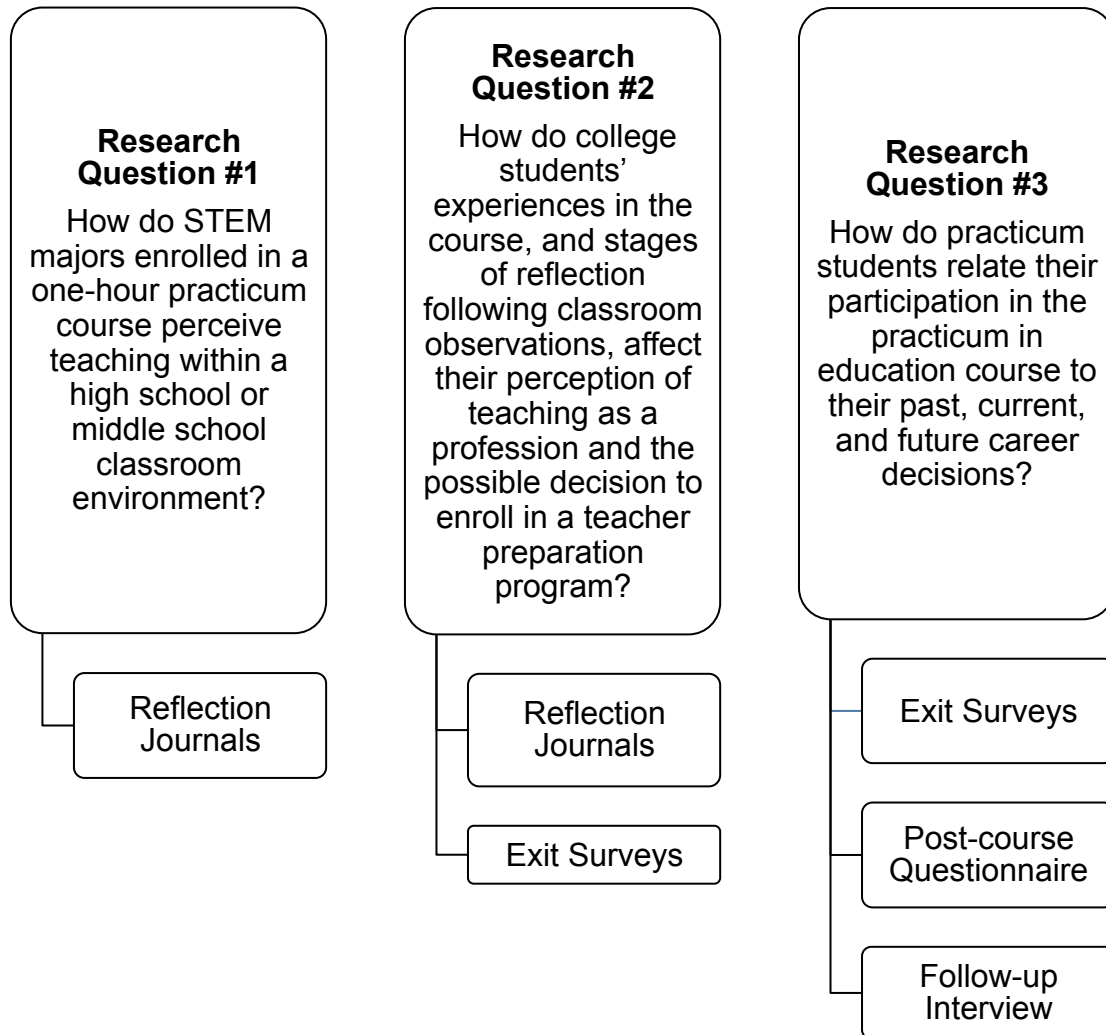
## **Data Collection Strategies**

For this study, the researcher focused on five data collection instruments: (a) reflection journals, (b) pre-course information sheets, (c) exit surveys, (d) post-course questionnaires, and (e) follow-up interviews. Reflection journals, pre-course information sheets, and exit surveys were obtained from each participant while they were enrolled in the course. Each participant was contacted and asked to participate in a structured post-course questionnaire. Participants were then purposively selected to participate in a semi-structured follow-up interview based on their views expressed in the questionnaire and their response to a question asking if they are willing to be interviewed about their views.

Table 3.1: Demographic for Participants

<b>Gender</b>	<b>Participants (n)</b>	<b>Percentage (%)</b>
Female	35	65%
Male	19	35%
<b>Race/Ethnicity</b>		
Caucasian	42	78%
African American	4	7%
Asian	3	6%
Hispanic	2	4%
Other	3	6%
<b>Student Classification</b>		
Freshman	28	52%
Sophomore	13	24%
Junior	6	11%
Senior	7	13%
<b>Student Major</b>		
Biology	9	17%
Mathematics	9	17%
Chemical Engineering	5	9%
Biological Sciences	4	7%
Chemistry	3	6%
Biochemistry and Molecular Biology	2	4%
Business	2	4%
Exercise Science	2	4%
Athletic Training	1	2%
Biomedical Engineering	1	2%
Civil Engineering	1	2%
Computer Engineering	1	2%
Economics and Marketing	1	2%
Elementary Education	1	2%
English	1	2%
Exercise Science	1	2%
Experimental Psychology	1	2%
Finance	1	2%
Hospitality Management	1	2%
Marine Science	1	2%
Nursing	1	2%
Public Health	1	2%
Secondary Mathematics Education	1	2%
Sociology and Spanish	1	2%
Undecided	1	2%





*Figure 3.1 Answering Research Questions*

Reflection journals, information sheets, and exit surveys were obtained from each participant while they were enrolled in the course. In addition to these instruments, the researcher also attempted to contact all participants, after their participation in the course, in order to gain insight into their perceptions of the course's impact on their future, current, or past career choices. This study employed a structured post-course questionnaire and a semi-structured interview. The questionnaire served as a means of ascertaining former participants' views about the impact of the course on their future, current, or past

career choices. The questionnaire data were used to purposively select participants for the follow-up interview (Creswell & Plano Clark, 2007). Individuals were selected based on their views expressed in the questionnaire and their response to a question asking if they were willing to be interviewed about their views. Figure 3.1 demonstrates how each data collection instrument relates to the research questions of this study.

**Reflection Journals.** As part of the course requirements, participants were asked to observe in either a mathematics or science classroom within a middle or high school setting. Practicum students observed and participated in classrooms for a minimum of 12 hours. They kept a time log and wrote reflective journals after each site visit. Journals were uploaded to Blackboard to receive credit for completing them and feedback from the instructor.

**Pre-Course Information Sheets.** Participants completed information forms at the beginning of the term, which were used to gather students' demographic data, current major, and purpose for participating in the practicum course.

**Exit Surveys.** Participants completed an exit survey after completion of the course. They were asked about how the course deepened their understanding of teaching as a profession, if they understood how to become a Noyce scholar, and their intentions to either enter or not enter a teacher preparation program.

**Post-Course Questionnaires (Appendix A).** In order to gain insight into participants' views on the impact of the practicum course on his or her choice of

career, a questionnaire was sent to former participants of the program. A questionnaire was used because they are recommended for seeking individuals' meanings and experiences (Fink, 2003). The questionnaire contained open- and closed-ended questions, which were used for gaining former participants' views about the impact of taking the practicum course on their future, current, or past career choices.

**Follow-up Interviews (Appendix B).** Individuals were selected for semi-structured interviews based on their responses to specific open-ended and closed-ended items, provided that they also indicated their willingness to be interviewed. The traditional method for collecting data in a transcendental phenomenological study is through interviews (Moustakas, 1994). The purpose of these interviews was to gain insight into the lived experiences of each participant as they recall their own experiences with the phenomenon (van Manen, 1990). According to Moustakas (1994), interviews “may facilitate the obtaining of rich, vital, substantive descriptions of the [participants'] experiences of the phenomenon” (p. 116). The researcher contacted the participants through email to set up the interview. All interviews were conducted over the phone and lasted approximately 15 – 20 minutes. The interviews were informal and interactive, allowing for “open-ended comments and questions” (p. 114). The semi-structured interview was comprised of open-ended questions, which allowed the participants to respond reflectively and candidly (Cresswell & Clark, 2007).

## Pilot Study

An initial inductive analysis, using pre-course information sheets and reflective journals, ranging from 2012 - 2014, was conducted during the summer of 2014. Transcendental phenomenology (Moustakas, 1994) was employed to reduce researcher bias and condense student statements into common themes (Creswell, 2007). Data revealed that practicum students, who were given the opportunity to teach a lesson, assist in a lesson, or help school-aged students with work often expressed their excitement about teaching another lesson or returning to observe again. These college students also expressed interest in becoming a teacher or realized that teaching was not for them, with 92% agreeing that the course helped them decide if they wanted to pursue teaching as a career (D'Amico, Miller, & Zhang, 2014). Gibbs' reflective cycle and the theory of emic/etic viewpoints were selected as the lenses for future analysis of student reflection journals and any additional data sources. They were chosen because college students, who were able to take a more active role in his or her observations, reflected at more in-depth stages on Gibbs' reflective cycle. The participants who reflected at more in-depth stages of the cycle also had a more definitive opinion of teaching as a possible career path. Participants began the practicum experience as an outsider in the classroom; however, as they took on a more active role within the classroom, they began to reflect on their experiences from an emic perspective. Based on initial findings from the pilot study, there could be a connection between taking on an emic perspective, in written reflections about classroom observations, and the effectiveness of the

course in helping students decide if they are interested in teaching. During the initial analysis, it was noted that the language used to describe the observation often switched from etic to emic when the students' participation in the classroom increased.

While all college students have observed teaching and the classroom environment, this practicum experience may be the first time that these students are specifically observing the teacher's actions regarding pedagogy. Upon completion of the course, 56% indicated plans to pursue teaching. Findings from this pilot study were presented at the 2015 National Council of Teachers of Mathematics (NCTM) research conference poster session (Spencer & Yow, 2015).

### **Data Analysis**

The researcher read all reflection journals, ranging from 2012 – 2015, and categorized them based on the stage of reflection used in Gibbs' reflective cycle. The researcher used transcendental phenomenology and inductive analyses to code participant reflection journals. To "build a coherent justification for [the] themes" (Creswell, 2014, p. 232) established during the second phase of coding (Rossman & Rallis, 2012), the researcher analyzed information sheets and exit surveys completed by the participants. The researcher also contacted each participant and requested that they complete a post-course questionnaire and follow-up interview as an additional data source to be added for the validity of the study through the use of triangulation (Creswell, 2014).

Questionnaires contained closed-ended and open-ended questions. Responses to the closed-ended items were totaled and converted to percentages to provide an overview of participants' views. The open-ended questions were analyzed for common themes and compared with students' reflection journals, pre-course information sheets, and exit surveys. The questionnaire responses were also used to purposefully select participants for the follow-up interview.

Interviews were digitally recorded and transcribed by the researcher. The researcher then reviewed the transcribed interviews, looking for emergent themes within the digital narratives of each participant. The data were analyzed to provide insight into the opinions and views of each participant's experiences in EDSE 210. To maintain the holistic approach of phenomenology, the researcher read each transcribed interview in its entirety before moving on to the next interview (Giorgi, 2009). This inductive analysis allowed salient themes to emerge from the statements of each participant's lived experiences of the phenomenon (Moustakas, 1994). This initial analysis, answers from the questionnaire, and reflection journals were used to develop the description for each interview participant. The researcher then analyzed each interview question for all four interviews separately, to ascertain salient themes for each question. This second analysis of transcribed interviews was presented in the form of a table to show the commonalities and central themes among responses.

Once salient themes were established among all data collection instruments for each participant, the researcher used disaggregated data to compare each participant's journal entries and exit surveys to look for common

themes among the participants' survey responses, depth of reflection, and emic or etic perspective when writing journal entries. The researcher also compared each participant's questionnaire responses and follow-up interview data with that particular participant's journal entries and exit survey data to build a coherent view of the participants' lived experiences through the use of triangulation (Creswell, 2014). The researcher then summarized this information to establish a clear link between the research objectives and findings. When coding journals, based on Gibbs' reflective cycle, the researcher referenced figure 3.2 to help with determining the appropriate stage of reflection. There were times when the stage of reflection appeared to be a mix between two stages. Therefore the researcher used figure 3.2 to help ensure that the coding process stayed consistent with Professor Graham Gibbs' (1988) original use of this model.

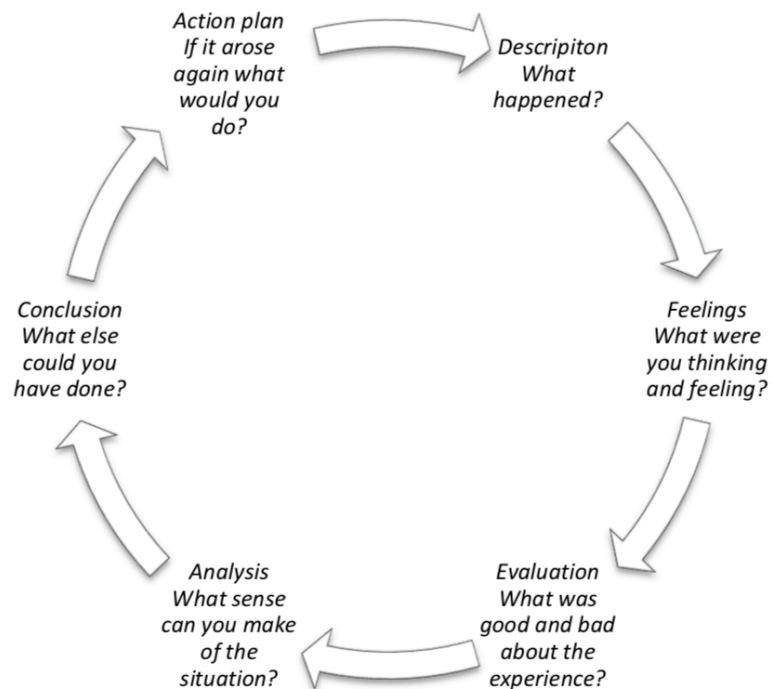


Figure 3.2 Gibbs' Reflective Cycle Analysis Tool

**Example Analyses.** In this section, sample data is included with explanations of how it was coded to help further demonstrate the data analysis process. For example, Tyler, a mathematics major who went on to pursue a master's degree in teaching and is currently teaching high school mathematics wrote:

The class reviewed for a test the whole block by doing group work, and I heard a lot more talking than work being done throughout the class. I think she should do something more interactive for a review because some of the students don't even do the packet. Third block did the same review as second block, but these students actually asked for my help because they were more comfortable with me. Compared to the second block, this class seems to struggle a bit more, but the other class was more talkative. I'm not quite sure how that correlates, but it is something that was intriguing.

Tyler's reflection was categorized at the conclusion stage of Gibb's Reflective Cycle (1988) because the observer talked about what else could have been done to improve the lesson. While the reflection's most in-depth level of reflection was at the conclusion stage, he also went through the other stages of description, feelings, evaluation, and analysis. The reflection was also categorized as being from both an emic and etic perspective (Pike, 1967) because the participant's language was more etic when talking about the second block and became more emic when talking about the third block. Most of his observations were in the third block; therefore, he may have felt more comfortable in this classroom because



he had been helping the students and they knew him well enough to ask for his help.

In another example, Anna, a mathematics major, who plans to obtain a master's degree in teaching, wrote:

Nothing makes me feel more excited to become a high school math teacher than sitting in this class. With every lesson I find myself wanting to either join as a student once again simply so I can solve the problems, or wanting to take the teacher's place in the front, EXPO marker in hand. She has a way with her students, and she knows how to make the class interesting. I have not been out of high school for long; therefore, I remember my math classes with full clarity. I have always enjoyed math, so I rarely disliked my math block, but I do wish I could have had a teacher similar to her, even if just so my classmates could be exposed to how math can be so fun. I cannot wait for the chance to have my own classroom and my own classes where I can really get to know all of the students.

Anna's reflection was categorized at the feelings stage in Gibb's Reflective Cycle (1988) because she mainly wrote about what she was thinking and feeling during the observation. The reflection was also classified as being from both an emic and an etic perspective (Pike 1967). While it is clear that she is reflecting from an emic perspective on her thoughts, feelings, and experiences, as they relate to this observation; her language suggests that she considers herself an outsider in

this classroom because she longs to be apart of it, either as the teacher or as a student.

### **Role of the Researcher**

In a qualitative study, the researcher is considered a data collection instrument (Denzin & Lincoln, 2003). As a graduate student at the University of South Carolina, the researcher approached this research study from an etic (outsider) perspective (Pike, 1967). She had not been involved in the organization or set up of the course, nor had she had any communication with the participants, except for contacting them and asking for their participation in the post-course questionnaire and possible follow-up interview. While attempting to maintain objectivity, the researcher did enter this study with the assumption that taking the practicum in education course (EDSE 210) would leave students with a more definitive opinion of the teaching profession.

### **Limitations, Delimitations, and Trustworthiness**

The study is limited by the sample size not being the same for all data collection instruments. While the reflection journals and pre-course information sheets were available for all four cohorts of college students (2012-2015), exit surveys were only available for three cohorts (2013-2015). The researcher attempted to contact all participants; however, two-thirds of participants did not respond to emails or phone calls. Only one-third of participants were willing to participate in the post-course questionnaire, and only six of those were willing to take part in the follow-up interview. Only those who found the course beneficial,

and decided to pursue a career in education, were willing to partake in the follow-up interview.

This study is also limited by a lack of gender and race/ethnicity diversity. Participants in this study were 65% female and 78% Caucasian. While this study's participants are predominately white female, the demographics of this study are in line with the national demographics of public school teachers. Results from the 2015-16 National Teacher and Principal Survey, completed by the U.S. Department of Education, indicated that about 80% of all public teachers are non-Hispanic white, and 77% are female (Taie & Goldring, 2017).

This study is limited by having one researcher analyze the data. Given the feasibility of this study, the author chose to solely analyze all data, employing the use of transcendental phenomenology (Moustakas, 1994) to reduce researcher bias. Bracketing out one's own experiences, related to the phenomenon, allowed the researcher to more appropriately describe the meaning of the participants' lived experiences. This method allowed the researcher to reduce "the information to significant statements or quotes and combine the statements into themes" (Creswell, 2007, p. 60).

Ideally each participant would have taken the post-observation reflections seriously and tried to make connections between content and theory; however, one limitation of this study is that some of the participants may have written the reflection logs quickly in an effort to complete the assignment and ensure a specific word count as opposed to experiencing true critical reflection.

Like other phenomenological studies, this study sought reality in the lived experiences, perceptions, and feelings of the participants toward a common phenomenon. The participants' lived experiences are found in the analyses of their journal entries, exit surveys, post-course questionnaires, and follow-up interviews, toward the common phenomenon of taking EDSE 210 as a STEM major. Gibbs' Reflective Cycle and Pike's theory of Emic and Etic Perspectives were lenses utilized by the researcher to view each participant's authentic perspective and perception of the course. The six stages of Gibbs' Reflective Cycle revealed the depth of reflection experienced after each participant's observation, while Pike's theory of Emic and Etic perspectives allowed for insight into each participant's point of view during observations. The researcher used these lenses to gain insight into the lived experiences of college students taking an early education practicum course, to aid in writing a coherent narrative of the meaning of those experiences.

## **Conclusion**

The purpose of this study was to determine how a practicum course, developed to recruit freshman and sophomore STEM majors for a teacher preparation program, impacted participants' perceptions of teaching as a profession. Reflection journals, pre-course information sheets, exit surveys, post-course questionnaires, and follow-up interviews were analyzed from a phenomenological perspective that sought participants' emic and etic perspectives (Pike, 1967) and stages of reflection in Gibbs' Reflective Cycle (1988).

## CHAPTER IV

### RESEARCH FINDINGS

#### **Introduction**

The purpose of this study was to determine how a practicum course, developed to recruit freshman and sophomore STEM majors into a teacher preparation program, impacted participants' perceptions of teaching as a profession. This study focused on four cohorts of college students who took the Practicum in Education Course (EDSE 210) from 2012 – 2015 (n=54). A qualitative approach, from a phenomenological perspective, was used to answer the following research questions: 1) How do STEM majors enrolled in a one-hour practicum course perceive teaching within a high school or middle school classroom environment; 2) How do college students' experiences in the course, and stages of reflection following classroom observations, affect their perception of teaching as a profession and the possible decision to enroll in a teacher preparation program; and 3) How do practicum students relate their participation in the practicum in education course to their past, current, and future career decisions?

To address the aforementioned research questions, data were collected from the following instruments: (a) reflection journals, (b) pre-course information sheets, (c) exit surveys, (d) post-course questionnaires, and (e) follow-up interviews.

## Findings Part I

### **Examining the Question, “How do STEM majors enrolled in a one-hour practicum course perceive teaching within a high school or middle school classroom environment?”**

The researcher used transcendental phenomenology and an inductive analysis to help reduce and identify researcher bias and for condensing participants' statements into common themes during the initial analysis of reflection journals (Creswell, 2007). Transcendental phenomenology allows the researcher to “bracket out” stimuli and capture the “essence” of the phenomenon (Lavery, 2003) by describing the meaning of several individuals “lived experiences of a concept or a phenomenon [and] describing what all participants have in common as they experience a phenomenon” (Creswell, 2013, p. 76). This approach allowed frequent topics to emerge from the data without imposing predetermined categories on them (Patton, 2002). The researcher then coded each journal entry based on the common themes that appeared from the first analysis. When reading the journals, the researcher also focused on whether the participant's reflection was written from an etic, emic, or both etic and emic perspective (Pike, 1967).

Participants were given a prompt, which read:

At Least 2 Positives: These can be anything from good ideas you would like to use for classroom management, quotes you see on the walls, good interaction with students, good teaching strategies, etc... (You could also

take the approach of writing things that you would do differently in your own classroom that you believe would positively affect the students.)

Some practicum students followed the prompt more closely than others, in that some reflections were very in-depth while others were more concise. Most began their observations from an etic perspective, by describing the classroom environment, the teacher, and the students. Once participants had an opportunity to take on more active roles, by helping or assisting the teacher and students, they often began to reflect from a more emic perspective. Participants who reflected from an etic perspective tended to focus on the description of teaching strategies being used, and their likes or dislikes of these strategies. Participants reflecting from an emic perspective talked about their role in helping/tutoring students, assisting the teacher, or teaching a lesson. These participants also discussed how the class they were observing in related to their own experiences in school. Mathematics major, Landon, reflected from an etic perspective during his first observation. He wrote:

The teacher was able to get her students involved and participating. One way she did this was by getting one of the louder boys in the class to answer some of the questions and get him to get the rest of the class motivated. Also, rather than going over every single homework question, she asked the students which ones they needed help with, and she gave her students time at the end of her class to begin their homework, as she knew that they had a lot of work for other classes as well. For this class, I mostly just observed to get a feel for how the class' flow went.

During a later observation, Landon reflected from an emic perspective after he was able to help students and take part in the lesson. He wrote:

I helped go over homework this day. It was actually tougher than I thought it would be. I walked around the class for a while and observed the students as they did their work. She asked me if I would like to teach a lesson in her class one day, and so we looked at the lesson plan while the students were doing their schoolwork.

Classroom management, classroom environment, content, and student behavior were discussed in approximately 20% of journal entries. Participants frequently discussed how the classroom teacher handled behavior and often took away ideas for how they might handle similar situations in their classrooms. The number of journal entries written by each participant was based on the length of each observation. Some participants wrote as few as three journal entries, while others wrote up to ten journal entries. An excel document with each journal entry, ordered by year and participant, was used to classify journals into themes. The researcher began by reading each journal and looking for salient themes. She then compiled all of the salient themes and reduced them to the 26 themes listed in table 4.1. The researcher read each journal entry a second time, placing the appropriate themes for each journal entry in the corresponding row. She then read the journals a third time looking for the emic or etic perspective of the journal entry. The author initially used the participants' language as a key for coding the journals as either etic, emic, or both etic and emic. After the original analysis, the researcher realized that some themes resulted in an emic



perspective, while other themes resulted in an etic perspective. After coding all journals, the researcher cross-referenced the participant's emic or etic perspective coding with the common themes found in each journal entry. The researcher found that the common themes described in table 4.1 as emic were common occurrences among reflections she had classified as emic, while the themes classified as etic in table 4.1 were found in journals that had been coded as etic. This additional layer of analysis helped the researcher ensure the validity of the first round of emic/etic coding by assuring that the themes matched the perspective.

When participants reflected on the themes that allowed them to participate in the class, they reflected from an emic perspective. When participants reflected on certain themes, which kept them as an outsider, they reflected from an etic perspective. Participants often reflected from both an etic and emic perspective within one reflection journal. The 26 themes, which appeared the most during the inductive analysis of 314 journal entries, are listed in table 4.1, along with how the themes were coded as either from an etic or emic perspective and the frequency and percentage of each theme.

Data indicated that it was the college students' participation level within the classroom that guided their perspective when reflecting. Most journal entries were comprised of multiple themes and had portions written from an etic and emic perspective within one journal entry. For example, the participant may have begun by describing the teaching strategies being used and their likes or dislikes

of these practices and then gone on to discuss how they helped a student or how they might have done things differently in their own classroom.

*Table 4.1: Common Themes*

Common Themes	Perspective	Frequency (f)	Percentage (%)	Journal Excerpt
Description of teaching strategies being used	Etic	207	66%	"The teacher utilized a technique she referred to as 'interactive note-taking.' This term was foreign to me at first, but I realized exactly what she was referring to when I saw it in action."
Likes and dislikes of the teaching practices being used	Etic	124	39%	"She was really great about breaking down the problem and figuring out which part the students were struggling with by asking them 'are you ok with this?'"
Helping students	Emic	72	23%	"I was able to walk around and show them a few "tricks" that they can use."
Technology usage	Etic	65	21%	"The teacher used the response technology to poll the students on what they needed more help with."
Classroom management	Etic	63	20%	"She was able to gain control of the class easily, and she seems to have the respect of her students."

Classroom environment	Etic	58	18%	"It is a relaxed environment that allows students to be comfortable and ask questions and participate."
Discussion of the content	Etic	56	18%	"To multiply polynomials, students built upon their previous knowledge of adding polynomials and identifying powers."
Description of the teacher	Etic	35	11%	"Although she relates to the students on an interpersonal level, she also maintains authority throughout the classroom."
Discussion of the difference between different level classes	Etic	34	11%	"I also noticed that honors students asked significantly more questions than the CP students."
Grading papers	Emic	34	11%	"I was busy recording grades or working out a solution to the quiz to grade from."
Negative student behavior	Etic	32	10%	"The teacher had to ask the CP students several times to be quiet and work."
What I will do in my classroom	Emic	31	10%	"I think this is a great idea and is definitely something I would do in my own classroom."

Student/Teacher relationships	Etic	28	9%	“He seemed genuinely interested in all the students’ academics, and also their extracurricular activities...It was obvious that there was a mutual respect between him and his students”
Participant assisted the teacher	Emic	27	9%	“I helped go over homework this day. It was actually tougher than I thought it would be.”
Positive student behavior	Etic	26	8%	“The students were honors students and for the most part did an excellent job of staying on task.”
Related observation to own experiences in school	Emic	25	8%	“I know that for me personally, going back over my tests and figuring out my mistakes ensured that I did not make the same mistake again. I did some of my best learning from corrections.”
Student Motivation	Etic	25	8%	“The indifference the students have blows me away. I recognize that college is not for everyone but students can and should be able to graduate high school.”

Suggestions given to improve lesson	Etic	21	7%	“Some [students] had identical answers, which probably meant they just copied down the answers of their partner. To fix this, the assignment could have been completed alone instead of in groups.”
Challenges of teaching	Etic	11	4%	“Unfortunately, with standards being placed on schools, and the entire point of an AP class being focused on passing the AP exam, schools are becoming more and more about learning to take tests, rather than about learning.”
Talking with students	Emic	10	3%	“Today I spoke with a student who will be attending USC next year, and he was asking for housing, major, and college advice.”
The commitment of the Teacher	Etic	7	2%	“I discovered that [she] makes herself available for homework help through text messaging. I find it fascinating how easily accessible [she] makes herself to the students, and if I’m ever a teacher, I hope to do the same.”

Observation had an impact on the decision to teach	Emic	7	2%	"I discussed with her how I planned to change my career goals and she was more than thrilled."
Discussion of lesson plan ideas for teaching a lesson during this practicum	Emic	6	2%	"I thought we might measure the height of [the school] using three methods."
Participant learned something new or received a better understanding of something	Emic	6	2%	"Although I had gone over this concept many times before, the wheel helped to visualize the whole thing much more easily."
Students struggling academically	Etic	6	2%	"Some of the students, not surprisingly, had some trouble with these types of problems."
Participant taught the lesson	Emic	5	2%	"I was pretty nervous at first when I stood in front of the class. But it proved to be easier than I thought it would be. The first activity went over very well... There were a few times where I made a few mistakes, but [the classroom teacher] able to help me through them"

What the participant would do differently if they were the teacher.	Emic	4	1%	"The only thing that I would do differently in my classroom is to just be more hands-on while the kids are doing the worksheets. I walked around and did my best to be hands-on with their learning."
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Table 4.2 offers a detailed deconstruction of the coding process used for each journal entry. A single journal entry is divided into multiple themes and emic/etic perspectives to show insight into the coding process used by the researcher.

*Table 4.2 Deconstruction of Journal Entry*

<b>Excerpts from one participant's Reflection Journal</b>	<b>Emic/Etic Perspective</b>	<b>Common Themes</b>
In the first class the students took notes on the slope of a line. This included the four types of slopes and how to find the slope by using the slope equation.	Etic	Description of teaching strategies being used
Mrs. Smith did an excellent job explaining this concept and even called students up to the board to demonstrate their understanding.	Etic	Likes and dislikes of the teaching practices being used
I find students pay more attention if the teacher calls individuals up to the board.	Etic/Emic	Likes and dislikes of the teaching practices being used
In the next class they were taking a test. I went over some examples on the board with the class to answer their questions before the test.	Emic	Helping Students/ Participant assisted the teacher
While they were taking the test I made the answer key and graded the test afterward.	Emic	Grading Papers

This analysis revealed that 64% of individual journal entries were from an etic perspective, 33% were from both an etic and an emic perspective, and 2% were from an emic perspective. Overall, seventy percent of participants reflected from both an emic and etic perspective (n=33), while 30% of the participants reflected only from an etic perspective (n=14). While there were only 6 journal entries that were only from an emic perspective, 70% of the participants reflected from an emic perspective. These emic reflections were within the same journal entry where the participant also reflected from an etic perspective. The data for etic/emic perspectives are listed in table 4.3.

*Table 4.3: Etic/Emic Perspectives*

<b>Perspective</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
Etic	201	64%
Emic	6	2%
Etic/Emic	105	33%

## Findings Part II

**Examining the Question, “How do college students’ experiences in the course, and stages of reflection following classroom observations, affect their perception of teaching as a profession and the possible decision to enroll in a teacher preparation program?”**

Gibbs’ Reflective Cycle was used as the framework for answering the second research question. The researcher analyzed each journal entry by looking for the stage of reflection used, based on Gibbs’ Reflective Cycle (Gibbs, 1988). This analysis revealed that 18% of the journal entries were at the description stage, 25% were at the feelings stage, 31% were at the evaluation



stage, 16% were at the analysis stage, 7% were at the conclusion stage, and 2% were at the action plan stage.

A Mathematics major, reflecting at the description stage, wrote:

Today the students are working on similar triangles. To do this, the students are going outside to do an activity. But before doing the activity, the students took some notes. After taking notes, the students worked on some examples. After that, she took the students outside to work on finding similar triangles, with the shadows from the flagpole and the school building.

This reflection was classified at the description stage because the participant described what happened, yet she did not express her feelings about the observation and whether the experiences were positive or negative, nor did she give any ideas of how the lesson could be improved or changed.

A Biology major, reflecting at the feelings stage, wrote:

He was able to see how passionate he was about teaching and that he wanted his students to succeed. He got very serious and wasted no time. I haven't seen that side of him much, so it was nice to see how dedicated he was to his students' academic success.

This reflection was classified at the feelings stage because the participant discussed how she felt about the teacher's passion for teaching.

A Mathematics major, reflecting at the evaluation stage, wrote:

When the students had questions, she would walk through the problem with them. Instead of telling them what to do, she would have them lead

her through their thought process. I think this is a very positive style of teaching because it enables the teacher to find out what her students are having issues with and it also enables the teacher to correct the students indirectly—when they go through the problem they typically find the issues themselves.

This reflection was classified at the evaluation stage because the participant went beyond her feelings and discussed why she felt the teaching style being used was appropriate.

A Nursing major, reflecting at the analysis stage, wrote:

This activity not only allows for active learning but also encourages interaction and teamwork which are huge skills needed for success in life. I know we do labs all the time in college, so it is important to learn how to do them! Experiments also make students think about the information they learned and apply it to the results in their lab rather than just memorize facts, also is huge in further education programs.

This reflection was classified at the analysis stage because the participant went beyond what she liked about the lesson and made sense of how doing labs in high school can help students prepare for college while also teaching them important life skills.

A Biology major, reflecting at the conclusion stage, wrote:

They worked on their lab journals on the lab that was done for the past two days and reviewed some notes on the circulatory system. This is one of my favorite chapters of biology so I was very excited to see it being

taught. Since it is a hard subject, I would make it much easier to learn.

There are so many parts of the heart, so making nice analogies or song to help them remember would be a good strategy.

The conclusion stage of Gibbs' Reflective Cycle focuses on what else could have been done during the observation. This reflection was classified at the conclusion stage because the participant discussed detailed strategies for improving this lesson when explaining what could have been done differently to teach this lesson.

A Biology major, reflecting at the action plan stage, wrote:

The class played a jeopardy game to help them review more for the test.

The students played individually. I really liked the jeopardy game idea as a review method but if I did this game with my class, I would tell the students about it at least a few days before the exam and tell them that whoever got the most points would get a reward so that the students would come more prepared for the review, which would then make them more prepared for the test. Something else I would probably change about the jeopardy game is changing it to teams going against each other rather than individual students because then all the students would have to be involved and not just some.

This reflection was classified at the action plan stage because the participant discussed how to improve the lesson by giving suggestions for how it could be done differently in her classroom. The action plan part of Gibbs' Reflective Cycle focuses on what the participant would do if this situation arose again. This

participant's response shows that she has a clear idea of how she would handle this situation if it were to occur in her own classroom. The data for Gibbs' Reflective Cycle is found in table 4.4.

*Table 4.4: Gibbs' Reflective Cycle Stage*

<b>Gibbs' Reflective Cycle Stage</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
Description	57	18%
Feelings	78	25%
Evaluation	96	31%
Analysis	51	16%
Conclusion	23	7%
Action Plan	7	2%

Exit surveys were administered to the participants who took the course from 2013 - 2015 (n=49). The exit survey results revealed that 39% (n=19) of the participants agreed and 53% (n=28) of the participants strongly agreed that the course helped them decide if they wanted to teach. Four percent (n=2) of the participants said that the course did not help them determine if they wanted to become a teacher. One of the practicum students, who said that the course did not help her decide to teach, also said that if she had been given the opportunity to teach a lesson, the experience would have been more beneficial. The participant stated:

When we go to the high school, we're pretty much just observing. I think it would be better if we were allowed to help teach a concept to see what it would be like. It's hard to get a feel for what teaching is like if we are just sitting there observing.

The other participant, who said that the course did not help in her decision to teach, said that more observation time would have been beneficial. Of the 49 participants who took the exit survey, 49% (n=24) plan to pursue a teaching certificate or degree, while 51% (n=25) do not.

Forty percent of the participants said that they were interested in teaching at the beginning of the course, and also said that they plan to pursue a career in teaching (n=19). All of these participants said that the course was beneficial in their decision to consider teaching as a possible career choice.

Nine percent of the practicum students, who were interested in teaching at the beginning of the course, were still not sure if they planned to pursue a career in teaching (n=4). All of these participants said that the course was beneficial in their decision.

Thirty-eight percent of the participants said that they were interested in teaching at the beginning of the course, but then decided that they would not pursue a career in teaching (n=18). All of these participants said that the course was beneficial in their decision to consider teaching as a possible career choice.

Six percent of the participants said that they had an interest in teaching at the beginning of the course, and were still not sure if they planned to pursue a career in teaching (n=3). Two of these participants said that the course did not help them determine if teaching was appropriate for them, while one of the participants said that it did.

Six percent of the participants said that they were not interested in teaching at the beginning of the course, and also said that they did not plan on

pursuing a career in teaching (n=3). All of these participants noted that the course was beneficial in their decision to not pursue teaching as a possible career choice. The complete results of the closed-ended survey questions are listed in table 4.5.

*Table 4.5: Exit Survey Results*

<b>Survey Prompt</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
The instructor provided helpful information about the teaching profession.	37	12	0	0
I understand how to obtain teaching credentials.	29	20	0	0
All of my questions about a teaching career were addressed in this class.	27	21	1	0
I had an interest in teaching before I enrolled in this class.	19	26	4	0
Overall, this class helped me decide if I want to teach.	19	28	2	0
The on-campus meetings helped me decide if I want to teach.	13	26	9	1
The practicum experiences in the schools helped me decide if I want to teach.	30	15	4	0
I plan to pursue a teaching certificate or degree.	14	10	23	2
Overall, this class helped me decide if I want to apply for the Noyce scholarship.	15	28	5	1

<b>Survey Prompt</b>	<b>Yes</b>	<b>No</b>	<b>Not Sure</b>
Did you know about the Noyce scholarship before taking this class?	6	43	0
I plan to apply for the Noyce Scholarship.	11	21	17

In addition to the closed-ended questions cited above, participants were also asked open-ended questions about the course. When asked what the most beneficial aspect of the course was, 78% of the participants said that the practicum in a middle or high school classroom was the most valuable part of this course (n=38). These practicum students elaborated by saying that they enjoyed seeing what it was like from the teacher's perspective as opposed to the view of the student, talking with teachers about what it is like to teach, and being able to observe the teaching strategies which were also being discussed during the on-campus meetings. Ten percent of the participants stated that the on-campus meetings were the most beneficial to them in their decision to teach (n=5). Ten percent of participants indicated that learning how to obtain teaching credentials/certification and gaining information about scholarships available to them were the most beneficial aspects of the course (n=5). Four percent of the practicum students said that the professor's comments and lectures were what they enjoyed most about the class (n=2), and 4% of the participants said that the most beneficial part of the course was how it helped them decide if teaching was the appropriate career for them (n=2).

When asked what they would do to improve this course, 28% of the participants who answered the question (n=43) said that they would not make any changes to the course (n=12). Twenty-one percent of the participants said that they had scheduling and placement issues (n=9), 12% stated that they would like to have observed more hours in a classroom (n=5), 12% indicated that they would like to have participated more during their practicum by teaching a lesson

(n=5), 7% said that they would like to have had more time in the on-campus meetings (n=3), 7% said that they would prefer to have covered more teaching strategies during the on-campus meetings (n=3), and 5% said that they would have appreciated an opportunity to share their practicum experiences with classmates (n=3).

After analyzing the results of the exit survey and the journal entries separately, the researcher then compared each participant's journal entries with their exit survey. Of the participants who agreed or strongly agreed that this course helped them in determining if they wanted to teach, 73% of them reflected both from an emic and an etic perspective (n=33), while 27% of these participants reflected from only an etic perspective (n=12). Of the practicum students who disagreed that this course helped them in determining if they wanted to teach, one reflected from only an etic perspective while the other reflected from both an emic and an etic perspective (n=2). The participant who reflected from both an emic and etic perspective was able to help the teacher by grading papers and helping students, which led to the emic reflections. This individual wrote, "The class was well-behaved as always, and they were very friendly to me personally when I went over some of their work with them. I actually learned some new things today, so it was an interesting class." This participant stated that more observation time would have made the class more beneficial in deciding if she was interested in teaching as a profession.

Participants who reflected at the description stage focused on reporting what happened in the class. They described the classroom environment,



management techniques, teaching strategies, and gave a general overview of what was happening in the classroom. Participants who reflected at the feelings stage described what was going on and discussed their likes and dislikes of various aspects of the lesson and classroom environment. When participants moved beyond a basic description and how they felt about the lesson, they began to reflect at the evaluation stage, which was the most common stage of reflection for this study. At the evaluation stage, participants discussed what they considered good and bad about their experience, but did not go into detail about why aspects were deemed to be good or bad. Participants who reflected at the analysis stage tried to make sense of the situation by discussing their understanding of why specific teaching practices and classroom management techniques were more beneficial than others. These practicum students also made connections between what they were learning in the on-campus meetings and what they were observing in the classroom. Participants who reflected at the conclusion stage took their analysis and gave suggestions for what their cooperating teacher could have done differently or what they would do differently if they were the teacher. Participants who reflected at the action plan stage discussed an in-depth plan for how to teach specific topics or how to handle particular situations.

Two participants reflected at the action plan stage of Gibbs' Reflective Cycle, and both of these participants strongly agreed that the course helped them decide if they wanted to pursue a career in teaching (n=2). For participants who said that they agreed or strongly agreed that this course helped them in

determining if teaching was the appropriate career choice, their most in-depth stage of reflection was at the following stages: Zero percent reflected at the description stage (n=0), 9% at the feelings stage (n=4), 42% at the evaluation stage (n=19), 24% at the analysis stage (n=11), 24% at the conclusion stage (n=11), and 4% at the action plan stage (n=2). Both participants who disagreed that this course had helped them in determining if teaching was the appropriate career choice had their most in-depth stage of reflection at the conclusion stage (n=2).

For participants who said that they plan to pursue a career in teaching, the most in-depth stage of reflection was at the following stages: No students reflected at the description stage (n=0), 8% reflected at the feelings stage (n=2), 42% reflected at the evaluation stage (n=10), 29% reflected at the analysis stage (n=7), 17% reflected at the conclusion stage (n=4), and 4% reflected at the action plan stage (n=1). Eighty-three percent of these participants reflected from both an emic and an etic perspective (n=20), while 17% reflected from only an etic perspective (n=4).

This summary shows that most of the participants, who plan to teach, reflected from both an emic and etic perspective, meaning that they had the opportunity to participate in the classroom instead of only observing. Most of them also reflected at stages beyond description and feelings, which means they may have experienced a more in-depth reflection than those who were not able to participate in the classroom. The participants who found the course beneficial

typically reflected at more in-depth stages of reflection on Gibbs' Reflective Cycle.

### **Findings Part III**

**Examining the Question, “How do practicum students relate their participation in the practicum in education course to their past, current, and future career decisions?”**

#### **Questionnaires**

All college students who took EDSE 210 were contacted and asked to take part in an online post-course questionnaire. Thirty-three percent (n=18) of the study participants took the post-course questionnaire. Of the participants who took the questionnaire, fifty-six percent (n=10) have graduated college with a bachelor's degree, while 44% (n=8) are still pursuing a bachelor's degree. The participants who have graduated have bachelor's degrees in biological sciences (n=1), biology (n=1), civil engineering (n=1), mathematics (n=5), public health (n=1), and theatre (n=1). The participants who are still in college are majoring in biological sciences (n=1), biology (n=1), chemical engineering (n=1), chemistry (n=2), mathematics (n=1), and public health (n=2). Twenty-two percent of the participants (n=4) either have or are currently pursuing a master's degree in teaching and 11% of the participants (n=2) plan to pursue a master's degree in teaching. Twenty-two percent of the participants (n=4) have teaching credentials, and 27% are currently teaching (n=5). These participants are teaching Mathematics (n=4) and English as a second language (n=1) at the middle and

high school level. The closed-ended question responses are summarized in Table 4.6.

*Table 4.6: Post-Course Questionnaire*

Question	Strongly Agree	Agree	Disagree	Strongly Disagree
The practicum in education course was beneficial for you in terms of helping you decide on a career path.	7	9	2	0
Question	Yes	No		
If you remember, you spent at least 12 hours in a high school classroom. After each visit, you completed a brief journal entry where you listed at least two positive things you observed as well as other observations you wanted to mention. Do you feel that these journal entries, you completed after each observation, were a helpful part of this course?	14	4	0	0
Would you recommend this course to others?	18	0	0	0
Do you have teaching credentials?	4	14	0	0
Are you currently teaching?	5	13	0	0

Open-ended responses were analyzed and grouped based on five categories: 1) Participants who are currently pursuing a bachelor's or master's degree in teaching (n=1); 2) Participants who plan to obtain a master's degree in teaching (n=3); 3) Participants who are currently teaching (n=5); 4) Participants who do not currently have plans to teach, but would consider teaching in the future (n=7); and 5) Participants who do not plan to teach (n=2). Pseudonyms, which were created to protect participant's privacy, were also used to help connect participant's responses with their reflection journals and survey

responses. Table 4.7 summarizes the number and names of the individuals in each category. The section that follows Table 4.7 offers additional details on these individuals and their responses.

*Table 4.7. Categories of Respondents*

Category	Total Number of Respondents	Respondents
1) Participants who are currently pursuing a bachelor's or master's degree in teaching	1	William*
2) Participants who plan to obtain a master's degree in teaching	3	Lexy
		Sydney
		Anna*
3) Participants who are currently teaching	5	Tyler
		Erica*
		Grace
		Elizabeth
		Alan
4) Participants who do not currently have plans to teach, but would consider teaching in the future	7	Brooke
		Emma
		Kevin*
		Landon
		Livy
		Dylan
		Josh
5) Participants who do not plan to teach	2	Hannah
		Emily

\*Completed a follow-up interview

**Participants who are currently pursuing a bachelor's degree in teaching.** William is currently pursuing a bachelor's degree in Chemistry and Secondary Education. He strongly agreed that this course was beneficial for him in terms of helping him decide on a career path. He said, the course "helped me make the decision on what I wanted my career to be. Had I not taken it, I would probably still be clueless."

He agreed that the reflective journals were a helpful part of this course, saying, they "allowed me to reflect on the up-side to becoming a teacher and how rewarding it was, not in terms of money, but knowing that I could possibly shape the future by educating the leaders of tomorrow." He said that he would recommend this course to others because "it may help someone like [him] find their calling in life."

When asked if he had any additional comments about the course, he said, "I Loved the course. Dr. Yow was amazing. I would not trade the opportunity she and the university gave me for anything." He reflected from both an emic and etic perspective when writing reflective journals during the course. He was also able to assist in the classroom by helping students during his classroom observations.

**Participants who plan to obtain a master's degree in teaching.** Lexy, Sydney, and Anna are currently pursuing bachelor's degrees. Lexy is majoring in biology, Sydney is majoring in chemical engineering, and Anna is majoring in mathematics. All three plan to obtain a master's degree in teaching upon graduation. Lexy and Anna strongly agreed that this course was beneficial for them in terms of helping them decide on a career path. Lexy said, "This class

helped me decide to become a teacher," and Anna said, "I felt very immersed in the classroom and learned a lot of hands-on lessons." Sydney agreed that the course was beneficial, saying, "It was good classroom experience and exposure to teaching."

All three participants said that the reflective journals were a helpful part of this course. Lexy commented, "These helped me reflect on my experiences." Sydney added, "Reflection helps summarize, [making it] easier to find benefits." All three said that they would recommend this course to others. Lexy would recommend the course because she believes it was an "easy class and helpful for people of all majors." All three of these participants reflected from both an emic and etic perspective when writing reflective journals during the course. They were also able to help in the classroom by grading papers and assisting students during their classroom observations.

**Participants who are currently teaching.** Tyler, Erica, Grace, and Elizabeth are currently teaching in mathematics and Alan is presently teaching English as a second language at the middle and high school level. Tyler, Erica, Elizabeth, and Alan either strongly agreed or agreed that the course was beneficial for them in terms of helping them decide on a career path. Tyler said, "It gave me in-class experience, and I was able to observe different classroom management techniques." Erica said, "Although I was already on the path toward becoming a high school math teacher, the class offered me one of my first real experiences within the classroom and solidified my plans." Alan added, "It opened me up to the possibility of teaching and allowed me the opportunity to

observe how experienced teachers manage an entire class." Grace disagreed that the course was beneficial in helping her decide on a career path by saying, "I sat in a class and observed but was given little direction from the teacher. She gave me no insight to her lessons and barely spoke to me about anything related to being a teacher."

Alan and Tyler agreed that the reflective journals were a helpful part of the course. Alan said, "I believe reflection is an integral part of learning and improves retention of what was covered each day," and Tyler added, "I was able to reflect on positive learning experiences for me and see what things were effective in the observed classroom." Erica, Grace, and Elizabeth disagreed that the reflective journals were an effective part of the course. Elizabeth simply said, "I definitely do not remember them," while Grace said, "there was little to report" about her observations. Erica said, "I'm already a reflective person, so the journals didn't really add anything I wasn't already doing. And as for the people who were not already reflective, I have doubts that they took the journals seriously."

All of these participants said that they would recommend this course to others. Tyler commented, "it provides in-class experience which is invaluable for people who want to teach," Elizabeth said, it was "well worth the money and insight," and Erica said it was "a valuable experience and one of the only ones students have the opportunity to participate in during their early undergraduate careers." Alan said it is an "interesting course [that] I would recommend to non-education majors who are looking to broaden their career search," and Grace said, "the money was a great incentive."



Erica and Grace, who disagreed that the course or journals were beneficial, reflected from only an Etic perspective when writing reflective journals during the course and did not have the opportunity to take part in helping during their classroom observations. While Erica said in the questionnaire that the journals were not helpful, during the follow-up interview, she said, "I think it's hard to organize your own thoughts in your head, and by writing them down it really helps you organize and appreciate what's happening." Erica also said that she did not feel the course would be as beneficial for future students if they do not have the reflective journals. She said, "I think it would be more beneficial if you had the reflection journals with a more extended discussion." She felt that feedback from the instructor was very important, and expressed her desire to discuss her journal entries with classmates when she was taking the course. Her response to the questionnaire may have been "no" because she found the in-class part of the experience to be the most beneficial part of the course. Alan and Tyler, who agreed that the course was beneficial, reflected from both an emic and etic perspective when writing reflective journals during the course. They were given the opportunity to help students and assist the teacher during their classroom observations. Elizabeth, who reflected from both an emic and etic perspective when writing reflective journals during the course, said that the journals were not beneficial; however, she did say that she did not remember them being a part of the course. One of the participants, who agreed that the course and reflective journals were beneficial, reflected from only an etic

perspective when writing reflective journals during the course and was not given the opportunity to participate.

**Participants who do not currently have plans to teach, but would consider teaching in the future.** Four of these participants have already obtained bachelor's degrees. Brooke has a degree in Biology, Emma has a degree in Civil Engineering, Kevin has a degree in Public Health, and Landon has a degree in Mathematics. The other three participants are currently pursuing a bachelor's degree. Livy is pursuing a degree in Public Health, Dylan is pursuing a degree in Chemistry, and Josh is pursuing a degree in Biological Sciences.

All of these participants either agreed or strongly agreed that the course was beneficial for them in terms of helping them decide on a career path. Brooke said she felt the course was helpful because "it gave me hands-on experience in a school classroom." Dylan said it was "a direct way of showing the role of teaching through the perspective of the teacher." Josh found the "hands-on experience in the classroom [to be] a great opportunity to see what teaching would be like." Emma said, it "confirmed that I liked teaching," and Kevin said, "It gave me insight into the value of education and the need for teachers." Landon said, "It helped me realize that I would want to go into teaching at some point in my life."

All six participants agreed that the reflective journals were a helpful part of the course. Emma said, "they helped me remember what had happened," and Josh said, they "made for intentional reflection on the experience to see what you were really liking or questioning about the classroom setting." Dylan said, they

“were effective in reflecting on our thoughts afterward as opposed to before,” and Kevin said, they “made me actually reflect upon my time in the classroom...allowed me to really think about what the experience was like for me.” Livy said it was “good to have feedback on experiences.” Landon said:

The journal entries made me actually have to observe the manner in which the teacher taught the class and the effectiveness of getting the lesson objectives across to the students. I feel that otherwise I may have just sat there and listened to the lesson and only evaluated whether or not I understood the material rather than whether or not the students understood the material.

All six participants said that they would recommend this course to others. Kevin commented, “I really enjoyed this course and felt that it helped to get me where I am today,” and Brooke said, it is “an easy way to gain hands-on experience in the classroom and figure out if it is what you want to do as a career.” Livy found it to be a “good tutoring experience,” and Dylan said, it was “a good way of seeing exactly if this career field would be a good fit for me.” Josh said, it was a “great way to explore secondary education before really diving in if there may be an interest,” and Emma said, “it was a good experience.” Landon said:

I would recommend taking it early on in one's undergraduate career if they can, and to students who are considering teaching but are not sure if it is the path, they wish to pursue. It gives a bit of insight into what the teaching path looks like without putting too much pressure on the student in the

event that they find it is not the path for them. I wish I had taken it sooner in my undergraduate career.

Kyle, Emma, Livy, Dylan, Josh, and Landon reflected from both an emic and etic perspective and had the opportunity to help students, assist the teacher, and grade papers. Livy and Landon had the chance to teach a lesson. Kasey reflected from only an etic perspective and did not have the opportunity to participate during classroom observations.

**Participants who do not plan to teach.** Hannah and Emily have no plans to teach in the future. Hannah is currently pursuing a bachelor's degree in Public Health and plans on pursuing a master's degree in Environmental Health Sciences. She did not find the course beneficial in helping her decide on a career because she "did not want to be a teacher before taking the class." She also did not find the reflection journals helpful because she "felt like [they were] busy work." She would recommend the course "to those who know they want to be teachers, but not to others." She reflected from both an emic and etic perspective; however, her participation within the classroom was limited to grading papers.

Emily is currently a stage manager with a bachelor's degree in theater. She strongly agreed that the course was beneficial in helping her decide on a career because she "was able to experience what teaching was like" and realized "that it was not the path [she] wanted to pursue." She found the reflection journals helpful, saying, "It was helpful to reflect on my experience and to think about what I enjoyed and what I did not." She said that she would recommend

this course to others by saying, “It helped me to realize that I didn’t want to teach and I feel confident that it would help others change or solidify their goals for the future.” She reflected from both an emic and etic perspective when writing reflective journals after each visit, and had the opportunity to grade papers and assist the teacher during her classroom observations.

### **Follow-up Interviews**

After analyzing the post-course questionnaires, participants were purposely selected to take part in a follow-up interview. Ideally, one participant from each of the five categories listed above would have been chosen to participate in a follow-up interview; however, only six of the eighteen participants were willing to take part in an interview with no one from the last category (Participants who do not plan to teach) agreeing to an interview. Therefore, only four of the categories were represented with an interview.

**Description of the interview participants.** In reporting the information, the researcher sought to convey a rich and textual description of the participant's experiences (Marshall & Rossman, 2010; Moustakas, 1994). In an effort to convey each participant's lived experience in EDSE 210, the researcher created a description of the interview participants. These descriptions were developed from an analysis of each participant's reflection journals, exit-survey, post-course questionnaire, and follow-up interview. Pseudonyms were used to ensure anonymity and confidentiality.

**William.** William is a participant who is currently pursuing a bachelor’s degree in teaching. As the son of a teacher, William was told that his education

would only be paid for if he did not major in education. Even though he wanted to be a teacher, he decided to major in Chemical Engineering instead. During his sophomore year of college, he decided to take EDSE 210 for the extra credit hour and a stipend. He observed in both a chemistry and physics classroom where he was able to see "two different teaching styles, two different classroom management styles and two different people in general." He found that this situation helped him "really recognize the differences that teachers can make in a classroom." William said that he feels the journals were an integral part of the course, in fact, without them "[he] wouldn't have put too much thought into it and [he] would have sat in the classroom and not really paid attention to what was going on." He felt that the journal writing process added to his enjoyment of the course. He especially appreciated the feedback from his instructor. He said, she "would constantly challenge us to just look beyond what was actually happening at face value in the classroom and to take a deeper walk into the classroom management styles." In class, the instructor would talk about "what it means to be an educator what kind of standards educators should hold themselves to," and then William was able to go "to the high school and see that." He said that the instructor guided him by having him look at teaching styles and methodologies from various perspectives – to "see it from the student's standpoint and the teacher's standpoint and try to personally bridge that gap."

William enjoyed being able to help in the classroom where he was observing. He said:

The chemistry teacher was very open to me coming in her class and working with the students, especially her AP students because they were the higher-level learners and a lot of them were looking into majoring in chemistry or some kind of STEM fields when they got to college. Being able to interact with them on that level, not only helped me understand what it would be like to encourage students in pursuing something, but also for them to get an understanding for me of what it means to be in the STEM fields.

The physics teacher was also “very open to letting [him] interact with the students, walk around helping them if they had any questions on concepts, or help them with Labs.”

William agreed that the course and reflective journals were beneficial and he would recommend this course to others. He reflected from both an emic and etic perspective when writing his reflective journals, and he was given the opportunity to help students during his classroom observations. William’s journal entries were written at the description and evaluation stages of Gibbs’ Reflective Cycle. William said, “I definitely feel like the class really opened my eyes to being an educator and wanting to basically share what I know with as many people as I can.” He even said that if he had not taken the course, he would probably not be pursuing education now.

William is currently pursuing a bachelor’s degree in Chemistry and Secondary Education. He agreed that the course, reflective journals, and feedback from the instructor were beneficial and he would recommend this

course to others. After graduating and teaching high school for a few years, William plans to go to graduate school, and eventually obtain his Ph.D. in either organic chemistry or biochemistry so that he can also teach at the collegiate level.

**Erica.** Erica is a participant who is currently teaching. As a college freshman, Erica received an email about taking EDSE 210. She describes this moment by saying, "I mean, of course, it didn't hurt that the subject headline for the e-mail was, earn 300 dollars when you take this class!" Erica was also enrolled in another practicum course during the same semester she took EDSE 210. She was able to observe in two different mathematics classrooms, where she observed teachers who were as "different as night and day." She said, "It was a really awesome reality check both ways because I was able to see, this is what I want to do, and this is what I don't want to do." The journal entries Erica wrote after observing were at the description, feelings, and evaluation stages of Gibbs' Reflective Cycle. She reflected from only an etic perspective and did not have the opportunity to help or teach during her classroom observations. She strongly agreed that the course helped her decide on a career path, saying, "It was a valuable experience, and one of the only ones students have the opportunity to participate in during their early undergraduate careers." Erica disagreed that the journal entries were a beneficial part of the course because she did not believe all students would take it seriously. One part of the journals she did find beneficial was the feedback she received from the instructor. She appreciated that the journals were flexible and that she was able to ask the



instructor questions about what she was experiencing. Erica said the following about feedback from the instructor:

If I had a question about why the teacher chose to do something, and I didn't get a chance to ask the teacher, I would stick it in [the journal] and [the instructor's] feedback was really helpful... a lot of my education classes had us write reflection journals, and that was it...it is better to get validation or feedback from the instructor. It can push you to think about things further. It wouldn't have the same impact without feedback like that.

Erica believes the course is so beneficial because it was offered early on in her academic career, “otherwise [she] wouldn't have been in the classroom until [her] senior year.” She feels that having the class available to freshman and sophomores serves as a “reality check” for students. She said:

You really don't get classroom exposure if you're going through a STEM major, and not everybody has an education minor, so a lot of people wouldn't even take any sort of practicum class until their senior year. That's not good if you're not really sure you want to be in the classroom. I knew I wanted to teach, so I jumped at the opportunity, but there were a lot of people in that class who were thinking about teaching, and because they took the class, they decided that they didn't want to. I honestly feel like that is just as important because you need to be recruiting people who want to be in there.

Erica said that this course “solidified [her] career decision to teach math.”

While she entered the class “knowing [she wanted] to teach high school math,”

the class “just made [her] want to teach more.” Erica earned her bachelor’s degree in Mathematics and went on to pursue her master’s degree in Secondary Mathematics Education as a Noyce Scholar. She has teaching credentials and is currently teaching high school mathematics.

**Anna.** Anna is a participant who plans to obtain a master’s degree in teaching. As an incoming freshman, Anna was deciding between three majors but settled on business. However, Anna reflected by saying, “Deep down I knew I’d always wanted to be a teacher.” While taking another education class, Anna received information about taking EDSE 210. Since she was currently in a “limbo stage”, where she was trying to determine if she was “going to do math education or a different career in math,” she felt that this class would be “a good test run to see if math education [was] what [she] wanted to do.” While she feels that she would have still settled on math education, she believes that this course “was just the perfect timing” for her and helped her be “confident in [her] decision” to pursue mathematics education. She said, “It helped me solidify that I wanted to keep pursuing math education.”

Anna is currently pursuing a bachelor's degree in mathematics, and she also plans to pursue a master's degree in teaching. She agreed that the course and reflective journals were beneficial; however, she could “have talked about [her observations] verbally more one-on-one with the instructor.” She said that she would recommend this course to others and she is “grateful for the course!” She did, however, say that she wishes there had been “more authentic assignments”—where she could work with the teacher on designing a lesson.

She also would have liked "more active participation in the actual teaching part." She reflected from both an emic and etic perspective when writing her reflective journals. She stated, in her reflective journals, that her observations had an impact on her decision to teach. She was given the opportunity to grade papers and help students during her classroom observations, and her journals were at the feelings, evaluation, and analysis stages of Gibbs' Reflective Cycle.

**Kevin.** Kevin is a participant who does not currently have plans to teach but would consider teaching in the future. As a freshman biochemistry major, Kevin heard about EDSE 210 when a recruiter came into one of his classes. Kevin said, "Before taking this course, I never considered anything in the educational world." He observed in an Algebra I class, where he had the opportunity to grade papers and assist the teacher. He remembers this experiences by saying, "I would shadow and be a part of a classroom, teach a lesson...so it definitely gave me some context in education. Specifically, it showed me why I value higher education." He felt the reflective journals were a beneficial part of the program, and he said that receiving feedback from the instructor helped make the process "more than just a superficial reflection."

After taking the course, Kevin "shifted [his] trajectory," and now has a bachelor's degree in Public Health and is currently pursuing a master's degree in Higher Education and Student Affairs and Psychology. While he does not have immediate plans to teach at the high school level, he said, "K-12 is definitely something I have an interest in long-term...specifically looking at the transition for juniors and seniors to Higher Ed." He agreed that the course and reflective

journals were beneficial and he would recommend this course to others. He reflected from both an emic and etic perspective when writing his reflective journals, and his journals were at the description, feelings, and evaluation stages of Gibbs' Reflective Cycle.

**Analysis of the interviews.** The researcher read each participant's response to each question and looked for common themes among the responses. Quotes and segments of quotes were selected to represent the true essence of each participant's response to each question. These accounts were then analyzed for common topics and salient themes among the interview participants. Participants' interview quotes and salient themes are listed in table 4.8.

**Salient themes from interviews.** All of the interview participants found the course and reflection journals beneficial in their career decision. This course impacted each participant differently; however, all of them left the course with a positive view of teaching as a profession. All participants said that this course had an effect on the degree they obtained or are currently earning. Erica and Anna both said that they might have still entered the teaching profession if they had not taken the course; however, both also said that taking EDSE 210 helped them solidify their decision to teach. William and Kevin both said that this course had a significant impact on their decision to change careers.

The participants agreed that semi-structured journals would be beneficial to all students taking EDSE 210. A mix of structured and open-ended questions would allow for deep and meaningful reflection for all practicum students.

Table 4.8 Salient Themes from Interviews

Question	William	Erica	Anna	Kevin	Salient Themes
Were you able to make connections between what you were learning in the course and what you observed in the high school classrooms?	"Yes."	The course was more "focused on how to become a Noyce Scholar."	"Yes, I remember I definitely was."	"Absolutely"	Students were able to make connections between what they were learning in the course and observing in the classroom
What helped you make this connection?	The instructor talked about "what it means to be an educator, what kind of standards educators should hold themselves to, and then going to the high school and being that."	The feedback received from the instructor helped Erica make connections between education and her observations more so than what she was learning in the course.	"I felt like I learned a lot in the class...that I could apply in the classroom."	"The journals just gave us a time and a space to kind of reflect on what we were being a part of, of what we were watching, what we were assisting with, and the importance of the opportunity and the role."	The process of reflection and feedback from the instructor helped the students make connections.

Question	William	Erica	Anna	Kevin	Salient Themes
<p><b>How did the feedback you received from the course instructor help you make connections between what you were learning in the course and your classroom observations?</b></p>	<p>The instructor encouraged us to “see [situations] from the student's standpoint and the teacher’s standpoint and try to personally bridge that gap.”</p>	<p>“She was flexible about what we could include in the journals... If I had a question about why the teacher chose to do something and I didn’t get a chance to ask the teacher, I would [put it in the journal] and [the instructor’s] feedback was really helpful.”</p>	<p>“It helped speed up the process for me actually implementing things that I was learning.”</p>	<p>“I had a lot of follow-up questions... There were times where the connections weren’t always right in front of me, but I was kind of talking around them, so it was really nice to get that feedback and support to continue the conversation and keep making those connections.”</p>	<p>The students found feedback from the instructor to be a beneficial part of the course. The opportunity to ask questions and participate in a discussion helped them make the connections.</p>

Question	William	Erica	Anna	Kevin	Salient Themes
<p><b>Did you find feedback from the instructor to be a beneficial part of the journal writing process?</b></p>	<p>“Yes...the instructor would constantly challenge to just look beyond what was actually happening at face value in the classroom and to take a deeper walk into the classroom management styles. I personally had the opportunity to observe two separate classrooms....I was able to get feedback from her on two different things I was observing and that helped me to really recognize the differences the teachers can make in a classroom.”</p>	<p>“Yes because a lot of my education classes had us write reflection journals and that was it...It’s better to get validation from the instructor so they can push you to think about things further...It wouldn’t have the same impact without feedback like that. “</p>	<p>“Yes, but I wish that we could have talked about it verbally more one-on-one with the instructor. “</p>	<p>“Feedback is always really important when you’re reflecting on things...In that experience...it made it more than just a superficial reflection, but actually something that gives you time to think again once you receive the feedback. I think it just made the whole reflection more powerful.”</p>	<p>Students found the feedback from the instructor beneficial. It helped deepen the reflection they experienced.</p>

Question	William	Erica	Anna	Kevin	Salient Themes
<b>How could the reflective journals be more beneficial?</b>	<p>“I really don’t know....they were pretty straightforward—we were just supposed to summarize things we had observed. Anywhere from a perfect day...to bad days.”</p>	<p>“I feel like, in that class, they were more beneficial than others...She really encourage us to ask for questions and look for that feedback from her. I think other classes could have improved the journal by doing it the way it was done in 210.”</p>	<p>“Kind of not just forgetting the journal entries once we submit them that week, but actually implementing them in the classroom and talking about them, and really solidifying what we’re realizing.”</p>	<p>“They were a little vague in the sense that if someone was having trouble making connections they might have been able to kind of make it, fake it....I think that if you took advantage of the time and space to reflect, they were very beneficial.”</p>	<p>Some students said the class was beneficial the way it is. Some suggestions were to implement the journals entries into a class discussion and to add more structure to the questions.</p>
<b>What did you find to be beneficial or difficult about keeping a reflective journal?</b>	<p>“I do feel like there was a little too much pressure to write a certain amount.”</p>	<p>“Remembering to do it.”</p>	<p>“It was beneficial to be able to put in to words what exactly I was learning. There wasn’t really anything that wasn’t beneficial about it.”</p>	<p>“It didn’t ask or require so much that it was hard to keep track of. So, I think it was overall a beneficial process. “</p>	<p>Students found the pressure to write and remembering to write to be difficult. Others said it was easy and helped the learning process.</p>



Question	William	Erica	Anna	Kevin	Salient Themes
<b>Do you think the reflective journals would have been more beneficial if you would have had structured questions as opposed to open-ended prompts?</b>	“I feel like it probably would have worked a little better had there been an even split of structured questions and open-ended prompts...to force us to think and really look at what was going on.”	“There were times when a structure question would have been better...to have guidance, but there were also times where I knew what I wanted to write about and questions I wanted to ask the instructor.”	“I prefer them the way they were...maybe some type of optional guided reflection.”	“I’m someone who prefers structured questions....I think it makes you be able to hone in and target a specific thought or idea, but at the same time, open-ended just in general...also challenges you to really get to the root of your thoughts.”	Students see the benefits of both structured and open-ended questions.
<b>Do you feel that the course would have been as beneficial without the use of reflection journals?</b>	“Definitely not. As a STEM major in an education class, had I not had to write the journals, I wouldn’t have put too much thought into it and I would have sat in the classroom and not really paid attention to what was going on.”	“Because the purpose of the course was to just get that first bit of exposure into the classroom. I do... I like the journals...the observation is an experience enough for you to realize if you want to teach.”	“I don’t actually. I think it would be more beneficial if you had the reflection journals with a more extensive discussion. I think you can learn more from other students who are actively in your same boat and...having the same realizations.”	“I think taking those opportunities to reflect away, would’ve made the experience less beneficial. It is a component where you have to kind of have some accountability for making connections and being involved and invested.	Most students said the course would not be as beneficial without the use of reflection journals. The journals helped students focus and held them accountable in the course. One student said observation is enough to realize if you want to teach.

Question	William	Erica	Anna	Kevin	Salient Themes
<b>What would you do to improve the course?</b>	"Not much. The structure of the course is really good."	"I think it was great because...you get classroom exposure early...Its serves as a reality check."	"I wish we would have had one or two assignments that we actually turned in to our teachers that we were working within the classroom...and also turn it into the professor. I wish it had been observing while also more active participation in the actual teaching part. More authentic assignments."	"I got a lot out of it...more opportunity to be in the classroom. I think by the time I felt like I was really getting involved and getting comfortable that it was almost over."	Some students said the course should stay as it is, being offered early. Other students made suggestions that include more authentic assignments and more time in the classroom.
<b>Do you believe that teaching a lesson, as part of your practicum course experience, would have made the course more helpful to you?</b>	"Teaching a solo lesson at that kind of level...I don't think would have been very beneficial...More hands-on with the students rather than just sitting in the back of the classroom. STEM majors are going to be hands-on-learners...so, they're not really going to experience the full effect if they can't get their hands dirty."	"Not for that class in particular. Only observing 12 hours...only 1 credit hour. That would be good for a three-credit hour class where you were in the classroom a lot more."	"Well, I don't know about actually teaching a lesson because it's such a short amount of time, and that might disrupt the classroom flow...the students didn't know us well."	"I took another class that was similar...I did actually get to shadow for a whole semester, once a week, and I did teach a lesson. Teaching a lesson was huge for me. It really made me feel like I value education and being in the classroom...so, absolutely."	Most students did not feel teaching a lesson in this course would be appropriate. There is not enough time in the classroom or enough credit hours offered for that to be a requirement. One student said that he taught in a lesson in another course and he thinks it would be beneficial.

Question	William	Erica	Anna	Kevin	Salient Themes
<b>How do you think this course impacted your view of teaching as a profession?</b>	“The class really opened my eyes to being an educator and wanting to share what I know with as many people as I can.”	“I don’t know if it was the course so much as it was [the instructor] because her research is on teacher leadership. You can be a leader in your school and in your classroom and the class really set that thought process in motion for me.”	“The classroom I was in was a very encouraging atmosphere. If I had ended up with a teacher that I didn’t click with as well...it may have pushed me away.”	“I would shadow and be a part of a classroom, teach a lesson...so it definitely gave me some context in education. Specifically, it showed me why I value higher education.”	This course impacted each student differently; however, all students left the course with a positive view of teaching as a profession.
<b>How do you feel this course impacted your career decisions?</b>	“It definitely opened that door for me.”	“It solidified my career decision to teach math.”	“Yes. It helped me solidify that I wanted to keep pursuing math education.”	“It actually completely set the stage for me seeing myself doing something different.”	This course solidified career decisions for some students and completely changed the trajectory for other students.

Question	William	Erica	Anna	Kevin	Salient Themes
<b>Do you think you would have entered teaching or be considering teaching as a career if it had not been for this course?</b>	"Honestly, Probably not."	"Yes, but it solidified my decision."	"I think I still would, but maybe I wouldn't be as confident in that decision."	"Before taking this course, I never considered anything in the educational world."	One student said the experience solidified her decision, one said she may have still entered the profession, and two said this course changed their decision to teaching and education.
<b>Are there any other thoughts or comments about the course or your experience in the course you would like to share?</b>	"I had great teachers that encouraged me and helped me...[the instructor] was very helpful."	"I think the most important part of it was the fact that it was offered early on...otherwise, I wouldn't have been in the classroom until my senior year."	"Not that I can think of."	"It has a lot of potential for a lot of people who aren't even in education. I feel lucky that I found this opportunity."	The course is so beneficial because it is offered early and has the potential to help many students. The cooperating teachers and instructor were very helpful.

The students found the instructor's feedback to be a very beneficial part of the course. Several participants talked about how they liked that the journaling process allowed them to ask questions and receive meaningful feedback from the course instructor. One participant suggested that the journals be used to facilitate class discussion among EDSE 210 participants. Another participant said that more time observing in the classroom would improve the course.

Most participants did not feel that teaching a lesson in this course would be appropriate. Reasons for this include not having enough time in the classroom and not being offered enough credit hours for that to be a requirement. One student said that he taught a lesson in another course and he thinks it would be beneficial; however, he also felt that the course should include more classroom observation time.

### **Summary**

Data, collected from reflection journals, pre-course information sheets, exit surveys, post-course questionnaires, and follow-up interviews, were used to analyze the research questions for this study. A qualitative approach, from a phenomenological perspective, was employed in the analysis of the data collection instruments.

The Framework for this study employed a qualitative approach from a phenomenological perspective. Specifically, transcendental phenomenology and an inductive analysis were used to help reduce researcher bias by allowing the researcher to set aside preconceptions related to the study (Moustakas, 1994). Gibbs' Reflective Cycle (1988) was used to analyze college student reflection

journals in an attempt to attain their depth of reflection following classroom observations. Kenneth Pike's theory of Emic and Etic Perspectives (1967) was used to provide insight into each participant's point of view during observations. The amalgamation of phenomenology, Gibbs' Reflective Cycle (1988), and Pike's Theory of Emic and Etic Perspectives (1967) allowed the researcher to gain insight into the lived experiences and perceptions of college students taking EDSE 210. The author used this data to convey a coherent narrative of the meaning of the lived experiences of EDSE 210 participants.

The analyses revealed insight into each participant's lived experiences of the phenomenon (participation in EDSE 210); helping to determine how the practicum course impacted participants' perceptions of teaching as a profession and his or her decision to enter the teaching profession. This early practicum course gave college students the opportunity to observe and assist within the classroom, write reflection journals, and receive subsequent feedback from the course instructor. Participants agreed that these were beneficial aspects of the course, aimed at recruiting STEM majors to teaching. Key findings from this study suggest the benefits of:

- Using Gibbs' Reflective Cycle to help guide the development of a semi-structured observation reflection form, allowing for both flexibility and structure on an as need basis.
- Having students observe in at least two field placements, allowing them to juxtapose diverse classroom management styles, environments, and strategies.

- Having college students observe and take part in classroom observations, as this is a useful tool for helping prospective teachers consider teaching as a possible career.

## CHAPTER V

### SUMMARY AND DISCUSSION

#### **Overview of the Study**

The recruitment of highly qualified STEM teachers, to improve student achievement in STEM fields, has been a predominant concern in the United States for decades (Ingersoll & Perda, 2010). Since early field experience is one of the most powerful learning occurrences for future teachers (Darling-Hammond & Bransford, 2005), a recruitment program, with an early practicum course, could be beneficial to students who are interested in education but need hands-on experience before making a decision. The purpose of this study was to determine how a practicum course, developed to recruit freshman and sophomore STEM majors into a teacher preparation program, impacted participants' perceptions of teaching as a profession.

This study focused on four cohorts of college students who took the Practicum in Education Course (EDSE 210) from 2012 – 2015 (n=54). A qualitative approach, from a phenomenological perspective, was used to answer the following research questions: 1) How do STEM majors enrolled in a one-hour practicum course perceive teaching within a high school or middle school classroom environment; 2) How do college students' experiences in the course, and stages of reflection following classroom observations, affect their perception of teaching as a profession and the possible decision to enroll in a teacher



preparation program; and 3) How do practicum students relate their participation in the practicum in education course to their past, current, and future career decisions?

In an effort to address the aforementioned research questions, data were collected from the following instruments: (a) reflection journals, (b) pre-course information sheets, (c) exit surveys, (d) post-course questionnaires, and (e) follow-up interviews. The data collection instruments were analyzed from a phenomenological perspective and more specifically through a lens framed by Gibbs' Reflective cycle (1988) and Kenneth Pike's theory of Emic and Etic Perspective (1967). Phenomenology, Gibbs' Reflective Cycle, and Emic/Etic perspectives were used to determine the impact of the practicum in education course, EDSE 210, on participants' perceptions of teaching as a profession and on their intent to teach.

### **Summary of Findings**

**Question 1: How do STEM majors enrolled in a one-hour practicum course perceive teaching within a high school or middle school classroom environment?**

The theory of emic and etic perspectives was used to analyze student reflection journals through the use of transcendental phenomenology and inductive analysis. The reflection journals revealed the salient themes of the classroom experiences for participants in EDSE 210. Regardless of whether practicum students were reflecting from an emic or etic perspective, most were able to reflect critically on what was happening in the classroom. This type of

critical reflection helps participants articulate questions, confront bias, and contrast theory with practice (Ash & Clayton, 2009). Critical reflection is a skill that can be learned through reflective practice and subsequent feedback (Dewey, 1933, Rodgers, 2002). These journal entries revealed how participants enrolled in a one-hour practicum course, perceived teaching within a high school or middle school classroom

Sixty-four percent of journal entries were from an etic perspective, 33% were from both an etic and an emic perspective, and 2% were from an emic perspective. Practicum students reflecting from an etic perspective discussed teaching strategies being implemented, their like or dislike of the teaching practices being used, the technology being implemented, classroom management styles, the classroom environment, student motivation, student/teacher relationships, the content being taught, student behavior, the challenges of teaching, the commitment of a teacher, and students struggling academically.

Journal entries written from an etic perspective revealed how the practicum students analyzed what was happening in the classroom and gave insight into their perceptions of teaching; however, when practicum students moved from the initial etic perspectives to emic perspectives, it showed an evolution of their thought process from one of a college student to one of a potential teacher.

The data presented in table 4.3 indicates that the etic perspective far outnumbered the emic and emic/etic perspective of reflection journals. This is not

surprising given the nature of the course and it being the first observation experience for many college students. It should be noted that this skew of the data could be due, in part, to each participant's first journal entry being from the etic perspective, since they were not familiar with the classroom teacher or school before this observation. If each participant's first journal entry were removed from the study, the emic/etic results would be more accurate of the student's reflections, as can be seen in table 5.1

*Table 5.1 Emic/Etic Perspectives with First Journal Entry Removed*

<b>Perspective</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
Etic	147	57%
Emic	6	2%
Etic/Emic	105	41%

Given the same reasoning, the first journal entry for each participant was also at the description stage of Gibbs' Reflective Cycle. If these journal entries were removed from this coding, the data would be more accurate of the students' overall reflection stage, as can be seen in table 5.2.

*Table 5.2 Gibbs' Reflective Cycle Stage with First Journal Entry Removed*

<b>Gibbs' Reflective Cycle Stage</b>	<b>Frequency (f)</b>	<b>Percentage (%)</b>
Description	3	1%
Feelings	78	30%
Evaluation	96	37%
Analysis	51	20%
Conclusion	23	9%
Action Plan	7	3%

This course experience was, for many of the participants, their first time in a classroom with some knowledge of teaching as a profession. Therefore, their change from an etic perspective in their initial journal entries to an emic or emic/etic perspective in successive journal entries is indicative of the participants being able to see a classroom from a new perspective, from that of a teacher or, in their case, a prospective teacher. Taking on an active role during the classroom observations was a way for these participants to see classrooms and teaching from a different perspective. Practicum students who reflected from an emic perspective took on an active role during their classroom observations. These participants wrote about helping students, grading papers, helping the teacher, talking with students, and teaching a lesson. They were also able to reflect from an emic perspective when they wrote about what they would do in their classrooms, how they could help by planning lessons, what they would do differently if they were teaching the lesson, or how they gained a better understanding of content while in the classroom. Some of the students, who reflected from only an etic perspective, did not find the course or journal entries beneficial. These results could indicate that observation time without a required hands-on aspect could result in a negative experience.

**Question 2: How do college students' experiences in the course, and stages of reflection following classroom observations, affect their perception of teaching as a profession and the possible decision to enroll in a teacher preparation program?**

Gibbs' Reflective Cycle (1998) was used as the framework for analyzing the reflection journals. This analysis revealed that 18% of the journal entries were at the description stage, 25% were at the feelings stage, 31% were at the evaluation stage, 16% were at the analysis stage, 7% were at the conclusion stage, and 2% were at the action plan stage. Exit surveys were administered to the participants who took the course from 2013 - 2015 (n=49). The exit survey results revealed that 39% (n=19) of the participants agreed and 53% (n=28) of the participants strongly agreed that the course helped them decide if they wanted to teach. Four percent (n=2) of the participants said that the course did not help them determine if they wanted to become a teacher. The two participants who said that the course did not help also suggested that more time in the classroom and the opportunity to teach a lesson would have made the course more beneficial.

Practicum students' reflection journals and exit surveys were compared to see how participants' reflections affected his or her perception of teaching as a profession and his or her possible decision to enroll in a teacher preparation program. The analysis revealed that most of the participants, who plan to teach, reflected from both an emic and etic perspective, meaning that they had the opportunity to participate in the classroom instead of only observing. Most of them also reflected at stages beyond description and feelings, meaning they may have experienced a deeper reflection than those who were not able to participate in the classroom. The participants who found the course beneficial typically

reflected at the evaluation and analysis stages on Gibbs' Reflective Cycle and from both an emic and etic perspective.

The stage of reflection may have been affected by whether the practicum student had a positive or negative observation experience. Often, the participants who reflected at the conclusion and action plan stages did so because they felt that the lesson could have been improved. Those who enjoyed their observation experience, stopped at the evaluation or analysis stage because they had no recommendations for improvement.

**Question 3: How do practicum students relate their participation in the practicum in education course to their past, current, and future career decisions?**

Exit surveys, post-course questionnaires, and follow-up interviews were analyzed to determine how practicum students related their participation in the practicum in education course to their past, current, and future career decisions. Ninety-six percent of the participants, who took the exit-survey (n=47), agreed or strongly agreed that the course helped them decide if they wanted to teach. Of the 18 participants who took the post-course questionnaire, eighty-nine percent (n=16), agreed that the course helped them decide on a career path.

All of the participants, who agreed to take part in the follow-up interview, had positive experiences in the course and agreed that the course helped them determine their career path. William and Kevin changed their major after taking EDSE 210. William changed his major from Chemical Engineering to Chemistry and Secondary Education after taking the course. He said that taking the course,

“definitely opened that door for [him].” While Kevin does not currently plan to teach within the K-12 school system, he changed his major from Biochemistry to Public Health and is currently pursuing a master’s degree in Higher Education and Student Affairs. He said the course helped him see “why [he] value[s] higher education.” Erica and Anna both said that the course helped solidify their career decisions. Erica, a Mathematics major, who knew she wanted to teach mathematics, said this course “just made [her] want to teach more.” The course also helped Erica learn about the Noyce program and eventually, she became a Noyce Scholar. Anna was already in the process of changing from business to mathematics, but this course helped her solidify her decision to teach.

While some participants did not find the course beneficial in their career decision, most practicum students found value in the experience and agreed that it impacted their career decisions. For some, the course was a catalyst in changing their career to education, for others, the course solidified their decision to change their degree to education. For some, this course served as a reality-check, in that, they realized that teaching was not the career for them.

### **Implications of the findings**

This study builds on prior research, stating the importance of early field experiences for prospective teachers (Darling-Hammond & Bransford, 2005; Yost, Sentner, & Forlenza-Bailey, 2000; Malone, Jones, & Stalling, 2002; Wasburn-Moses, Kopp, & Hetttersimer, 2012). Following the analysis of participants’ reflection journals, exit surveys, post-course questionnaires, and

follow-up interviews, suggestions can be made for how to structure similar courses in the future.

Previous research suggests that an early practicum experience for STEM majors is a beneficial approach for recruiting future teachers (Gomez, Strage, Knutson-Miller, & Garcia-Nevarez, 2009; Malone, Jones, & Stalling, 2002; Darling-Hammond & Bransford, 2005; Wilson et al., 2001). This study supports similar findings. Results from this study also support that programs should target freshman and sophomore STEM majors, giving them the opportunity to see if teaching is a career they would like to consider. Exit survey, post-course questionnaire, and follow-up interview data show evidence that this program helped students make career decisions. Some students determined that teaching was not appropriate for them, for some, it solidified their decision to teach, and for others, it was a catalyst for changing their major to teaching. Programs, like EDSE 210, should also inform college students of how to attain teaching credentials, and guide them in this process.

Reflection journals are a research-based, effective part of teacher preparation programs (Schön, 1991; Morrison, 2009; Richards and Lockhart, 2005; Lee, 2008; Rodgers, 2002; Taggart & Wilson, 2005; Krol, 1996). Reflection journals were used in this course to help practicum students make connections between theories they were learning as part of their coursework and observations they were experiencing in real classrooms. Participants found the classroom observations and subsequent reflective journals to be a beneficial part of this course, which supports findings from previous research in the field. Lee



(2008) found that reflective journals are one of the main instruments used to encourage reflective thinking in preservice teacher education programs. The participants in this study discussed the importance of feedback from the instructor, which coincides with Taggart and Wilson (2005) who found reflection journals as a way to facilitate learning by helping students connect theory and practice. As Krol (1996) stated, journal writing “is an approach that fosters reflection and is an effective source of dialogue between student and teacher” (p.1).

**Journal Recommendations.** While journal writing has been found to aid preservice teachers in reflection, researchers have determined that there is a need for teaching preservice teachers how to reflect more appropriately as to allow for the connection of theory to practice (Beeth and Adaden, 2006; Davis, 2003; Knapp, 2012; Moore, 2003). Participants agreed that the journals would have been more effective if they had followed a semi-structured approach. The journals should be comprised of questions; however, the students should also be able to discuss issues not related to the specific questions. Practicum students appreciated that the journal entries could be flexible, allowing them to ask the instructor questions about their experiences. This flexibility to ask questions helped many, who were trying to make connections between what they were learning in the course and observing in the classroom. However, if the participants had no specific questions or issues that arose, they would have found structured questions beneficial. These findings lead to the need for a semi-structured approach, where students can either follow specific guiding-questions

or discuss individual issues for which they have concerns. The guiding questions should follow Gibbs' Reflective Cycle, allowing students to reflect at the description, feelings, evaluation, and analysis stages. The conclusion and action plan stages may be best suited for other courses, which require practicum students to teach a full lesson. A sample guideline for reflective journals is shown in table 5.3.

*Table 5.3 Guideline for Reflective Journals*

<b>Stage of Gibbs' Reflective Cycle</b>	<b>Guiding Questions</b>
<b>Description</b>	When and where did the lesson take place? What was the objective of the lesson? What did you do during the lesson? What did the cooperating teacher do? What did the students do?
<b>Feelings</b>	What were you thinking and feeling during the lesson? How do you think other people felt during the lesson? How did you feel after the lesson?
<b>Evaluation</b>	What was positive about the lesson? What was negative about the lesson? What pleased, interested, or was important to you? What went well (what worked)? What needs improvement? What did you and other people do to contribute to the lesson (either positively or negatively)?
<b>Analysis</b>	Did you find any similarities between what you are learning in the course and your observations? Consider what went well and write why you think it went well. Consider what went badly and write why you think it went badly. What similarities or differences are there between this experience and other experiences? What are some questions you have as a result of this observation?
<b>Open-ended Prompts/Questions</b>	
<p>Discuss what stood out to you during this observation. This could be anything from good ideas you would like to use for classroom management, quotes you see on the walls, good interaction with students, useful teaching strategies, etc.</p> <p>Is there anything you would have done differently in your classroom that you believe would positively affect the students?</p> <p>How did this observation allow you to compare theory and practice?</p>	

**Instructor Feedback.** Prior research suggests that reflective journals are a way for university instructors to maintain continuous communication with their students (Rodgers, 2002) while also providing the instructors with insight into their students' ability to reflect on experiences (Bean & Stevens, 2002). In this study, instructor feedback helped practicum students make connections between what they were learning in the course and observing in the classrooms. This discourse, between the instructor and participants, served as a tool for strengthening the reflection process.

All of the interview participants spoke about the importance of receiving specific feedback from the instructor. In fact, Erica discussed how the feedback she received from the instructor helped her make connections between education and her observations, more so than what she was learning in the course. Asking questions and receiving timely, specific feedback allowed students to deepen their reflection process and challenge their thinking. Erica said, "It's better to get validation from the instructor so they can push you to think about things further," and William said, the feedback challenged him to "look beyond what was actually happening at face value in the classroom and to take a deeper walk into the classroom management styles." The findings of this study concur with prior research, which suggests that reflection journal feedback allows supervisors to facilitate learning by helping students connect theory and practice (Taggart & Wilson, 2005). Participants' reflective journals and subsequent instructor feedback provided an "effective source of dialogue between student and teacher" and was "an approach that foster[ed] reflection" (Krol, 1996, p. 1).

Future practicum courses should incorporate classroom observations, which are followed by written reflective journals and specific feedback from the instructor. Findings from this study also suggest that it may be helpful to use the reflective journals as part of the course discussion, allowing practicum students the opportunity to share their experiences with each other, and discuss the connections they are making during their observations.

**Practicum Student Participation.** Prior research emphasizes the importance of practicum opportunities, which give prospective teachers or those with interest in education the opportunity to observe teaching and to learn first-hand while also studying pedagogy (Ghaye, 2011; Khanam, 2015). In this course, students, who were able to participate during their observations, often had more profound reflections, and also expressed their opinion that the course was beneficial in their career decisions. Participants who reflected from an emic/etic perspective were able to view the classroom from the insider and outsider perspective. Unfortunately, thirty percent of the participants only reflected from an etic perspective and did not have an opportunity to participate during classroom observations. Many of the participants stated in the exit survey, post-course questionnaire, and follow-up interview that they wish they had the opportunity to participate more within the classroom. Since practicum programs help prospective teachers and others develop an idea of what teaching involves and requires (Darling-Hammond and Bransford, 2005), future programs should encourage students to take on an active role while observing in the classroom; as opposed to merely observing from an etic (outsider) perspective. This could

be done by requiring that participants teach or co-teach a mini-lesson or design a lesson plan, activity, or homework assignment as part of the requirements of this course. Due to the 12-hour observation time and participants only receiving one credit hour, requiring practicum students to teach a full lesson, may be unrealistic. However, tutoring students, grading papers, assisting the teacher, and helping in the classroom enables practicum students to feel as if they are a part of the class, thus, allowing them to see themselves in the role of a teacher. Any attempt to increase college students' participation in the classroom will help them reflect from an emic perspective when writing reflective journals. Since 83% of students, who said they plan to pursue a career in teaching, also reflected from an emic and etic perspective, future programs should focus on ensuring that participants have the opportunity to engage in hands-on experiences that will elicit reflections from an emic perspective.

All of the interview participants discussed how their participation in the classroom was a beneficial part of the course. In his interview, William said the course would have been more helpful "had [it] been a little more hands-on with the students rather than just kind of sitting in the back of a classroom." He also said, "STEM majors are going to be hands-on learners, so they're not really going to experience the full effect if they can't get their hands dirty." Providing hands-on experiences will allow prospective teachers and others to scaffold their learning; thus making connections between theories, they are learning as part of their coursework and observations they are experiencing in real classrooms. (Yost, Sentner, & Forlenza-Bailey, 2000).

Participants felt that teaching a lesson, given the time restraints of this course, would not be appropriate. However, participants did discuss the need for more authentic assignments, allowing for insight and feedback from the classroom teacher and university instructor. In future courses, the classroom teachers could help the practicum students design a lesson or allow them to create a homework or classwork assignment.

**School Classroom Teachers.** Many of the participants who did not find the course beneficial, spoke about a negative experience within the classroom or did not have the opportunity to participate. Anna said, "The classroom I was in was a very encouraging atmosphere. If I had ended up with a teacher that I didn't click with as well...it may have pushed me away." Participant's responses suggest that having an adverse observation experience could negatively affect their decision to consider teaching as a possible career choice. When analyzing student reflection journals, the researcher found that several of the students who had more in-depth reflections only reflected at the conclusion and action plan stage because they had a negative experience and felt that the lesson could have been improved. While the negative experience helped the students reflect at a more in-depth stage of reflection; it could have also been the catalyst for their decision to not enter teaching.

Findings from this study support the need for well-trained school classroom teachers, who support the university's vision, and who are willing to let practicum students take on an active role in the classroom. Effective teachers

who host practicum students can help these students as they attempt to make connections between theory and practice.

All of the interview participants discussed observing two different teaching styles, either both in this course or as part of this course and other courses. They found observing in two classrooms to be a beneficial way of making connections between theory and practice. Offering two placements, within the same high school or middle school, could help practicum students juxtapose their observation experiences. It could also help ensure that students receive at least one positive classroom environment.

### **Recommendations for Early Education Practicums**

Based on these findings, participants of this study and the analysis of their suggestions say early education practicums should focus on implementing a semi-structured reflection journal, after classroom observations, in early practicum courses aimed at recruiting STEM majors to the field of education. The journals should include two options for practicum students to choose from: 1) Structured questions, following Gibbs' Reflective Cycle, which will require students to reflect at the description, feelings, evaluation, and analysis stages of reflection; or 2) An open-ended prompt, allowing students to discuss pertinent issues that arose during their observation. Either option should also include practicum student-derived questions to the instructor. Participating students should be encouraged to ask the instructor questions, seeking feedback from the instructor, thus deepening his or her reflection process.

Future studies should also focus on the aspect of having practicum students observe in two separate classroom environments. In this study, participants who were able to juxtapose classroom observation experiences benefited from the experience. Having two placements could also alleviate the issue of having only negative experiences as part of the observation process.

Participants of this study also suggest that being given an opportunity to assist within the classroom was essential in their decision to decide on a career path. Suggestions included creating assignments, helping with homework, tutoring students, and teaching a mini-lesson with the help of the classroom teacher.

Beeth and Adadan (2006), Davis (2003), Knapp (2012), and Moore (2003) discussed the need for teacher educators to enhance preservice teachers' reflection by guiding them to reflect more purposefully, and by finding ways to bridge the gap between theory and practice. Two observation sites, combined with the aforementioned semi-structured journals, where students can have hands-on involvement, could facilitate students in attaining a more in-depth reflection. Strengthening the reflection process could be essential to aiding STEM majors, and other prospective teachers, in their career decisions and possible choice to become a teacher.

### **Recommendations for Future Research**

Several implications for future research emerge from this study. The recommendations for early education practicums, presented in the previous section, should be included in future research studies, which are aimed at



recruiting STEM majors into teacher preparation programs. Implementing semi-structured reflection journals, encouraging practicum students to ask questions when writing reflective journals, and observations in two different classroom environments are recommended areas of focus for future early education practicum courses and subsequent research studies.

Participants' views on how to improve the current course, EDSE 210, vary. Some practicum students recommend that the course should include more observation time in the classroom, more time in the on-campus class, or the added requirement of teaching a lesson. Others disagree with these recommendations, stating that the stipend and 1-credit hour are not sufficient for the increased workload. Future study should focus on how a one-hour credit course, designed as an introduction to teaching session and as a recruitment tool for college students who are majoring in STEM disciplines, could be better designed to increase effectiveness.

Since this study is focused primarily on the viewpoint of non-Hispanic white, females, future research should focus on the perspective of males and females from various races/ethnicities. Future research should also focus on how participants who do not plan to teach view early practicum course, as this study does not offer the full picture of that perspective since no one who does not intend to teach agreed to participate in the follow-up interview. Determining why college students choose not to enter teaching, after taking the course, will help guide the development of future courses, by assisting in the improvement of

approaches and strategies that can be used to support the recruitment of teachers.

Previous research on the recruitment of STEM majors has focused on job shadowing, STEM days, NASA Aerospace teacher programs, and science internships (Hubbard, Embry-Jenlink, & Beverly, 2015; Worsham, Friedrichsen, Souci, Barnett, & Akiba, 2014; Tomanek & Cummings, 2000); however, there was a lack of empirical research on the impact of using a teaching practicum course for the recruitment of STEM majors to the field of teaching. This study adds to the literature on teacher recruitment, specifically the recruitment of STEM majors. In line with previous research, indicating that recruitment focus on first-year college students majoring in mathematics and natural sciences (Plecki, St. John, & Elfers, 2013), this study focused on freshman and sophomore mathematics and science majors. Prior research also indicates the need for recruitment programs that give students the opportunity to observe and teach in classrooms (Fineus & Fernandez, 2012). This course coincides with this literature, as the course focused on the intertwining of university coursework and field experience, through a practicum program, which allowed students the opportunity to make connections between theory and practice (Darling-Hammond & Bransford, 2005).

The Theoretical Framework of this study is not typically used in educational research; however, this study can serve as a guide for future researcher focused on the study of early practicum courses. When selecting the framework for this study, the researcher knew that Kenneth Pike's theory of Emic

and Etic Perspectives (1967) was appropriate, because the switch from emic to etic when observing in a classroom, as the pre-service teacher, is an experience teachers know well. Every pre-service teacher has had the experience of entering a classroom as an outsider and viewing everything from an etic perspective, and then over-time transitioning to an insider within the classroom and observing events from an emic perspective. This is the case with successful practicums. This study indicates if a pre-service teacher is not given the opportunity to participate and take part in the lesson in some way, they will remain an outsider, and perhaps never see themselves as a teacher.

Gibbs' Reflective Cycle (1988) is part of the frame that is similar to other reflection models used in education classes. Education majors and teachers understand the importance of being a reflective practitioner because reflection is an integral part of education courses (Morrison, 2009; Rodgers, 2002). An early practicum course is an appropriate time to introduce the concept of reflection and reflective journaling to pre-service teachers and help them begin to see the power of reflection and feedback. This study suggests offering a structure that guides students to reflect thoughtfully and critically, along with providing feedback and support from the course instructor, is essential to pre-service teacher growth.

Phenomenology houses this blend of Gibbs' Reflective Cycle (1988) and Pike's Theory of Emic and Etic Perspectives (1967), allowing the researcher to remove herself/himself from the data and analyze it objectively, while knowing as an educator that the framework will help in determining the depth of reflection

and angle of perspective for the participants. This study suggests this framework could be used in other practicum courses as a way of helping the researcher convey an accurate view the participants' experiences and an authentic account of how they perceive teaching and learning within a classroom. The shared phenomenon of this study is an early practicum course designed to recruit STEM majors into teaching (EDSE 210); however, the shared phenomenon of all teachers and pre-service teachers is the experience of a series of classroom observations, where they transition from a college student sitting in a K-12 classroom to a prospective teacher.

## **Conclusion**

This study suggests early practicum experiences are an effective way of helping STEM majors determine if teaching an appropriate career choice. Students who took the course from 2013-2015 (n=49) answered questions in an exit survey, which revealed that 96% of participants (n=47) found the course helpful in deciding if teaching was an appropriate career choice. While all students who took the course did not choose to enter teaching, these findings represent the success of this course in helping completers determine if teaching is an appropriate career choice for them or not. Exit survey data also revealed that 49% of participants (n=24) said they planned to pursue a teaching certificate or degree. Due to the limitations of this study, which relied on former participants' contribution, the number of students who entered the teaching profession is unknown. Out of the 18 who answered the post-course questionnaire, nine are either currently teaching or pursuing a bachelor's or master's degree in teaching,

seven say they would still consider teaching as a profession, and two said they would not consider teaching as a career option. Even if college students do not immediately choose to enter education, the course may plant a seed and result in a future major or career shift to the field of education, as was the case for William in this study.

It appears that around 50% of completers either entered or at one-time planned to enter the teaching profession; however, the success of this course is not in that it necessarily produces more teachers but that it helps potential teachers decide if they want to go into the teaching field. Early practicum courses offered to STEM majors, who are prospective teachers, may help reduce teacher attrition by helping those potential teachers or teacher-candidates determine if teaching is an appropriate career path. As some of the participants said, it served as a “reality check” or solidified their plans to teach. It is also worth noting that this class is also a means for informing STEM majors about the Noyce Grant available to them if they decide to pursue teaching. Based on survey data, 88% of the college students (n=43) who took the course did not know about the Noyce Program before taking EDSE 210.

An early education practicum course for STEM majors is an effective introduction to teaching because it allows students to acquire basic pedagogy instruction from a university professor and time to observe and implement what they have learned in a real classroom. Being in the classroom as the teacher is not the same as being a student, and a practicum course explicitly aimed at STEM majors is one way to allow them to see teaching from a new perspective.

The course can serve as a "reality check" for STEM majors who need to solidify their decision to enter education or confirm their desire not to enter the field of education. Both are essential aspects of recruiting teachers who are highly qualified and effective in the classroom.

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## APPENDIX A: POST-COURSE QUESTIONNAIRE

### 1. First Name

### 2. Last Name

### 3. Are you currently attending college as an undergraduate?

- Yes
- No

If so, what is your current major? (If this question does not apply to you, then please type N/A)

### 4. Do you have a bachelor's degree?

- Yes
- No

If so, what degree did you earn? (If this question does not apply to you, then please type N/A)

### 5. Please choose which applies to you.

- I have a master's degree.
- I plan to pursue a master's degree in the future.
- I am currently pursuing a master's degree.
- I do not have a master's degree, nor do I plan to pursue one.

Please list the master's degree you have already earned or plan to obtain. (If this question does not apply to you, then please type N/A)

### 6. Do you have teaching credentials?

- Yes
- No

### 7. Are you currently a teacher?

- Yes
- No

**8. If you are currently a teacher, what subject do you teach? (If this question does not apply to you, then please type N/A)**

**9. If you are not a teacher, what is your current career? (If this question does not apply to you, then please type N/A)**

**10. If you are not a teacher, would you consider teaching as a possible career choice in the future? (If this question does not apply to you, then please type N/A)**

**11. The practicum in education course was beneficial for you in terms of helping you decide on a career path.**

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree

Why or why not?

**12. If you remember, you spent at least 12 hours in a high school classroom. After each visit, you completed a brief journal entry where you listed at least two positive things you observed as well as other observations you wanted to mention. Do you feel that these journal entries, you completed after each observation, were a helpful part of this course?**

- Yes
- No

Why or why not?

**13. Would you recommend this course to others?**

Why or why not?

**14. Do you have any additional comments you would like to share about your participation in this course?**

**15. Are you willing to participate in a follow-up interview to discuss your views in more detail?**

- Yes
- No

**16. Method of interview preferred**

- Phone
- Skype

- In person
- I do not want to participate in an interview

**17. Preferred Phone Number**

**18. Preferred Email Address**

## APPENDIX B: SEMI-STRUCTURED INTERVIEW QUESTIONS

When taking the course, you took classes on campus and observed at least 12 hours in a high school classroom, after which you completed a brief journal entry.

Were you able to make connections between what you were learning in the course and what you observed in the high school classrooms?

If so, what helped you make this connection?

If so, how did you make those connections?

If not, what could have been done differently to help you make this connection?

How did the feedback you received from the course instructor help you make connections between what you were learning in the course and your classroom observations?

Did you find feedback from the instructor to be a beneficial part of the journal writing process?

How could the reflective journals have been more beneficial?

What did you find to be beneficial or difficult about keeping a reflective journal?

Do you think the reflective journals would have been more beneficial if you would have had structured questions as opposed to open-ended prompts? Why?

Do you feel that the course would have been as beneficial without the use of reflection journals? Why?

What would you do to improve the course? Do you believe that teaching a lesson, as part of your practicum course experience, would have made the course more helpful to you?

How did this course impact your view of teaching as a profession?

How do you feel this course impacted your career decisions?

Did this course have any effect on your decision to obtain a bachelor's or master's degree in your respective field? If so, how? If not, why not?

Do you think you would have entered teaching if it had not been for this course?  
Why or why not?

Do you think you would be considering teaching as a possible career choice if it  
had not been for this course? Why or why not?

Are there any other thoughts or comments about the course or your experience  
in the course you would like to share?

## APPENDIX C: EDSE 210 SYLLABUS

### EDSE 210: Practicum in Education Teaching Science or Mathematics in Middle and High Schools

#### I. Descriptive Information

- A. Course number and title: EDSE 210: Practicum in Education
- B. Catalog description: A sequence of supervised practica in various educational settings. Seminar and group discussions included.
- C. Course credit: One (1) hour
- D. Prerequisites: none
- E. Intended audience: undergraduate science and mathematics majors interested in becoming high school teachers
- F. Instructor: Dr. Jan A. Yow, Wardlaw 224, 777-2472, jyow@sc.edu

#### II. Course Goals and Objectives

- A. Goals:  
To provide science and mathematics majors experience in middle and secondary school classes so as to appreciate the rewards and challenges of teaching science or mathematics.
- B. Objectives
1. The student will become knowledgeable about current standards and practices for teaching science and mathematics.
  2. The student will participate in discussions related to practical experiences gained in middle and high school science and mathematics classes.
  3. The student will, at a minimum, serve for 12 hours in a high school science or mathematics class.

#### III. Required Text

None.

#### IV. Academic Course Requirements

1. Practicum experience in middle and high school classrooms for at least a total of 12 hours.
2. Participation in discussion of issues related to teaching and learning science and mathematics.

#### V. Administrative Course Requirements



1. Consistent with the undergraduate Class Attendance policy, students may not miss more than 10% scheduled class sessions. Missing more than 1 scheduled class meeting may result in lowering the course grade one letter grade for each absence.
2. Students must complete the minimum 12 hours of practicum time in school classrooms to pass the class.
3. Research: Information gathered in this class may be used for research purposes to better understand mathematics and science teaching in an effort to improve teacher profession satisfaction and retention. If you do not want your information used, please email the instructor, [jyow@sc.edu](mailto:jyow@sc.edu), to inform her of your choice. Your decision to not include your information in the research will not impact your grade in this course and you may choose to withdraw your information at any time. Materials chosen for the research will be anonymous.

#### VI. **Evaluation and Grading**

There are no examinations. Students are graded on their participation in discussions, their completion of field work, and the input provided by the teachers in whose classrooms they are placed.

The final grade is determined on the following basis but grade of C+ or D+ will NOT be assigned:

1. Field Hours (Time Log)/ Reflections  
50%
2. Discussion Participation/Class Assignments  
25%
3. Cooperating Teacher and Instructor Input  
25%

**\* Reflections need to be posted in Bb Assignments within a week of each practicum visit. All time logs are due April 24.**

- A: Completed the required field hours (at least 12), journal, class assignments, and course instructor and teacher assessed performance as exemplary.
- B+: Completed the required field hours (at least 12), journal, and class assignments, but either the course instructor or the teacher assessed the performance as slightly less than exemplary.
- B: Completed the required field hours (at least 12), journal, and class assignments, but either course instructors or the teachers assessed the performance as satisfactory but not exemplary.
- C: Completed the required field hours (at least 12), journal, and class assignments, but both the course instructors and the teachers assessed the performance as satisfactory but not exemplary.
- D: Completed the required field hours (at least 12), journal, and class assignments, but the performance in either the course discussion or in the field was assessed as unsatisfactory.
- F: Did not complete the required field hours.

## VII.

### Course Topics

January 16	Introduction to Practicum, Input on Placements
January 23	Joint Meeting with Noyce Scholars WD 126, 4:30-6
January 30	Teaching Options (MT, PACE, TFA); Science and Mathematics Standards
February 6	No Class (field work begins)
February 13	No Class (field work)
February 20	Discussion
February 27	No class (field work)
March 6	No Class (field work)
March 13	No Class (Spring Break) <b>DUE: At least 4 hrs of field work (&amp; journals)</b>
March 20	Discussion (possible Joint Meeting with Noyce Scholars: TBA)
March 27	No Class (field work)
April 3	Discussion <b>DUE: At least 4 hrs of field work (&amp; journals);</b>
	<b>Teacher Video</b>
	<b>Discussion WriteUp</b>
April 10	No Class (field work)
April 17	No Class (field work)
April 24	Joint Meeting with Noyce Scholars WD 126, 4:30-6 <b>DUE: At least 4 hrs of field work (&amp; journals)</b>