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From the Editor

Dear Readers of *The Field Experience Journal:*

This edition of *The Field Experience Journal* begins with a submission from Lina Soares, Catherine S. Howerter, Kathleen Crawford, and Kathleen Tootle of Georgia Southern University. Their article, *Implementing Co-Teaching in Higher Education: Pedagogical Innovations in Field Experiences* shares how co-teaching became infused in a teacher preparation program.

Mark Montgomery and Paula Griffin of Stephen F. Austin University share how they guide teacher candidates enrolled in field experience and math methodology courses to engage children to address how math will be used in the real world in *Mathematics Career Carnival: Integration of Content, Pedagogy, and Authentic Learning.*

The Promise of Practice: Alternative Field Experiences for Pre-service Teachers in Elementary Science submitted by Patricia Bills from Northern Kentucky University describes alternative field experience projects designed to increase prospective teachers' confidence with and knowledge of teaching science.

Cynthis Tyner and Britney Graber present a qualitative study titled *A Qualitative Study on Cross-Cultural Skills Growth: An International Teaching Practicum in the Philippines* examining the effects of an international experience on cross-cultural skills.

International Teaching – How Do I Get That Job? is an article from Haley DeVos-Roy and Larry J. Corbett of Central Michigan University in which the authors detail what is required for an instructor to get hired for a teaching position in an international school.

Learning Together: Benefits of Focused Language and Literacy Instruction for ELLs by Pre-Service Teachers in a Course-Based Field Experience by Debra A. Giambo and Niurka Castro-Curet conducted a study that explored the effects of a course-based university field experience with elementary school English language learners (ELLs) over seven semesters.

Katrina A. Hovey, Endia J. Lindo, and Bertina H. Combes provide a review of literature pertaining to Response to Intervention (RtI) framework in *Pre-Service Teachers' Field Experiences with Key Components of Response to Intervention: A Systematic Review.* This review of the literature from 2004-2016 examines the field

experiences of pre-service teachers related to using key components of the RtI.

Finally, my thanks to those who have contributed their manuscripts for our consideration and to our reviewers for their time and expertise.

Kim L. Creasy

Implementing Co-Teaching in Higher Education:

Pedagogical Innovations in Field Experiences

Lina Soares, Catherine S. Howerter, Kathleen Crawford, and Kathleen Tootle

Georgia Southern University

The distinguished educational researcher, John Goodlad, (1990) once said,

> The education of teachers must be driven by a clear and careful conception of the educating we expect our schools to do, the conditions most conducive to this educating (as well as the conditions that get in the way) and the kinds of expectations that teachers must be prepared to meet. Further the renewal of schools, teachers, and the programs that educate teachers must proceed simultaneously. (p. 3)

As an influential educator, John Goodlad (1990) stood on the forefront of educational reform. Goodlad (1990) advocated for schools and teacher education programs to work in unison to advance student learning. To Goodlad (1994), reform was viewed as a renewal; a renewal to fundamentally change teaching and learning by promoting educational quality through democratic practices in the classroom.

Today, the need for collaboration among teacher education programs and P-12 schools is significant. The development of highly-qualified teachers who possess a strong set of skills that include the content knowledge, pedagogical skills, and professional dispositions (Goodwin, 2010; Villers & Mackisack, 2011) to become effective teachers is no easy task due to the ever-increasing diversity in today's schools (Darling-Hammond, 2006). In addition, federal legislative mandates, such as the Individuals with Disabilities Education Improvement Act (IDEA) reauthorized in 2004 (Pub. L. No. 108- 466) and the No Child Left Behind (NCLB) Act of 2001 (Pub. L. No. 107–110) reauthorized in 2015 as the Every Student Succeeds Act (ESS) were passed to ensure all students have equal access to educational opportunities under the guidance of highly-qualified

teachers. This combination of increasing student diversity and federal reform mandates have been the impetus for many schools of education to change the face of their teacher education programs in order to prepare teacher candidates to meet the needs of all students with whom they will teach. One instructional model that holds promise is co-teaching. Co-teaching is generally viewed as an instructional model implemented by a regular education teacher and a special education teacher to instruct students of diversity in a general education classroom (Cook & Friend, 2010; Friend, 2008; Murawski, 2009; Salend, 2001).

Recognizing that the success of our initial teacher certification programs are a collaborative effort with our partner schools, we present a discussion on the implementation of co-teaching within our Educational Preparation Program (EPP). As teacher educators, we agree with Bacharach, Heck, and Dahlberg, (2010) that the preparation of pre-service teachers must address co-teaching through coursework and implemented in field experiences. Our purpose in doing so is to fortify our teacher candidates with the most effective instructional delivery models and pedagogical tools to be prepared for their future classrooms. Moreover, we believe this is what Goodlad (1988) intended – the "renewal" of our educator preparation program in response to our partner schools' needs.

We begin with a brief discussion on the meaning and models of co-teaching, followed by a discussion on the literature from the field and the theoretical framework that supports co-teaching as applied in our preservice field experiences. For purposes of this paper, we then delineate how each individual program within our EPP has implemented co-teaching (early childhood education, special education, dual certification education, and middle grade education) as a potential reference for other teacher education programs who may wish to implement co-teaching as an instructional model.

Co-Teaching Overview

According to Friend, Cook, Hurley, Chamberlain, and Shamberger (2010), co-teaching is a model of teaching that is typically implemented as a partnership between a general education teacher and a special education teacher for the purpose of improving learning for students with special needs in the general education classroom. Additionally, co-teaching can be defined as the collaboration between two individuals to plan, instruct, and assess a single group of students (Cook & Friend, 2010; Murawski, 2009; Salend, 2001). In the case of our programs the two individuals can be two teacher candidates or a teacher candidate and a mentor teacher working together. Because co-teaching involves collaboration, McKenzie (2009) asserts that co-teaching is collaborative teaching and can be implemented using Cook and Friend's (1995) six different instructional models: one teach-one observe, one teach-one assist, station teaching, parallel teaching, alternative teaching, and team teaching (see Table 1).

Table 1. *Co-teaching Models.*

Model	Description
One Teach-One Observe	Teacher candidate observes the mentor teacher deliver content to the entire class and records data that is focused on a specific skill (e.g., behavior management, questioning techniques).
One Teach-One Assist	Mentor teacher delivers content to the entire class while the teacher candidate assists with assigned students or as needed throughout the lesson.
Station Teaching	Mentor teacher and teacher candidate deliver different content to three to four small groups, which rotate over the class period or days.
Parallel Teaching	Mentor teacher and teacher candidate deliver the same or similar content to two equal groups of students (heterogeneous or homogenous).
Alternative Teaching	Mentor teacher or teacher candidate deliver content to a large group of students while the other does one of the following with a small group of students: research, pre-teach, or enrichment.
Team Teaching	Mentor teacher and teacher candidate deliver content in tandem to the entire class.

Although co-teaching to date is typically implemented in the P-12 setting, there has been a shift to integrate co-teaching as an instructional model in teacher preparation programs (Heck & Bacharach, 2016). In fact, Bacharach, Heck, and Dahlberg, (2010) challenged teacher preparation programs to include co-teaching in the preparation of new teachers, offering the preparation should include coursework or training on co-teaching and the integration of co-teaching into fieldwork. In conjunction, Young (2011) called for the need to prepare general and special education teacher candidates to co-teach in an inclusive classroom because students with disabilities spend a large amount of time in the general education classroom.

This shift towards co-teaching with teacher candidates occurred in the early 2000's at St. Cloud University, aided by a Teacher Quality Enhancement Partnership grant (Heck & Bacharach, 2016). The research conducted at St. Cloud University found that elementary classrooms with co-taught student teaching resulted in elementary school students preforming at a higher rate on state math and reading assessments then the classrooms with the traditional student teachers (Bacharach, Heck, & Dahlberg, 2010). Additionally, student teachers in the co-taught setting performed at a higher rate than those in the traditional setting (Bacharach, Heck, & Dahlberg, 2010). In 2014, Baeten and Simons (2014) conducted a review of the literature, which indicated that co-teaching had a positive impact on teacher candidates, mentor teachers, and their students. These findings included increased support and professional growth for teacher candidates, a decreased workload for mentor teachers, and learning gains with increased support for learners (Baeten & Simons, 2014). The National Council for Accreditation of Teacher Education's 2010 report indicated the need for a stronger link between the theoretical of teaching and field experiences in the classroom. One way to bridge this gap is through the use of co-teaching with mentor teachers and teacher candidates in planned and supported field experiences.

Theoretical Framework

Co-teaching is difficult to conceptualize as evidenced by the lack of consensus among researchers. Johnson and Johnson's (2009) Theory of Cooperative Learning, Organization Culture (Schein, 1990), Activity Theory (Engeström, 1993), and Distributed Cognition Theory (Salomon, 1993) have all been applied as various theories to understand individuals working together in a social context. However, Bandura's (1986) Theory of Collective Efficacy, a sub-theory within Bandura's (1977) Social Cognitive Theory, serves as the theoretical foundation that supports our understanding of co-teaching in a school context.

The Social Cognitive Theory (Bandura, 1977) embraces the concept of human agency. In other words, individuals can intentionally act to shape their lives. The second important construct of Social Cognitive Theory is efficacy which is the perceived belief individuals have that they have the ability to set their desired goals and enact the necessary tasks to obtain those goals (Bandura, 1997). According to Bandura (1997), efficacy can determine not only people's goals and desired outcomes, but their commitment to achieve the goals or the lack thereof. While the conceptions of human agency and efficacy have most predominantly focused on individual behaviors, individuals do not exist in a vacuum; therefore, Social Cognitive Theory further embraces the construct of collective efficacy.

Collective efficacy can be described as the belief that is shared by individuals working together with a common goal and the individuals cull together their strengths to achieve the goal (Bandura, 2000). When the concept is applied to the school setting, collective efficacy refers to teachers' shared beliefs that as a group they can enhance student achievement. The group functions as a whole to achieve this outcome. For purposes of this paper, collective efficacy reflects the shared beliefs held among our teacher candidates, the special education and regular

education teachers in our partner schools, and our university professors and supervisors who have engaged in co-teaching as a commitment to engage all P-12 students in their respective curricula and to enhance all P-12 students' educational achievement.

The Implementation of Co-Teaching

From a collective perspective, the implementation of co-teaching was designed to support the needs of teacher candidates in the teacher preparation program at our university and to fulfill the needs of our partner schools. The university is located in a rural portion of the Southeastern United States and teacher candidates are placed within a 60 mile radius for their field experiences with partner schools. The teacher preparation program is housed in the College of Education (COE) in the Department of Teaching and Learning. There are a total of four programs that lead to initial teacher certification and include: Early Childhood Education ([ECED], grades P-5); Special Education ([SPED], grades P-12); Dual Certification ([ECED/SPED], grades P-5), and Middle Grades Education ([MGED], grades 4-8). All four programs are committed to implementing co-teaching to meet the needs of the individual program, teacher candidates, and P-12 learners in our partner schools.

Overview of the Early Childhood (Elementary) Education Program

The early childhood program in our EPP is a program that results in a degree in P-5 elementary education. The program consists of a combination of coursework offered on campus and in school settings, as well as field placements in P-5 classrooms. The program includes several courses for teaching P-5 students in all subject areas that include Language Arts, Mathematics, Science, and Social Studies (see Table 2).

Methods I. Teacher candidates in the second semester of the ECED program complete a 130 hour field placement in a P-5 classroom with a peer. It is during Methods I that ECED teacher

candidates are first introduced to co-teaching. The candidates participate in a co-teaching seminar where the emphasis is placed on the one teach – one assist model. The purpose is to provide the opportunity for the ECED teacher candidates to plan instruction that permits the peer partners to collaborate on the preparation of instructional lessons.

Table 2. *Co-Teaching in Courses Early Childhood Education.*

Course	Overview
Methods I	130 hour field placement
	Pre-kindergarten to 5th grade classroom
	Paired peers
	Co-teaching seminar
	Co-plan for one teach-one assist model
Methods II	130 hour field placement
	Pre-kindergarten to 5th grade classroom
	Paired peers
	Co-teaching seminar
	Co-plan and co-teach one lesson
Student Teaching	16 week placement in Pre-kindergarten to 5th grade classroom
	Co-plan and co-teach with mentor teacher throughout the semester

Methods II. Like Methods I, Methods II in the ECED program consists of a total of 130 hours of field placement and is completed in a P-5 classroom. Teacher candidates attend a seminar whereby co-teaching models are taught and strategies for lesson planning with a peer are presented. Following the seminar, the teacher candidates are required to plan and teach a total of nine lesson plans; one instructional lesson is co-taught of their choosing.

Student teaching. As of this writing, co-teaching is not formally required during the student teaching semester in the ECED program. However, the teacher candidates are encouraged to co-plan and co-teach with their mentor teacher to support student learning.

Overview of Special Education Program

The SPED program at GSU prepares teacher candidates to provide instruction and classroom management in the P-12 setting for diverse learners with mild disabilities in both the resource environment or through a collaborative model in the general education environment. The program consists of a combination of coursework offered on campus and in-school settings, as well as field placements in resource classrooms and inclusive settings. The program of study aligns with the Council for Exceptional Children's (CEC, 2005) ethical principle and practice standards to ensure prepared candidates for entry-level teaching (see Table 3).

Table 3. *Co-Teaching in Courses Special Education.*

Course	Overview
Methodologies of Instruction	Teaching in P-5 special education settings Teaching in 6-12 special education settings Paired with peer for field placement in inclusive classrooms Observations of co-teaching Co-plan one instructional lesson
Inclusive Practices	Teaching students in inclusive environments Overview of co-teaching seminar Co-plan lessons of instruction
Practicum III	120 hour field placement Pre-kindergarten to 5th grade in resource room or inclusive classroom Paired peers Co-plan four lessons Video record co-taught lessons
Practicum IV	120 hour field placement 6th to 12th grade in resource room or inclusive classroom Paired peers Co-plan four lessons Video record co-taught lessons
Student Teaching	16 week placement in Elementary or middle/high school Co-plan and co-teach with mentor teacher throughout the semester One video recorded co-taught lesson

Inclusive practices in Special Education. In the third semester of the SPED program as a co-requisite to Practicum III and Practicum IV, the teacher candidates take a course entitled Inclusive Practices. This course focuses on the best practices for teaching students with diverse needs in inclusive environments. As part of the coursework, the teacher candidates are required to co-plan the collaborative lessons to be taught in Practicum III and Practicum IV. This structured work time allows for direct feedback from the course instructor and the time to effectively collaborate on the lessons to be taught in Practicum III and Practicum IV.

***Practicum III*.** Teacher candidates in the first six weeks of the third semester of the SPED program complete 120 hours of field placement in either a resource special education classroom or an inclusive classroom at the P-5 grade level. In this placement, teacher candidates are paired with a peer partner and they each teach a total of five standalone lessons and four co-taught lessons. Teacher candidates video-record their co-taught lessons and individually respond to reflective prompts regarding the effects on student learning using the co-teaching model.

***Practicum IV*.** In the second six weeks of the third semester of the SPED program, teacher candidates complete another 120 hour field placement in either a resource special education classroom or an inclusive classroom, but this experience is in a 6-12 classroom. The teacher candidates are paired with the same partner as the Practicum III experience and the teacher candidates each teach a total of eight standalone lessons and two co-taught lessons. In addition, the teacher candidates are required to video-record the co-taught lessons and individually respond to reflective prompts regarding their effectiveness on the classroom students using the co-teaching model.

Student teaching. During the student teaching semester in the SPED program, teacher candidates are placed in either the elementary or middle/high school placement as Practicum

III/IV; however, they are placed individually. This allows the teacher candidate to experience one of the models of a yearlong internship. One of the requirements for student teaching is for the teacher candidates to co-plan and co-teach with the clinical supervisor throughout the semester, as they build up to four weeks of head teaching. One co-taught lesson is video-recorded, and the student teacher writes a formal reflection regarding the effectiveness of the implementation of their co-taught lesson. Clinical supervisors who are unfamiliar with the co-teaching models are provided explicit training by the special education program director so they can best support their student teacher and the learning of their classroom students.

Overview of Dual Certification Program

The dual certification program at GSU is a program that results in a degree in P-5 Early Childhood and Special Education and leads to two certifications: a) general education grades PK-5 and b) special education grades PK-5. The program consists of a combination of coursework of special education and early childhood education courses offered on campus and in school settings, as well as field placements in inclusive (see Table 4).

Methodologies of inclusive P-5 settings. In the first semester of the Dual Certification program, the teacher candidates enroll in a foundational course entitled Methodologies of Inclusive P-5 Settings. This course is co-taught by two faculty members at a local partner elementary school with backgrounds in early childhood education and special education and reflects the traditional co-teaching model of one general educator and one special educator. Additionally, the course requires 30 hours of field placement. With a special emphasis placed on co-teaching, teacher candidates learn to combine methodologies of early childhood curriculum and special education inclusive practices. As part of the coursework and field placement, the teacher candidates are required to co-plan and co-teach a literacy lesson with their partner.

Table 4. *Co-Teaching in Courses ECED/SPED Dual Certification*.

Course	Overview
Methodologies of Inclusive P-5 Settings	Teaching students in inclusive environments Co-taught course 30 hours of field placement Overview of co-teaching seminar Observe co-teaching Co-plan and co-teach one literacy lesson
Methods I	120 hour field placement Pre-kindergarten to 5th inclusive classroom Co-teaching seminar Paired peers Co-plan and co-teach one social studies lesson Video recorded co-taught lesson
Methods II	120 hour field placement Pre-kindergarten to 5th inclusive classroom Paired peers Co-plan and co-teach one science lesson Video recorded co-taught lesson
Student Teaching	16 week placement in Pre-kindergarten to 5th inclusive classroom Co-plan and co-teach with mentor teacher throughout the semester

Methods I. Teacher candidates in the second semester of the Dual Certification program complete a 130 hour field placement in an inclusive classroom. Teacher candidates are provided a seminar in which co-teaching models are reviewed and individualized support is provided during the semester. In this placement, teacher candidates are paired with a new peer partner, and they each plan and teach a total of five lessons. One of these lesson plans is a co-taught social studies lesson that reflects the one teach – one assist model. Each pair of teacher candidates is required to document and submit meeting notes that reflect co-planning for their social studies lesson plan that is turned in for approval. In conjunction, teacher candidates video-record their co-taught lesson and individually respond to reflective prompts regarding their effectiveness as a co-teacher.

Methods II. Similar to Methods I in the Dual Certification program, this 130 hour field placement in an inclusive setting has been adapted to reflect effective co-teaching practices. Teacher candidates in this block are required to plan and teach a total of nine lesson plans, in which one of these lesson plans is a co-taught science lesson that reflects the one teach – one assist model. The P-5 science methodology instructor collaborates with the teacher candidates' university supervisors in supporting the planning and implementation of this co-taught lesson. Resembling Methods I, the teacher candidates are required to document and submit meeting notes that reflect co-planning for their science lesson plan.

Student teaching. During the student teaching semester of the Dual Certification program, teacher candidates are placed in the same school as Methods II; however, they are placed individually in an inclusive classroom. This form of placement provides strong models of co-teaching among general and special educators, and the teacher candidates continuously reflect on these practices and how they impact their own planning and instruction. Additionally, the teacher candidates are required to co-plan and co-teach with their clinical supervisor throughout the semester as they build up to four weeks of head teaching. One co-taught lesson is video-recorded, and the student teacher writes a formal reflection regarding the effectiveness of the implementation of their co-taught lesson.

Overview of Middle Grade Education

The middle grade education program prepares teacher candidates to be responsive to the diverse needs of students in grades 4-8. Central to the program are multiple opportunities for candidates to develop and apply their middle grade curriculum theory, content-specific knowledge, and skills in instructional planning, classroom instruction, and assessment of student learning that are appropriate for middle grade teacher candidates' areas of concentration (language arts, reading,

social studies, math, and science) and grade levels. Throughout the program of study, middle grade teacher candidates complete multiple field experiences (see Table 5).

Table 5. *Co-Teaching in Courses Middle Grades Education*.

Course	Overview
Methods I	200+ hour field placement
	6th to 8th grade in language arts or social studies classroom
	Plan for one teach-one assist model
	Co-plan and co-teach five content-specific lessons with mentor teacher
	Video-record co-teaching lesson
Methods II	200+ hour field placement
	6th to 8th grade in math or science classroom
	Co-plan and co-teach five lessons with mentor teacher
	Video-record co-teaching lesson
Student Teaching	16 week middle school placement
	Co-plan and co-teach six content-specific lessons
	Video-record co-teaching lesson
	Co-plan and co-teach with special education teacher candidate

Methods I. In the second semester of the Middle Grades program, the teacher candidates take Methods I. In Methods, middle grades teacher candidates are required to plan, instruct, and assess a five to six day instructional unit to fulfill course and licensure requirements for teacher certification in either a language arts or social studies classroom. The course also involves a 200+ hour field experience. University supervisors meet with their teacher candidates once a week at the candidates' school placements and during this time, the candidates receive explicit training on the models of co-teaching. During the semester, the Methods I middle grades teacher candidates are required to co-plan and co-teach five lessons in their respective content-specific area with their mentor teachers using the one teach-one assist model of co-teaching. One co-taught lesson is video-recorded and is accompanied by a formal reflection regarding the effectiveness of the implementation of their co-taught lesson.

Methods II. Methods II follows in the third semester of the Middle Grades program with a similar design but the course study and the 200+ hour field experience is math and science. Like Methods I, middle grades teacher candidates are required to plan, instruct, and assess a five to six day instructional unit to fulfill course and licensure requirements for teacher certification in either a math or science middle grade classroom. As part of the coursework and field placement, the teacher candidates are required to co-plan and co-teach five lessons with their clinical supervisor and submit the five co-teaching lesson plans, coupled with meeting notes to their university supervisors for documentation. While the co-teaching emphasis for Methods I teacher candidates is one teach-one assist, Methods II teacher candidates are encouraged to co-plan and co-teach with their mentor teachers using different models of co-teaching. Like Methods I, one co-planned and co-taught lesson is video-recorded and upon completion of the formal field-based teaching, middle grades teacher candidates participate in a detailed debriefing session on the field experience with their university supervisors. It is during this time, the teacher candidate and university supervisor examine the video-taped co-taught lesson together to address the effects on student learning.

Student teaching. The student teaching semester in the Middle Grades program is a period of 600+ hours and is the final semester for the teacher candidates. Under the guidance of the mentor teacher, teacher candidates assume increasing responsibility for leading the school experiences of all learners for whom they teach over a span of 16 weeks. It is also during the student teaching semester that middle grades teacher candidates are required to co-plan and co-teach each of the six models of co-teaching. All co-teaching lesson plans and collaborative notes between the teacher candidate and the mentor teacher are submitted to the university supervisor for documentation. Additionally, one co-taught lesson is video-recorded as a means of deconstructing the teaching experience through self-reflection.

Middle grade and SPED co-teaching. In Spring 2016, the Middle Grades program director and the SPED program director implemented the traditional co-teaching model of one general educator and one special educator by placing a middle grade student teacher with a special education student teacher in a seventh grade middle grades math classroom. The purpose was to provide the opportunity for the two student teachers to share equal responsibility and to collaborate in all areas of planning, teaching, assessment, and classroom management. Each student teacher contributed a unique set of skills to the learning environment as the middle grades student teacher was skilled in the knowledge and pedagogy to teach the math content and the special education student teacher provided the necessary accommodations and modifications to teach seventh graders with varied learning preferences and cognitive abilities. It was a "winwin" for all and it is a co-teaching model that continues to be implemented.

A Final Word

As students in P-12 schools become more diverse, educator preparation programs must find effective ways to prepare their teacher candidates to facilitate student learning. Our response has been to implement co-teaching as one instructional delivery model across all four programs within our EPP. Co-teaching has provided our teacher candidates the opportunity to build their skills of collaboration; skills that are needed in P-12 teaching contexts (Michael & Miller, 2011) and to better meet the academic needs of their diverse students. In addition, we take pride that our work is consistently aligned to Goodlad's (1994) vision of educational renewal because it is only through our work with our partner schools can our efforts to improve P-12 education via teacher preparation be realized.

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Kathleen Tootle is a Clinical Instructor in the Department of Teaching and Learning at Georgia Southern University and the Program Director of the Undergraduate Special Education Program.

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Mathematics Career Carnival:

Integration of Content, Pedagogy, and Authentic Learning

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A question commonly asked during mathematics lessons is, "when are we ever going to use this?" Typically, teachers respond with a variation of an answer that does much to squelch the conversation, but little to help students make real connections between classroom content and real-life experiences. To learn how to answer the age-old question and involve students in real-world connections, pre-service teacher candidates (PSTCs) enrolled in both field experience and mathematics methodology courses engaged local school children in carnival booths meant to show how mathematical skills are put to "work" every day in a variety of careers. School students not only engage in real-world mathematics applications, but they also get to explore a variety of careers that they may consider for their futures. For PSTCs, the opportunity to explore the uses of everyday mathematics and how to communicate that to students in engaging and relevant ways, gave them the ability to flexibly *teach and differentiate* content to a variety of students at varying skill levels (see Figure 1).

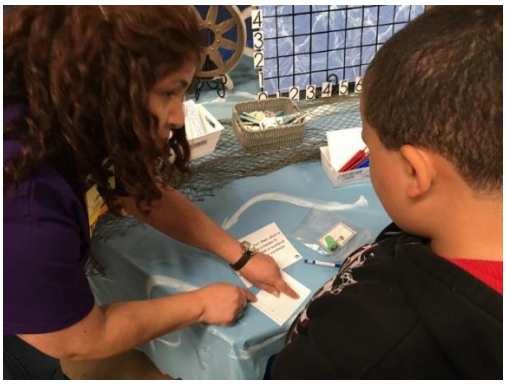

Figure 1: PSTCs differentiate instruction with students.

The Teaching and Learning of Mathematics Content

Research surrounding Mathematics in the classroom supports real-world application of content. Mathematics curriculum should include a focused progression of learning that develops and addresses real-world connections throughout the learning process (National Council of Teachers of Mathematics, 2014). Pre-service teacher candidates must be able to authentically communicate these real-world connections to students in their classrooms through relevant mathematics instruction. Sousa (2008) and the National Research Council (2000) agree that one of the goals of mathematics education should be that students transfer learning gained within the classroom to the world in which they live. The teaching and learning of mathematics should be connected to the real world. According to Sousa, "Learning mathematics is easier when the learner can connect mathematical operations and concepts to solving problems in the real world" (p. 216).

Teacher education programs are responsible for preparing future teachers and equipping them to meet the needs of all students. Equipping future teachers for the 21st century classroom requires a mindset of flexibility integrated with a rich skillset of instructional strategies. Knowing and understanding mathematics content (i.e., numbers, angles, and theories) is only one small piece of effective instruction. It has been suggested that preparing confident and successful teachers for today's classrooms requires teacher preparation programs that focus on effective practices and experiences (Berry, 2010). Others concur and point specifically to the need for authentic and connected field experiences to prepare pre-service teachers for the day-to-day work of teaching (Feiman-Nemser, 2001). Using the Mathematics Career Carnival as a framework, pre-service teachers may engage in just such an experience.

Mathematics Career Carnival

Students enrolled in a field experience course typically engage with students in a very controlled environment. Under the direction of a mentor teacher and university supervisor, the PSTC carefully writes and implements a lesson plan after feedback and support from their mentor. Even the objectives given to teach are carefully selected to be ones with which the PSTC can handle and may not be considered critical for the grade level. Critical objectives are typically saved for the mentor teacher to present. In this environment, the PSTC is mentored and gently guided to improvement in a carefully selected and safe environment. This supportive environment can help the PSTC grow as a teacher, but there are other interactions that are useful for PSTCs to experience as well. For instance, PSTCs need to practice knowing when a lesson needs to be scaffolded, adjusted, or changed completely based on student interactions or how to interact and react to multiple students at the same time, differentiating questioning, task, or activity for each. In addition, PSTCs need to experience teaching in a fun and engaging way that helps the content come alive for students, thereby showing students the usefulness of the subject to their real lives. During the carnival, university professors observe and informally assess each booth and PSTC while they are working with students using simple anecdotal records noting areas of strength and improvement. In addition, whole group discussions were held after each carnival to reflect and provide feedback on the event.

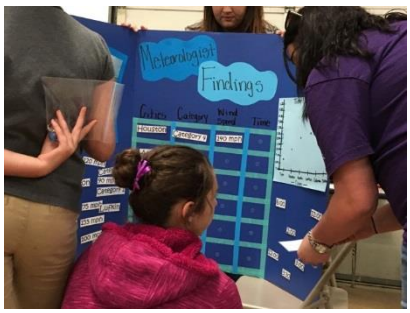

Figure 2: PSTCs practice meaningful application of mathematics.

A Mathematics Career Carnival is just such an event that allows PSTCs an opportunity to engage their students in meaningful application of mathematics skills, while teaching them in a non-traditional setting (see Figure 2). The day begins with buzzing excitement as PSTCs begin to gather and set up their career booths (see Figure 3). Nerves, anticipation, fear, and excitement all seem to be one emotion as they begin to worry that what they created may not be enough, or too difficult, or not difficult enough. They may even worry that they will forget how to teach their content. However, what will not be forgotten, is the impact of the experience and teaching opportunities that they will have throughout the course of the event. Throughout the day, students will be moving freely from booth to booth in small groups, while teachers engaging along with students, a lot of noise, and action, and movement, and mathematics can be seen and heard. Upon closer inspection, it becomes apparent that students are fully engaged in a variety of activities all that help support the state content, problem-solving, and connecting to real-life standards for mathematics.

Figure 3: PSTCs create inviting spaces for learning.

Creating a connection between a selected career and an identified mathematics objective seems easy yet must go much deeper than using the career as a theme and to decorate. PSTCs must carefully design activities to center around the use of grade-level appropriate mathematics skills

in real-life settings. Because so many students may have a limited view of both mathematics and its' usefulness in life, the connection to careers helps students to see that they will need to use what they are learning in the classroom for any job in their future. In addition to impacting their views of the usefulness of mathematics, PSTCs are helping to introduce children to careers that they might find interesting or that they originally thought were not attainable to them (see Table 1).

Table 1: Mathematics Career Carnival Booth Examples

Career	Mathematics Content	Mathematics and Career Connection	Mathematics Career Carnival Activity
Pool Architect	Relating perimeter and area to volume	A pool architect must know how many gallons of water a pool he is going to build holds so that he knows what type of equipment he will need to install.	Students use cubic inch blocks to "build a pool" and then determine the perimeter and volume of the pool.
Travel Agent	Solve multi-step problems using all four operations	Travel agents utilize all four operations when determining total cost of vacations for any number of travelers.	Students utilized a "Disney World Planner Book" to plan and budget for a trip to Disney World, including travel, hotel, meals, and entrance fees.
Veterinarian	Relate fractions and decimals	Medicines are administered to animals in both fraction and decimals formats depending on the size and type of animal.	Students matched equivalent fraction and decimal broken bone pieces. Then they determined amount of medicine needed to administer based on problem-solving situations and recorded what they determined in the patient file (see Figure 1)
Librarian	Ordering decimals	Books are placed on shelves using a numerical system that includes decimals.	Two students were given a stack of books and raced each other to place their books in the correct order on the shelf.

Centering around a carnival theme helps to make the content fun and engaging (see Figure 4). It also helps to facilitate the fast-paced teaching and learning that is happening within the booths. This fast-pace environment is meant to help PSTCs hone their skills of making content relevant, engaging, and individualized. With little time, they learn to be succinct and can distinguish what strategies work to help students and what does not work. Because students are entering the activity at various times, the PSTC must accommodate several students at once, all at

varying places within the activity, and differentiate for each of their understanding. By the end of the entire carnival, the activity and approach that the PSTC started with will likely look very different from what it looked like at the end of the carnival.

Figure 4: PSTCs create games to engage students in real-life mathematics.

The Mathematics Career Carnival creates a unique space where authentic instructional strategies meet real-world application of mathematics teaching and learning. According to Sousa (2008), "Learning mathematics is easier when the learner can connect mathematical operations and concepts to solving problems in the real world" (p. 216). The Mathematics Career Carnival provides PSTCs with an opportunity to validate their own learning about the pedagogy of teaching mathematics. By creating mathematics problems, activities, or scenarios that mimic the same mathematics problems, activities, and scenarios that someone in that career would utilize, PSTCs are able to help their own students make mathematical connections not otherwise made explicit in traditional classroom instruction. It is in this space that PSTCs can expand the understanding, for themselves and their students, of the usefulness of mathematics in the real-world.

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The Promise of Practice: Alternative Field Experiences for Pre-service Teachers in Elementary Science

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Introduction

Elementary pre-service teachers face many challenges when it comes to learning to skillfully teach science. Their early experiences as learners of science impact their self-efficacy (Bottoms, Ciechanowski, & Harman, 2015; Cannon & Scharmann, 1996; Clift & Brady, 2005; Kenny, 2012; Peterson & Treagust, 2014), their content knowledge (Kenny, 2012, Roth, 2014), and their ideas about how science ought to be taught (Roth, 2014). As generalists, elementary teachers are responsible for many subject areas, so fewer opportunities exist to develop deep content and pedagogical knowledge in any one area (Kenny, 2012). Also, there are fewer opportunities to teach science in most elementary schools than mathematics or language arts, resulting in few examples of quality science teaching in elementary classrooms from which pre-service teachers can learn (Abell, Appleton, & Hanuscin, 2010; Banilower et al., 2013; Roth, 2014).

These are not new problems. But recent innovations in teacher preparation hold promise for elementary science teacher educators. Central to these innovations has been a turn toward “practice” (Forzani, 2014; Lampert, 2010). For example, the NCATE Blue Ribbon Panel on Clinical Preparation and Partnerships (2010) called for teacher education programs to place "practice at the center of teaching preparation" (NCATE, 2010, p. 2). The Panel (2010) notes:

> mastery and fluency comes, in large part, through robust opportunities to develop as practitioners via expertly mentored experiences in the field and through pedagogically designed approximations of practices such as case studies and simulations that allow candidates to study and observe practice and test their skills in controlled situations (p. 27).

Efforts by Ball, Grossman, Franke, Lampert, Windschitl and others to identify "high leverage" teacher practices around which to organize teacher preparation resonates with this sentiment (Ball & Forzani, 2009, 2011; Forzani, 2014; Grossman, Hammerness, & McDonald, 2009; Lampert, 2010; Windschitl, Thompson, Braaten & Stroupe, 2012). Lampert (2010) offers a definition of the term "practice" as that which describes the "strategies, routines and activities that novices need to learn to do and from which they will continue to learn teaching" (p. 26). Of course, as Darling-Hammond and colleagues (2005) note, "…practice alone does not make perfect, or even good, performance. Opportunities to connect practice to expert knowledge must be built into learning experiences for teachers" (p. 402). Thus, finding ways to provide sustained and substantial field experiences for elementary science teachers, and tying those experiences to coursework and opportunities to reflect with experienced teachers and teacher educators seems a goal worth pursuing.

This paper describes two alternative field experience projects embedded in an elementary science methods course in a traditional 4-year university teacher education program that were designed to increase prospective teachers' confidence with and knowledge of teaching science. After briefly describing recent research on teacher learning and field experiences in elementary teacher education programs, I describe both the experiences I crafted and how the pre-service teachers I work with responded to the projects. I conclude with thoughts about the promise that such experiences might hold for elementary science teacher education.

The Promise of Alternative Field Experiences in Elementary Science Teacher Education

Research has shown that field experiences that occur alongside teacher education coursework - such as methods courses - are important, perhaps necessary, for the development of new teachers (Abell, 2006; Clift & Brady, 2005). The typical field experience occurs over the course of one semester (or trimester) in which a pre-service teacher is placed under the supervision of a classroom teacher for a minimum number of hours per week. These experiences involve pre-service teachers in some kind of teaching responsibility, with a supervisor, usually a university-employed instructor, who conducts formal observations of that teaching. Sometimes, pre-service teachers are required to complete assignments that help them to apply principles that they learn in on-campus methods coursework (Abell, 2002; 2006; Abell, Appleton & Hanuscin, 2010).

But quality field experiences often involve significant logistical challenges as university and school schedules are difficult to coordinate (Abell, 2006). Programs also struggle to find appropriate school-based sites and teachers who teach science in reform-based ways, if at all (Abell, 2002; 2006; Roth, 2014). Thus, learning to teach through traditional field experiences in traditional teacher education programs is a challenge of scheduling, mentorship and supervision, and curriculum (Abell, 2006).

In the absence of experienced elementary teachers who can serve as models of science teaching, and ample school sites in which to place elementary education students for extended periods of time, researchers have found that alternative placements, such as those that occur in after school programs (Bottoms, Ciechanowski, & Harman, 2015) or summer science camps (Hanuscin, 2007) can offer opportunities for pre-service teachers to develop specific skills and have close mentoring from the university professor - in these cases, the researchers themselves - at the same time (Abell, Appleton, & Hanuscin, 2010). Here I define "alternative" robustly to

include field placements that may happen outside of the regular elementary classroom in sites like cultural institutions or after school programs, or inside of regular classrooms but using alternative time frames, organizational arrangements, or teacher education pedagogies.

Scholars have found that alternative field placements offer pre-service teachers opportunities to make direct connections between theory and practice in ways that they perhaps would not have in traditional field experiences. For example, Bottoms, Ciechanowski, and Harman (2015) studied pre-service teachers in "cycles of enactment" during science teaching episodes at an after school STEM club in two Spanish-English dual immersion elementary schools. The project was embedded in a science methods course on a university campus, which allowed the researchers (the course instructors) to develop three cycles of enactment around questioning strategies, using children's ideas to develop an investigation, and assessing learning through their evidence-based explanations. They found that pre-service teachers displayed greater confidence in teaching science, and in bringing theory to practice. They were also able to make improvisational moves during instruction and generate valuable explanations about practices that worked with children, among other skills.

Researchers have also found that the close mentoring of students (pre-service teachers) can also be better organized in alternative placements because they are oftentimes embedded within methods courses (such as science) with the methods instructors themselves serving as supervisors. This configuration helps to address the challenge of continuity between the often theoretical nature of campus coursework and the practical orientations of classroom teaching (Hammerness, et al., 2005). One reason for this is that when the field placement supervisor is also the methods instructor, the content of both the on-campus coursework can be directly applied in the field component. For example, Bain and Moje's (2012) Rounds Project engages pre-service teachers in

a cohesive set of experiences in coursework and clinical learning. Modeled after medical practice rounds, teaching rounds involve a three-semester sequence which include the first two semesters of modeling and study on school sites. The last semester involves a full time internship in schools. The team also engages attending teachers (in-service cooperating teachers), interns, and university faculty in sessions in which they collaboratively analyze problems of practice. Similarly, Hanuscin (2007) developed a summer field experience for her elementary science methods students in which they co-planned and co-taught several lessons in a summer science camp. Here, pre-service teachers developed four days of science instruction that took place in small and whole groups. They collaborated on planning and teaching with peers as well as the instructor, Hanuscin. In the pre-service teacher reflection sessions, the teachers provided feedback and suggestions for plans for the next day's instruction, and Hanuscin was able to provide feedback to each teacher specific to their stated goals.

Third, alternative placements can facilitate the development of specific teaching strategies because pre-service teachers are not likely to be required to follow specific school-wide curricula that may not be in line with current thinking in science teaching (Abell, Appleton, & Hanuscin, 2010). In other words, alternative placements may offer opportunities to try out new strategies in a low-stakes environment. Researchers (Hammerness, et al., 2005; Kazemi et al., 2016) argue that novice teachers are able to enact practices effectively when clinical experiences are carefully designed to provide "content-specific strategies and tools that they are able to try immediately and continue to refine with a group of colleagues in a learning community" (Hammerness, et al., p. 375). Bottoms, Ciechanowski, and Harman's (2015) study mentioned above addresses this challenge as well. They learned that specific questioning strategies in mathematics were important for pre-service teachers to learn, but that to overcome pre-service teachers' "apprenticeship of

observation" (Lortie, 1979), they had to develop strategies that were practiced in close proximity to the learning. Their thinking was that teacher learning would be best facilitated with minimal time between the learning and the application as well as with close mentorship. Additionally, Hanuscin's (2007) students, in the study mentioned above, were able to choose which specific strategies they wanted to apply in the summer science workshop for elementary students.

The Science Methods Course and Field Experiences

Based on this work and calls to reform teacher education, I redesigned the field experiences in a full semester (16-week) elementary science methods course at a traditional four-year teacher education program that I teach. Students take this course with four other methods courses during their final semester before student teaching. Like many elementary teacher education programs, the students come to the final semester with at least two other formal field experience semesters. Often, students are not placed in classrooms where science (or social studies, for that matter) is taught during their assigned time (typically relegated to afternoons, or Fridays). This means that the students have had little to no practice in learning to teach science in their traditional field placement.

The goal for the embedded projects described here was to offer alternative field placement experiences within the science methods course in which students could both witness expert science teaching in elementary classrooms, reflect with practicing teachers on that teaching, and try the new skills themselves in a constructed teaching experience with elementary students in an informal learning experience (Abell, 2002, 2006, Abell, Appleton, & Hanuscin, 2010). I outline each field experience project below and describe how each is purposefully intertwined in terms of the specific science teaching strategies (Hammerness, et al., 2005; Kazemi et al., 2016) they learn in the course.

The Science Classroom in Action

The University's STEM center offers an embedded STEM education professional development program, the Science Classroom in Action (SCA)[1], in all of the 21 school districts across the region. In the SCA, master teachers from the STEM center conduct sessions in each district with multiple grade-level groups (e.g., primary, intermediate, and middle) four times per year. Each session comprises two segments. During the first segment, the master teacher teaches a STEM lesson to students in their regular classroom during the regular school day. The PD participants, from multiple grade levels, are positioned around the room observing and, at times, interacting with the students as they work. This segment is known as the "Fishbowl" and is a unique feature of this PD model that offers teachers the rare opportunity to experience PD embedded in their own school context, with their own students. Here, practicing and pre-service teachers have the chance to observe in real time how students both take up and respond to the various strategies used with the students.

For example, in one SCA session, 4th grade students were challenged to determine the kinds of fossils in a large rock found in the master teacher's yard. The teacher sets the stage by showing the rock she found in her back yard, a large piece of limestone containing many small fossils. She discusses with students that fossils are remnants of animals that lived long ago, and that they can be learned about today using several different kinds of scientific methods. She explains the local geology: that the land they see now was once at the bottom of the ocean, and that most of the land in the school's region is made up of sedimentary rocks of various types, mostly limestone. Students make inferences about the kinds of animals that they may expect to

[1] This is a pseudonym for the purpose of blinding the submission copy of this paper.

find as fossils in these samples: are these animals likely to have the characteristics of sea animals, or land animals? Why?

They then examine the sample fossils provided to them in small collections (curated by a local geologist). The master teachers and students discussed the various qualities of each kind of fossil and each kind of rock that they were embedded in. They then learned about the types of rock that were found in the earth and the natural history of the area. Students learned how to do chemical and physical tests for the rock samples to classify the rocks. They used very small vials to apply one small drop of hydrochloric acid (HCL) to the rock samples to determine limestone content, for example. Students also conducted a scratch test, hoping to determine the hardness of rock. The various clues they collected and recorded in notebooks allowed them to later make a defensible argument for their identification of the teacher's larger sample fossil and the rock it was embedded in. Students also confirm that the animal species represented in the samples are crustaceans and fish.

Once the class is over, the teachers and CINSAM master teachers meet in another room for the second segment, the "RECAP." RECAP stands for Reflection, Exploration of Content, Alignment, and Pedagogy. During this segment, participants reflect on the practices they observed in the Fishbowl, explore science content, discuss how these practices and content can be aligned to their own classrooms and NGSS standards, and delve into the facets of high-quality pedagogy. During the session on fossils, the CINSAM teachers discussed literacy connections, how to incorporate mathematics skills into the lesson, and provided additional resources for teachers to teach the entire unit in which this lesson was embedded.

Undergraduate pre-service teachers in the elementary science methods courses attend one of these Fishbowl/RECAP sessions during the semester, participating fully in the half-day PD

alongside in-service teachers. They take detailed notes on what happened in the classroom Fishbowl session and of the RECAP session. They interact with the students during the demonstration lesson. They listen carefully for particular practices that they learned about in class (e.g., the elements of the 5E model, using notebooks, math integration practices, whole group discussion strategies). And they later participate in the RECAP workshop and debriefing session with the practicing teachers. They then prepare a written report on their learning through the PD as a part of the project for credit in the methods course.

In this way, pre-service teachers get an opportunity to see high-quality interactive, inquiry-based, STEM teaching with real children during their regular class time. They get a chance to interact with practicing teachers as colleagues in the workshop. They have opportunities to hear about practicing teachers' concerns and fears, and even their successes, in teaching science using inquiry-based strategies. They hear and see examples of the types of strategies that they have studied in class on campus, providing them with a better understanding of these strategies in practice (Grossman, Hammerness, & McDonald, 2009).

The students in the methods course (pre-service teachers) report that the experience of watching the strategies they have studied in class come alive with elementary students is both exciting and influential. Many of them come to the experience never having seen children work with hands on science materials, work in small groups, or talk with so much knowledge about science. One pre-service teacher writes:

> As a future teacher, I think I was the most interested in actually observing the science lesson. This was one of the only elementary grades science lessons that I've observed since I've been in college. I have had so few opportunities (almost none) to see science in an elementary school classroom, which is why this experience was so rich to

my education. After seeing this lesson and discussing it with teachers during the PD, I feel more prepared to teach a science lesson when I become a teacher.

One of the oft-cited challenges for elementary teachers to feel confident in teaching science has been the fear of managing materials and ambiguity involved in actively engaging students in the investigation cycle (Duschl, et al., 2008; NRC, 20011). Seeing a model where elementary-aged students are deeply engaged in an authentic way - in their own classroom, during their regular school day, with teachers they know well - provides pre-service teachers with a vision of what's possible in elementary classrooms. One methods student reported, "I realized how easy it is to engage students" after watching the demonstration (Fishbowl) lesson. This comment comes in her analysis paper, in which she discusses how she has never seen children involved so deeply in science.

Elementary STEM Day

Another field experience that occurs during the same undergraduate course is a teaching opportunity called Elementary STEM Day (ESD). This is a program run through the campus STEM Center, who also offers the SCA. In this partnership project, pre-service teachers develop STEM lessons for area 4th grade students who come to the university campus for a full day of STEM activities. STEM faculty from the university offer one-hour activities in labs and science classrooms on campus, and the pre-service teachers offer an hour-long set of station teaching activities that engage students in various STEM activities.

During ESD, the pre-service teachers lead small groups of 4th grade students in four rounds of 15-minute science snapshot activities. For example, sessions may engage students in explorations on building Puff Mobiles for studies in engineering and motion, the differences in the color spectrums of light, electronic circuits made with conductive dough, or sound. Pairs of pre-

service teachers work together to teach the same lesson in each round, reaching nearly 75 students in an hour. The sessions occur in a large ballroom on campus, where stations are set up around the room. The 4th grade students, parent chaperones, and classroom teachers move to each station every 15 minutes, getting a different science lesson each time. Meanwhile, pre-service teachers experience teaching a lesson more than once, providing insight into what works and what doesn't, and opportunities to make immediate adjustments.

There are several mechanisms in place for the pre-service teachers to prepare for this project. Pre-service teachers plan the projects largely outside of class time, and I provide one-on-one support for each project. Each teaching pair also practices the 15-minute snapshot lesson in their methods class. This serves as a rehearsal of sorts (Lampert, 2010; Lampert, et al., 2013; Kazemi, et al., 2016), while classmates workshop the teaching episode with each other, providing feedback about aspects of the lesson such as management of materials, providing clear explanations of content, and ways to engage students more productively (Hammerness, et al., 2005; and Kazemi et al., 2016). Students report for example, that the rehearsal sessions allow them to see where they missed opportunities to generate good explanations of science phenomena, or to ask students questions that engage them more readily. Because they are able to practice using the materials and equipment during the in-class rehearsal sessions, pre-service teachers report that they feel more confident in using the materials with the 4th graders. One pre-service teacher noted that, she wasn't sure how many groups would work best for our activity, but the rehearsal helped them to see that having more groups with fewer students in each group allowed the 4th graders to use the materials more effectively because each child would have a role to play.

Pre-service teachers are also given a small budget to purchase materials they will need for teaching beyond what is available in our classroom and lab space. In preparation for the in-class

rehearsal, or workshop, pre-service teachers design full lesson plans, as if they are planning for teaching in a classroom. Each pre-service teacher follows and fully describes all phases of the 5E model (Bybee, 1997), and includes the coordinating NGSS performance expectation, a learning target, and a list of resources (U.S. Lead States, 2013). These plans are made available on the shared course online space. We discuss in the workshop that plans created in this way will involve much more than can be taught in 15-minute intervals. Given that elementary schools provide little time for teaching science, the practice of chunking instruction into smaller units is both a practical skill, and a confidence-inspiring notion for many beginning elementary teachers. One pre-service teacher reports, "I never thought I could teach so much content in such a short time. It makes me feel like I can do this even if my school doesn't give me enough time to teach science. I can fit in discussions about science almost any time!"

Pre-service teachers are required to design lessons that follow the 5E lesson format (Bybee, 1997), knowing that they will not get to all of the phases in such a short segment (nor is the model intended that way). In class, we discuss in depth the ideas of explanation (U.S. Lead States, 2013; Zembal-Saul, McNeill & Hershberger, 2013), modeling (Windschitl, Thompson, & Braaten, 2008; Windschitl & Thompson, 2013), and teacher-lead versus student-lead exploration of phenomena. Each lesson is to begin with a hands-on engage segment, where pre-service teachers quickly involve students in thinking about content ideas (Bybee, 1997). Usually, these are in the form of a surprising demonstration or discrepant event. Pre-service teachers then show the students several demonstrations or a combination of brief teacher-lead demonstrations and student-lead explorations that involve the students in manipulating materials and/or gathering data. Each teaching segment or session closes with a simple explanation of content - which can be in the form of providing new vocabulary, or explanations of particular phenomena they have just explored.

The goal in the end is to have all elementary students leaving the station with some new conceptual understanding of some simple idea.

Sometimes pre-service teachers create handouts, or small notebooks for students to record their thinking. Sometimes the pre-service teachers provide at-home parent instructions for each student. Some pre-service teachers decide to provide a make-and-take element for their station. While none of these are required, pre-service teachers learn that providing such supplemental materials provides them with an opportunity to plan beyond the 15-minute period, to extend the possibilities for further exploration of phenomena.

After the event, pre-service teachers write an analysis of their teaching in which they explain and interpret various aspects of their experience and learning about science teaching on STEM Day. The paper becomes another part of their project grade for the methods course. One student reports in her analysis that some aspects of her lesson required teacher-directed instruction, and some aspects required students' open explorations of content through interacting with the materials. In reflecting on a moment in which she chooses to provide opportunities for exploration, she writes,

> The way we approached teaching this part was to give the students as many as possible experiences with real world materials. In one of the articles we read for class it stated, "Scientists' science includes two important scientific practices: inquiry and application (Anderson, 2003)" (Gunckel, 2010, p.3).

She links her teaching experience directly to an article she read in the course, stating that application is an important part of how she and her teaching partner would help the 4th graders learn about liquid density.

Students in the course (pre-service teachers) are consistently positive in their reflections on the event, explicitly listing the connections they make between learning content and their own teaching practice. In one analysis, a student writes,

> I learned a lot about teaching science by doing this project. I have experienced Dr. [author] using the 5Es to conduct investigations in class and could identify the way the teachers implemented them during the SCA observation, but I learned it is much more difficult to remember to address all of them while actually teaching. It is not only difficult remembering to address them, but learning how to implement them to each unique class.

Some students described what it meant to communicate using specific language conventions in science, as well as to translate those conventions to children's own ways with words (Heath, 1983). The challenge to quickly generate explanations about scientific phenomena to 4th grade students in content areas that were initially unfamiliar to the pre-service teachers provided them with impactful lessons of teaching through scientific explanations. Another student writes,

> Teaching this lesson multiple times showed me how important it is to understand scientific language and be able to communicate it appropriately to the class. This may seem like a common-sense thing, but I did not realize how difficult it can be to explain scientific thinking prior to teaching a science lesson.

Further, pre-service teachers report that the experiences of teaching science during their methods course were entirely new to them, and gave them perspective about how children learn science that they could not articulate through studying texts in class. A student shares her insight about teaching science as a result of having been involved in STEM Day:

> During this process, I learned something about teaching that I had not experienced prior to this lesson. As a future teacher, I feel like it is my responsibility to always be teaching the

students and I forget that they teach me new things every day, especially when they are physically able to do the task at hand.

These two experiences are related to and build from each other. For example, in the first part of the semester, elementary science methods students learn about the 5E model for teaching inquiry-based science. They also learn about the Next Generation Science Standards and using science notebooks in classrooms (Fulton & Campbell, 2013; U.S. Lead States, 2013). As they are planning for the ESD, they are also attending the ngSC in area classrooms. Students then have opportunities to see the 5E model in action, they are able to talk to teachers experienced with teaching science using this model and in addressing the NGSS, and they are able to watch elementary science students using science notebooks in classrooms (as well as several other science teaching strategies and high leverage skills) (Ball & Forzani, 2009, 2011; Forzani, 2014; Grossman, Hammerness, & McDonald, 2009; Windschitl, Thompson, Braaten & Stroupe, 2012). The PD informs their teaching during the ESD, and the readings and activities we do in class help to prepare them for both experiences by studying the major pedagogical practices that they will both see (in the ngSC) and execute (in the ESD).

Both field experiences have a family resemblance to traditional field experiences, but because I have more control over the schedule, the teaching mentors, and the specific strategies that the teacher demonstrates, pre-service teachers have a more robust learning experience, arguably, than in a traditional setting where the variables of time, examples of good teaching, and a focus on strategies are typically too broad and sometimes unknown (Abell, 2002, 2006; Abell, Appleton & Hanuscin, 2010). These projects then are consonant with Darling-Hammond and colleagues (2005) who state, "opportunities to connect practice to expert knowledge must be built into learning experiences for teachers" (p. 402).

Concluding Thoughts

The work I describe in this paper is the result of three years of design and redesign. The account I provide here aims to do two things: 1) to add to the descriptions of alternative field placements and, 2) to explore the possibilities of such placements for science teaching and learning. Hammerness and colleagues (2005) argued that one of the prevailing challenges with field and clinical experiences in traditional university settings is that what students learn and how and when they are asked to apply that learning are discontinuous, leaving the students to make connections on their own. Providing guided practice alongside field experiences allows for greater continuity in our elementary program in general, and for science education at the university in particular.

These alternative field experiences have evoked possibilities for future research that could potentially inform science teacher education in our region and elsewhere. Methods students (pre-service teachers) report that these field experiences offer opportunities to see science in action in ways previously unavailable to them. They describe how they learn specific science teaching strategies (e.g., the 5E model, writing, or scientific explanation) through live demonstrations by experienced science teachers, and then through trying out the strategies in their own teaching with the 4th grade students. Pre-service teachers learned that they can offer rich science experiences to students in a very short amount of time, and that teaching science in reform-based ways – using inquiry and active learning and the manipulation of real science materials – is not only possible, but enjoyable. They gain much more confidence of their abilities to teach science in ways that many of them never experienced as students of science – for some, not so long ago – in elementary school.

These kinds of experiences offer possibilities not previously explored, yet they are not ideal. Hanuscin (2007) made this point a decade ago, during her study of a summer science camp. The ideal situation would be to place pre-service teachers in classrooms in schools during the regular school day, so that they experienced the more "typical" challenges of the classroom: schedule changes, full classrooms of students with a diverse range of skills, the pressures of high-stakes testing, etc. One limitation of the two experiences described here is that students do not teach in a regular classroom setting. However, it is not possible that every skill a teacher will need can be developed before they get into the classroom full-time. Alternative field experiences, such as those described here, may help to at least sharpen the edge on key strategies and practices in teaching contexts that are authentic to many elementary classrooms, along with close mentorship by a supervisor who has deep knowledge of the subject matter and of the latest science teacher education pedagogies.

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A Qualitative Study on Cross-Cultural Skills Growth:

An International Teaching Practicum in the Philippines

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Taylor University and Baylor University

During January of 2014, 2015, and 2016, three respective cohorts of students along with Taylor University Education Department Chair Dr. Cynthia Tyner and her husband Mr. Stan Tyner traveled to Manila, Philippines, for a month-long international teaching practicum experience at Cuatro Christian School, partnering with Kids International Ministries. This qualitative study emerged from a quantitative study regarding the effects of this international experience on cross-cultural skills and awareness gained by the participants of the education practicum. Offering unique opportunities and extracurricular activities for the students, this international trip to the Philippines is but one example of an opportunity to facilitate cross-cultural skill growth for college students through an international teaching practicum experience.

The purpose of this study was to explore education students' field experiences in terms of cross-cultural skill(s) growth. Utilizing the quantitative study conducted by Dr. Steve Snyder and his psychology students funded by the Spencer Centre for Global Engagement at Taylor University (Upland, Indiana), this study sought to enrich the quantitative results with personal interviews in order to create a holistic picture of the various factors that greatly impacted student cross-cultural skill growth.

This study proposed to answer the following research questions:

- In what ways does participation in an international cross-cultural practicum experience facilitate cross-cultural awareness and skill growth?
- What aspects of the international practicum trip were most influential in promoting cross-cultural understanding and growth?

Background Literature

The Philippines

Manila is the capital city of the Philippines and is home to eleven and a half million people. While Filipino is a primary language in the Philippines, English is prominent as well. Approximately ninety-five percent of the population is literate (ages fifteen and over). Around eighty-three percent of the population holds a Catholic identity (CIA, 2015).

The Philippines is a very young nation demographically. Approximately one-third of the population is under the age of fifteen, and just over fifty percent of the population is under twenty-four years of age. The median age of an individual living in the Philippines is twenty-three and a half years (CIA, 2015).

Taylor University

Taylor University is a small, Christian liberal-arts institution located in the rural community of Upland, Indiana. Founded in 1846, Taylor has an established history of sending students abroad, both during the traditional semester and during an interterm for the month of January, known as J-Term. With a student body of just under 2,000 undergraduate students, Taylor's population is approximately fifty-seven percent female and forty-three percent male (Taylor University, 2014).

International Field Experiences

International field experiences are a large part of education programs at many American universities. Overall, students who go on such trips seem to be greatly effected by their experience and have been observed to grow both personally and professionally. In a study conducted by Pence and Macgillivray (2008), students who spent a month teaching in Rome, Italy, were interviewed to gain an understanding of their experience in an unfamiliar culture and curriculum. Through the

participants' experiences, the authors saw a broadened understanding of educational methods through their international practicum experience.

With an increase in the number of international trips taken by college students, some concerns have been raised regarding the impact on the local communities where the practicum students are traveling. Two apprehensions of sending students on international service trips are (1) effectively meeting the host community's needs and (2) burdening locals who host visiting students, particularly when students are serving in impoverished countries. Faculty who plan and lead these field experiences are noticing the importance of developing and maintaining a relationship between the university and the organization(s) hosting the practicum students (Amaya-Burns, Fesperman, Non, Amaya, & Evans, 2010).

Cross-Culture Growth Development

Student development literature has increasingly stressed cross-cultural growth and development in recent years, emphasizing by the end of the undergraduate experience students should be able to—with care—interact with ideas and cultures different than their own. Moreover, graduates should be able to engage their understanding of other cultures to expand their thoughts to other disciplines and topics. In the Developmental Model of Intercultural Maturity, King and Baxter Magolda (2005) establish a matrix in which three dimensions (i.e., cognitive, intrapersonal, and interpersonal) are considered at different points in development (i.e., initial, intermediate, and mature). This model describes the movement of students in maturation within realms such as knowledge (i.e., cognitive), others' values (i.e., intrapersonal), and capacity for relationships (i.e., interpersonal). Students who are mature in their intercultural development employ multiple cultural frameworks to gainfully challenge their beliefs, consider their societal impact, and seek diversity within their social circles (King & Baxter Magolda, 2005).

Traveling abroad is widely considered to be an effective way for students to grow in their cross-cultural awareness. Often, students who study abroad are better equipped to reflect on his or her home culture and observe cultural peculiarities. In addition to merely gaining the skill to reflect effectively on an international experience, study abroad students are better equipped to think critically about their own beliefs and conceptualize how the home culture impacts their thinking. Thus, students are more skilled to effectively communicate cross-culturally since participating in an environment where their held stereotypes of other cultures and beliefs have been challenged, resulting in the student being more apt and able to employ perspective-taking skills and moving beyond initial beliefs (Mahon & Cushner, 2002).

Quantitative Study

Funded by the Spencer Centre for Global Engagement at Taylor University, Dr. Steve Snyder and his psychology research students conducted three annual quantitative studies "assess[ing] intercultural developmental change in students who taught abroad" (Sinclair & Snyder, 2014, p. 2). The studies measured the Intercultural Development Scales (IDS), Taylor University Core Values, and the Taylor University Common Learning Objectives (CLO). The IDS intercultural competencies are as follows: Total Knowledge, Total Awareness, Total Attitude, Total Behavior, Total Intrapersonal, Total Intellectual, Total Interpersonal, and Total Spiritual. Taylor University Core Values are as follows: Liberal Arts Grounded, Christ Centered, Biblically Anchored, Whole Person Focused, Servant Leadership, Vocationally Equipped, and World Engaging. The CLO are as follows: Spiritual Activity, Critical Thinking, Competent Communication, Aesthetic Literacy, Civic Mindedness, Responsible Stewardship, and Lifelong Learning; and institutional Core Values: Christ Centered, Biblically Anchored, Whole Person Focused All, Whole Person Focused 1, Servant Leadership Motivated, Vocationally Equipped,

World Engaging, Liberal Arts Grounded, Liberal Arts Grounded 1, and Core Values Total (Burrows, Ferro, & Zandee, 2015; Ferro & Ha, 2016; Sinclair & Snyder, 2014). Thus, the measures utilized in this study were comprehensive in nature to span both academic, spiritual, emotional, and physical experiences.

The studies demonstrated cross-cultural skill growth and net gain means from pre- to post-tests that were both statistically and practically significant in most areas of the quantitative study. Thus, this qualitative study sought to expand on the quantitative results in an effort to discover what experiences and elements of the teaching practicum trip developed and grew students' cross-culture awareness and skills growth (Burrows et al., 2015; Ferro & Ha, 2016; Sinclair & Snyder, 2014).

Methodology

Utilizing a qualitative approach, this study explored student cross-cultural experiences through personal interviews in order to discover the determinants of personal and spiritual growth made during the practicum experience. Following the results of quantitative studies that measured cross-cultural skill growth by means of the Taylor University Intercultural Inventory pre- and post-tests, this study sought to gain a qualitative perspective on the impact(s) of an international experience on cross-cultural awareness in order to compliment the quantitative data. The results of this study helped the researchers to determine what factor(s) have the greatest impact on cross-cultural awareness.

Participants

A total of thirty-one individuals from three years of international practicum trips to the Philippines (i.e., cohorts from 2014, 2015, and 2016) participated in a one-on-one interview over the course of two years. Of the participants, twenty-four were female and seven were male.

Twenty-eight were majoring in elementary education while three were secondary education or educational studies majors. Participants were classified as sophomores, juniors, or seniors. Twenty-nine participants were White and two were Asian-American. It is important to note that five participants had completed the practicum two different times (consecutive years). All participants were between the ages of eighteen and twenty-three, with a mean age of 20.25 years.

Design

Approximately sixty-five individuals were contacted via email communication for voluntary participation in the study. The audio-recorded interviews lasted approximately ten to fifteen minutes in a faculty office. The interviews were semi-structured and based on the individual's personal cross-cultural experience and growth achieved based on self-reflection.

The results of the pre- and post-tests of the Taylor University Intercultural Inventory informed the protocol, allowing the qualitative interviews to be targeted to interpret the quantitative data in terms of specific factors and experiences that contributed to cross-cultural awareness and development. While this education practicum has existed for several years, only recently has the Intercultural Inventory (pre- and post-tests) been administered; thus, the necessity for this study to analyze the effects of international practicums in terms of cross-cultural development.

Procedures

Participants were provided with an informed consent form to sign to confirm their continued participation in the study. Following a series of demographics questions, participants were individually interviewed utilizing a semi-structured protocol. The interviews were audio-recorded for analysis purposes. Following the interviews, the audio-recordings were transcribed

by a researcher, coded, and themed for reoccurring factors related to cross-cultural awareness development.

Analysis

Utilizing Taylor University's research through the Spencer Centre for Global Engagement, the quantitative data was used to corroborate student's personal reflections. The researchers took the qualitative data and the quantitative data, comparing and contrasting across a three-year period. The researchers looked for common themes in the qualitative data in order to measure cross-cultural awareness, growth, competencies, and acceptance in terms of development.

Results

Considering if participation in an international cross-cultural practicum would improve students' cross-cultural skills and awareness, all participants responded affirmatively when asked if his or her experience(s) made him or her more culturally competent. Throughout the participant interviews, several major and minor themes emerged as to what impacted participants in terms of personal reflection on cross-cultural growth development.

Poverty

The first major theme that materialized was the theme of poverty. A majority of participants (n=22; 71%) described how being immersed in an impoverished country and seeing poverty as they had never seen before influenced their views of other cultures and other peoples.

A subtheme under the broad concept of poverty was the experience the participants had with a lack of teaching resources, specifically technology, forcing the participants to become more creative in his or her teaching lessons (n=17; 55%). One participant observed,

> One thing I noticed too was the lack of resources—paper, glue, scissors. But also realizing that learning was still taking place and the teachers didn't even know that much about

> teaching, but the kids were still learning and I think it allowed me to see a whole different view of teaching… just realizing that teaching can look so different depending on where you are.

Many participants described creating his or her own posters, handwritten copies of worksheets, and other visual aids. Without the assistance of common technology found in elementary and secondary schools in the United States, participants found themselves confronted with a daunting task each night of preparing for the next day's lessons.

A second subtheme that developed under the umbrella of poverty related to the participants coming to appreciate what he or she has, a recognition of his or her own wealth comparatively, and, at times, guilt for privilege and wealth (n=15; 48%). In seeing how very little the Filipino children had, many participants were deeply moved and struck by an understanding of how much he or she takes for granted on a daily basis.

The joy of the Filipino people despite their poverty was the third subtheme under this major theme of poverty (n=10; 32%). The participants expressed being highly impacted by joy of the Filipino people despite the poor circumstances of families whose children attended the Cuatro Christian School. Several participants described being confronted with the challenge to be more joyful despite less-than-desirable living conditions. One participant reflected:

> …just the joy that these kids had, I mean they're always laughing, always joking around, and I think that is a very positive thing for a community, even despite the fact that they didn't have anything. They may have owned three shirts, maybe; they're playing basketball in flip-flops. But they're laughing, and joking around, and having a good time and making the best of what they have. And that makes the community so much more inviting, so much happier I guess, even though they may be lacking in other things, they definitely did not

> lack in joy, and that was really cool to see and that was something I took back is just [a] joyful attitude, joyful look on life, accepting circumstances, being content, but also, I guess striving for more at the same time.

Thus, the participants expressed conviction regarding the fact that they can express a joyful and grateful attitude, despite the state of circumstances they may encounter.

The hospitality and generosity of the Filipino people despite how little they possessed affected many participants as well (n=10; 32%). One participant told this story:

> The first week, [in] the mornings, they [the Filipino teachers] mostly just taught in Tagalog, so I would literally have no idea what was going on. So I picked up a history, a Filipino history book, and the first chapter was all about the Filipino culture, what they stand for, what they value, and one of the things talked about [was] the joy and the happiness despite, you know, they have a lot of poverty, and it also said that the Filipino people are willing to go into debt just so that their visitors feel welcomed. And it was one of those moments like, "Wow. What am I doing for my visitors? I'm not even wiling to clean my dorm room sometimes." These guys are literally willing to give all they have and more just so that me, who's there for three weeks feels welcome. And it was like, okay, that was one thing I took back with me is you know the impact we can have on welcoming people into our lives or into our space is astronomical.

Regardless of their poverty, the Filipino families gave gifts to the participants, welcomed them into their homes, and displayed kindness to the practicum students, regardless of the students being foreign to the Philippines and being more wealthy than their hosts and hostesses. Participants described this genuine display of kindness as motivating in considering how he or she exhibits hospitality and generosity to others.

The final subtheme under poverty included the additional activities students participated in while on the practicum trip, such as volunteering at a home for victims of human trafficking and sexual violence, the local orphanage, or playing basketball with street children (n=11; 35%). One participant described how volunteering after school instilled a desire in her to return to the United States and

> …be more involved in the community, to see where your students come from to be able to help them outside of the classroom and realizing [school's] not their whole entire lives and I think being in the Philippines definitely gave me more of that perspective because we had the opportunity to go see where they're from and to go help them in a bigger sense than just in their education.

These activities enhanced the participants' experience by providing them with additional interactions with the Filipino people, particularly individuals who have experienced trauma, have been marginalized, or have difficult home lives.

Gaining Skills

The second major theme evident in helping students grow in their cross-cultural skills and awareness was the gaining of skills. First, participants referred to gaining confidence in building cross-cultural relationships, as well as confidence in teaching as a result of the international practicum experience (n=19; 61%).

Second, many participants emphasized how the language barrier impacted their experience, challenging the participant to relate to his or her students in the classroom despite limited vocabulary (n=18; 58%). One individual recalled,

> Throughout the day the teacher would be teaching in Tagalog and it was hard because I actually had no idea what she was saying. So that was the first time that I experienced being

a minority, but also realizing that even though there were cultural differences, I realized how much at the same time, even though, they value other things and it's not that it's like a lesser value, but just realizing that they really have so much to offer from their culture.

Third, getting out of one's comfort zone was a repeated subtheme in terms of gaining or developing one's relational skills. Being in a totally different culture had its challenges, but participants recognized how being pushed in various ways to be uncomfortable was a growing experience.

Relationships

Relationships, interpersonal and intrapersonal, emerged as the third major theme from the study. Several participants remarked on their experience learning to appreciate the differences of other people in other cultures and how that developed their cross-cultural thinking (n=19; 61%). Through recognizing and appreciating others' differences, participants noted how they were able to see how much others had to contribute.

A second subtheme that impacted the participants' cross-cultural skill growth was a reliance on the participant's personal faith (n=17; 55%). Being in a foreign country with a language barrier and unfamiliar culture, participants recalled how often they looked to their personal faith commitment to aid them in coping throughout the experience.

Having personal conversations and building relationships developed as the third subtheme under this broader theme of relationships (n=17; 55%). Participants reported that getting to know a Filipino, particularly in a deeper relationship, allowed he or she to have stronger context for the cross-cultural experience. Additionally, he or she was able to have a local resource of whom he or she could ask questions about the Filipino culture.

The fourth subtheme of seeing similarities with the Philippines and Filipino culture to that of the United States emerged, paralleling the first subtheme in appreciating the differences between the two countries (n=13; 42%). One participant shared,

> I think through my personality and through just growing from [the] trip, I can find a common ground in people with different cultures…because going to the Philippines, there was a total different culture as well and we just found a common ground, which was what we were—Taylor University. And so I feel like that has equipped me to go to other cultures…and connect through [finding] common ground.

Participants recalled how the similarities between the Philippines and the United States surprised them and they developed an understanding of how two very different countries can share so very much, particularly noting how one culture impacts another historically, and vice versa.

Future Travel

The fourth and final major theme to result from this study was participant desire to travel in the future, either to teach abroad, travel for pleasure, or do short- or long-term service work (n=17; 55%). Participants described how this international practicum trip gave them a taste and a hunger for experiencing and learning about other cultures and other people. One participant stated, "I immediately fell in love with [Filipinos] and who they were, and so it was just giving me more of a want to know other cultures and other people and just like who they are." Even more so, this experience gave participants a desire to continue to become more aware of what is happening in the world around them, locally and globally. One participant said, "It has made me much more interested in learning about different cultures and it makes me want to travel more and just get more experience with different countries and learning about each country." Another participant expressed,

> I think on a global scale it's made me more aware of the problems people face…it's made me want to take action more and to see where I feel definitely called to work with children and in education…I feel like I want to know more on a global scale of what people are facing… I've realized the importance of engaging people around me… I'd really like to engage the community here more because this is where I'm living while I'm at school.

Thus, the participants' international experience impacted how they think locally as well.

Discussion

Just as the results from the Taylor University quantitative study revealed, and the qualitative results from this study demonstrate, the international teaching practicum experience to the Philippines is successful in developing cross-cultural awareness and growth in its participants. All participants affirmed that they felt more competent in interacting with people of other backgrounds than themselves after this experience. This study provides some basic principles and implications that can be translated across similar international experiences in efforts to grow students' cross-cultural skills.

In this particular study, the location of the Philippines highly influenced the results in terms of what the students saw and experienced, both in the broader cultural context and in the school systems where the participants taught. In light of the impact of poverty on the participants in this study, other teaching practicum experiences might reflect different results depending on the level of poverty in the respective country the students find themselves. The researchers would encourage others considering a similar program to contemplate the type of environment where the teaching practicum is located. As this study demonstrates, an impoverished country has a particular impact in terms of the facet of cross-cultural skill growth, whereas a different western country might impact another facet of development.

Similarly, participants in this study encountered a language barrier that impacted their experience. Many participants described the struggle to fit into the culture and understand their surroundings while not being able to communicate at times. This struggle produced great effort in communicating on part of the practicum students, something for future practicum supervisors to consider when planning a comparable experience.

This study emphasizes the importance of students building relationships with people of other cultures in developing their cross-cultural awareness. Through constructing relationships, students learn how to become more comfortable in asking questions and appreciating differences. As one participant noted, "…learning to ask good questions and be respectful when they have differing views on things or when they viewed me coming in as a completely different person" influenced her cross-cultural appreciation and skills.

Finally, this international experience instilled in many participants a desire to travel in the future and learn about different cultures and other peoples. Thus, this study reveals that exposure to a new culture promotes a spirit of learning about additional cultures, increasing cross-cultural awareness and skills even further.

This study offers faculty and higher education professionals one example of an international teaching practicum experience where participants grew in their cross-cultural skills and awareness from being immersed in the culture and school system, and the specific factors that impacted the students' growth. As stated previously, the Philippines and Cuatro Christian School offered a unique environment and opportunities for participants to grow in their understanding of another people group and school system. Individuals planning similar experiences may want to consider how the country of choosing, culture, and school structure may impact the results of the experience in terms of cross-cultural awareness and skills growth. Additionally, team cohesiveness

and training must be taken into account when engaging in a month-long endeavor in a foreign culture. However, as this research has demonstrated, diverse cultural experiences develop cross-cultural awareness and competence, as well as a hunger for learning about other peoples and places.

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International Teaching – How Do I Get That Job?

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Introduction

The idea of an "international school" is something that is fairly new. Early discussions of international schools can be found in the 1964 Yearbook of Education. The yearbook labeled international education as "an up-and-coming field" and identified 50 schools around the world that claimed to be "international". The yearbook concluded that international schools were "short on means" and "uncertain of their aims and fundamental premises." At that time, however, it was really only children of politicians, diplomats, missionaries, and volunteers with social welfare organizations who attended international schools. Since 1964, the international school community has grown to 7,017 schools as of 2014. Now, children all over the world, not just children of politicians and missionaries, attend international schools for the superior education they offer.

Today, the official definition of an international school is "a school that promotes international education, in an international environment, either by adopting a curriculum, such as the International Baccalaureate, or by following a national curriculum different from that of the school's country of residence." In order for a school to be considered international there are four criteria it must meet. The first is that a significant number of the students enrolled must be citizens of a country different than the one in which the school is located. The second is that the board of directors must be made up of "internationals and nationals" in roughly the same proportions as the student body they serve. The third criteria that must be met is that the teachers themselves must have gone through a "period of cultural adaptation", meaning they either currently are, or have spent a significant amount of time, living in a culture different than the one they were born into.

Finally, the curriculum must be a mix of the best and most effective practices from a variety of national systems to allow students to smoothly transition to other international schools, schools in their home countries, or universities anywhere in the world. All the schools studied in this research also offered instruction primarily in English.

Although the international school field has grown considerably in the past 50 years, there is minimal research done on the faculty. During the researcher's study abroad experience, there was an opportunity to spend some time observing in an international school. The students in the international school were impressive and the teachers used progressive teaching strategies. The decision was made to research international school curricula and find what is required for an instructor to get hired for a teaching position in an international school. There is not a lot of information on what becoming an international school teacher entails. Most discussion on the subject is outdated or from the blogs of current international educators. The job search and employment process seems extremely difficult and mysterious. The researcher studied the international education field by interviewing 22 teachers and administrators at 18 different international schools around the world, as well as an associate at an international teaching agency. The interviewees were asked a variety of questions about their qualifications and experiences as international school instructors. The data gathered, as well as previously published findings, was then used to formulate a guide on how to become an international educator.

Educational Background

A strong educational background is essential when preparing for a career in an international school. Similar to teaching in the United States, teaching in another country requires a college degree. All of the teachers interviewed had at least a Bachelor's Degree and the majority of them had their Master's Degree. Search Associates is an agency that matches teaching candidates with

international schools. According to their website, “It is essential for a candidate to have at least a B.A., a B.Sc., or B.Ed. degree.” One teacher interviewed said he got his first job at a small school in Singapore with just his Bachelor’s Degree. He taught there for 5 years, while also getting his Master’s Degree online. He stated that after getting his Master’s Degree he was a much more competitive candidate and was hired for a teaching position at a more prestigious international school in Paris. People who want to be administrators at international schools need at least a Master’s Degree. The most esteemed schools, however, require candidates to have a doctorate.

One unanticipated finding is that a teaching certificate is not always required to get a job at an international school. According to Search Associates, “Teaching certification/qualification from a major English-speaking country is preferred for classroom teachers by at least 60% of the schools we work with.” This means that about 40% of international schools don’t require teachers to have a teaching certificate. In interviews with teachers, only one did not have a teaching certificate. However, the interviewed teacher did have a Bachelor’s Degree in early childhood education. The majority of the administrators interviewed did not have teaching certificates. The administrators overseeing these international schools have, oftentimes, never taught children or been educated in teaching practices. The following posting for a high school principal position at International School Pointe Noire illustrates this point. “Advanced degree, Experience in a multi-cultural setting, ability to communicate in French, risk-taker; adventurous; resourceful; along with strong interpersonal and communication skills.”

Experience

Having had a vast array of rich experiences will highlight any teacher applying at an international school; that is what sets candidates apart from each other. The most important type of experience for teaching candidates to possess when applying for an international position is

teaching experience in their home country. Most schools require a minimum of 2 years, but 2-7 years was what the teachers interviewed recommended. Every teacher interviewed mentioned previous teaching experience as a necessity for getting that first international teaching position. International schools are often of higher quality than domestic schools. It is important that candidates have experience with classroom management, lesson development and implementation, assessment, and have a substantial amount of effective teaching strategies in their arsenal. Although it is sometimes possible to get a teaching position at an international school without previous teaching experience, it would be an extremely difficult adjustment. The teacher would have to adjust to living in a foreign country, while also having to adjust to a new school and students and learning the "ins and outs" of their first teaching position.

Another important type of experience for international teachers to have is experience living abroad. This experience can be gained a variety of ways. Many of the instructors interviewed lived abroad and attended international schools as children. Others studied abroad during their college career. Some interviewees volunteered abroad after graduating college, through the Peace Corps or other service organizations. The experience living abroad does not need to be teaching related. The international schools want to ensure candidates will be able to adjust to living alone in another country. The international schools attempt to guard against the situation of hiring a new teacher, just to have that person return home after a few months. There were a few people interviewed that had no experience living abroad, but still were able to get hired at an international school. One person had never even left the United States before, but decided he wanted to teach abroad. He commented;

> "It was always a goal of mine to travel abroad and after five and half years of teaching in the US, I decided I wanted to live abroad in London. I naively set out to move to London

> without a job or real concept of what immigrating to another country would look like. This was in August 2007. The teaching job market in London was good at that time, however I did not have the necessary documentation to work in England, and I would need to redo my teaching qualifications in order to secure a job. While investigating these options, a family of a former student of mine had recently returned to England and asked if I had considered the American School. This was the first time I had heard there were such schools. From there I started searching the internet and sending my resume out to different schools. Something I did not know at the time was that August is definitely not the time to be looking for an international teaching job, but I got very lucky in that there was a position open in Frankfurt, Germany. I went through the interview process and was hired. This was the start of my international education career. Well this did eventually work out for me, it would have been better had I had experience living abroad. Regardless, I'm glad I took a risk and went for it."

This instructor has now been teaching internationally for 12 years, illustrating that experience living abroad is preferred, but not necessarily required.

Experience living abroad is not the only way for candidates to set themselves apart. Fluency in another language is always a strong selling point. Most international school instruction is in English, however, it is helpful to speak the language of the country the school is in, or at least learn enough of it make conversation with the locals. An English as a Second Language (ESL) endorsement is also helpful when working with students in another country. Most international elementary schools do not require students to speak English, even though it is the primary language of instruction. The researcher had the opportunity to spend some time observing and volunteering in a kindergarten classroom at an international school in Frankfurt, Germany. The international

school teacher had two students in her class who had recently came to the school from China and Finland and spoke no English. The teacher did not speak Chinese or Finish, nor did any of the other students in her class. The teacher had to discover a method to reach these two students, even though she did not speak their language and the students did not understand hers. This is where an ESL endorsement would be helpful.

Professional Development

It is important for teaching candidates to have a variety of professional development experiences. The techniques learned at conferences and seminars can typically be used in any setting, domestic or international. The individuals interviewed had extensive professional development training. The instructors did summer-long institutes and a variety of workshops, conferences, and seminars focused on topics ranging from, the newest cutting edge strategies in education, to a knowledge of different learning styles, and teaching in today's global society. One teacher had this to say,

> "I have attended numerous conferences and workshops to enhance my skills and knowledge in specific areas related to my teaching. These experience did not provide me with another degree, but were very important in helping ensure my skills and knowledge in the field of education were updated and current. They have also helped me advance my career by providing me with leadership opportunities."

Diverse professional development experiences are especially important for international positions because they allow candidates to enhance their skills and stand out from their peers as a superior candidate.

The Association of International Educators (NAFSA) is a great resource for teacher candidates to use. The NAFSA website has many publications on the research and current trends

in international education. The organization offers many conferences each year at different locations around the world that teacher candidates can attend to learn the newest practices and techniques in teaching. NAFSA also has online trainings and seminars that teacher candidates can complete. One especially helpful training NAFSA offers is the Academy for International Education. The academy is "an intensive year-long training program with extensive networking opportunities. The Academy fast forwards your learning process and prepares you to take on leadership roles." The program can be for international teachers who are just starting out or for experienced teachers who want to broaden their horizons. It is completed online and includes a 3-day training in Atlanta, Georgia. At the training, attendees are able to meet and network with other international teachers and administrators. The academy is a great way for teachers to "boost their proficiencies as an international educator through the creation of an individualized learning plan, training, and networking. Teachers are also able to build a network of international education colleagues, both in their region and nationally, to aid in their professional development."

Personality Traits

There are many traits that recruiters look for when hiring an international teacher. One of the teachers interviewed is part of the team of faculty members that interviews potential teachers. She stated that the team typically looks for the following traits in candidates:

- Articulate, with good communication skills
- Team player, willing to work with others to learn, solve problems, pool resources, share ideas and thoughts about education and the day to day events that happen in a school
- Have an in-depth knowledge of their subject area or grade level they are applying to teach
- Have educational views, perspectives, and beliefs that are similar to the school's mission and educational beliefs

- Open-mindedness
- Resourcefulness
- Have some background about the school and program
- Good references from past administrators, other teachers the candidate has worked with, or parents of past students
- Willingness to embrace new opportunities
- Positive attitude
- Able to articulate why they want to work at an international school
- Past experiences that match what the school's characteristics

Teachers, no matter where they teach, need to be knowledgeable, resourceful, open-minded, and positive. When applying for a position at an international school, however, the competition is much tougher. Through the application, resume, and interview process, the school needs to know, without a doubt, that the applicant possesses all the professional teaching traits and will be an excellent match for the school. This is the rationale for teaching at a domestic school for a few years, to better develop these skills. It behooves a serious candidate to improve their teaching craft and develop more self-confidence when applying for a position at an international school.

Another characteristic a teacher candidate for an international school must possess is adaptability. Teachers need to adapt to living in a whole new culture. Everything about their lifestyle needs to be adapted, from their grocery shopping routine to their means of transportation. Adapting to life in a new country is not an easy task.

International teachers also need to be able to adapt to teaching a different type of student. The students at international schools are typically intelligent, with many life experiences. The students have bounced around a lot from school to school, sometimes attending two, or even three,

different schools in one year. Teachers need to be able to adapt to students leaving their classroom at a moment's notice, as well as new students coming in. Students at international schools likely will not have a lot of close friendships, because long-distance friendships are hard to maintain, especially for children. This can cause the students to have social and emotional issues. The students likely have had a lot of exposure to adults, more than would be expected for a child living in the United States, attending a public school. This can be surprising to new international school teachers because the students will have advanced vocabularies and impressive conversation skills. Not only do teachers have to adapt to a different type of student, they also have to adapt to more demanding parents. The parents of students at international schools are typically highly educated. The parents spend quite a bit of money to send their child to the school, so they expect a lot of their child's teacher. The parents are also typically busy. Teachers have to adapt their schedules and find ways to communicate with parents. Oftentimes this means late-night or early-morning meetings and phone calls during personal time.

Placement Agencies

The use of placement agencies was noted many times in my interviews with current international school faculty members to assist with the job hunting process. Nearly all the teachers surveyed said they used an agency to find open positions. Only two teachers who were interviewed did not use an agency, and they both got jobs through knowing someone that worked at the school to which they submitted an application. The most popular international teaching agencies are Search Associates, International School Services, and the Council of International Schools. An associate from Search Associates was interviewed to learn more about the process of joining an agency. The first step in this process is to complete an application. This includes uploading a resume, short biography for the profile, and references. Then, upon approval of the application,

the prospective teacher pays the application fee. The application fee is typically around $300, depending on which agency. The fee keeps members active for three years and includes admission to one job fair.

Once the teacher is accepted, a candidate profile is displayed on the website. Schools that are looking for teachers can also create a profile on the agency's website. The schools can view teachers' profiles and contact them based off their credentials. Teachers can also view open positions at schools and contact them that way. Each member is given a contact person, or associate. This associate works with the prospective teacher and helps the candidate market themselves to schools in a positive manner. These associates are extremely helpful because they have experience as international teachers and administrators. The associate interviewed for this project had spent almost 20 years abroad as both a teacher and an administrator. After retiring from administration, the associate came back to the US and got a job at Search Associates, helping prospective teachers and administrators locate positions and prepare for successful interviews.

Another benefit of joining an international teaching agency is the opportunity to attend a job fair. At the job fairs, attendees have the opportunity to talk to recruiters from schools face-to-face, rather than over the phone or Skype. On the first day of the fair, all the schools in attendance have a table and a list of the positions they are hiring for. Attendees move through the fair, using their resume to apply for jobs they are interested in. The second day of the fair is for interviews. The interviews are conducted on site and typically last about 30 minutes. On the second day, attendees also have the opportunity to attend informational sessions about the different schools in attendance. They can attend and get more information about the housing, transportation, cost of living, and culture of the school. The third day is for second interviews. The attendees will typically be offered jobs by the end of the third day of the fair. Even if an attendee does not get a job offer

at the fair, the networking done is substantial. They have put their name and resume out there for schools to remember when they have another position become available. Historically, attending a job fair was absolutely necessary to get a job at an international school. In more recent years, however, attendance is helpful, but not necessary. With the emergence of media technology such as Skype, a lot of interviewing and hiring is done over video chat, rather than face-to-face.

Things to Research before Accepting a Position

Before interviewing or accepting a position with a school, there is a great amount of research the prospective teacher must do. Just like one would in their own country, it is important to get a feel for the school. A teacher candidate should go to the school's website and determine if the school's mission statement and values align with their own. Candidates should reach out to someone at the school and ask questions about the environment and culture of the school to see if it is somewhere they could work. Candidates should find out where most of the teachers live and how they get to work each day. Determine the cost of living for the area and make sure the salary the school is providing will cover living expenses and more. The international school community is extremely tight-knit and most contracts last 2-4 years. If a teacher leaves a school before their contract is up because they realize it's not a place they can live, it becomes extremely difficult for them to find another job. It is better to research the school as much as possible beforehand. One teacher interviewed had this to say, "If the school doesn't seem like a good fit, then do not take the job. It is better to continue searching for a job you will love, rather than take a job you know you will not like."

Before the interview, it is important to learn a little about the culture of the country you are interviewing in. For example, in many Asian and Middle Eastern countries it is considered rude to make eye contact. In the US, however, eye contact is a crucial part of the interview. It shows the

interviewer that the applicant is being attentive to them. If a prospective teacher goes to an interview at a Middle Eastern or Asian school without knowing how the culture values eye contact, the interviewee could offend the interviewer and ruin their chances of getting hired. -One of the individuals interviewed is an administrator at a school in Japan. These are the comments describing the interview;

> "When I first went for my interview I was not prepared. A former colleague of mine told me about the opening and, on a whim, I decided to apply for it. Just two weeks later, I was on a plane to Japan for an interview. I remember I was sitting in the waiting room for a long time. I made small talk with the school's secretary and she told me not to shake the interviewer's hand. I thought she was crazy, why would I not shake the hand of my interviewer?! She went on, however, and told me that in Japan it is expected that interviewees bow to the interviewer, rather than shake hands. After I got the job, my former colleague told me that one of the main reasons why was because the interviewer was impressed by my knowledge of Japanese culture."

It would have been better for the candidate to do some research on the school and culture of Japan beforehand. Even if the person interviewing applicants is not from the country the school is in, they will likely be impressed that the applicant has done research and knows the proper etiquette for the country they are in.

Conclusion

A job in an international school requires a lot of extra work. It is a long, difficult, sometimes discouraging, process. Candidates must be well-educated and have many unique experiences to set them apart. In addition to all this, candidates must be willing to uproot their lives and move across the world to immerse themselves in a brand new culture. They must learn new norms, a

new language, and a whole new way of life. If a teacher candidate is up to all this change, then the candidate is in for an exciting, rewarding educational experience.

Perhaps the best advice that can be given to an individual wanting to teach at an international school is this, “Be flexible. Make change and compromise your two best friends. Be open to possibilities. Sometimes the best experiences come out of things you haven’t planned for or were aware of. You are in for a wonderful and awesome experience provided you are ready to learn new things.”

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Learning Together: Benefits of Focused Language and Literacy Instruction for ELLs by Pre-Service Teachers in a Course-Based Field Experience

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Abstract

This study explores the effects of a course-based university field experience with elementary school English language learrners (ELLs) over seven semesters. The university course was held at the elementary school, and the field experience wsa conducted during extended class time. Pre-service teachers planned and implmented focused language and literacy instruction for the ELLs over a 10-week period each semestser. Data includes observations from the univeristy professor and the ELL teacher, pre/post literacy assessment scores of the ELLs, and a survey of the university pre-srvice teachers. Results indicated growth in collaborative learning relationships between the pre-service teachers and the ELLs, value placed on the collaboration by the university professor and the ELL teacher and university students, significant gains in probability of reading success and in volcabulary for the K-2 ELLs and in maze (i.e., reading efficiency and comprehension) for ELLs in 3rd-5th grades, and educationally significant gains for many ELLs in grades 3-5 in reading level, reading comprehension, and word analysis. Implicaitons for future reasearch, teacher education programs, and field experiences are provided.

Key Words: English language learners, ELL, field experience, teacher education, language, literacy

With the continuing increase in numbers of English language learners (ELLs) in public schools in the U.S., there is a growing need for teachers who have knowledge of second langauge acquisition and cross-cultural communication, skills in implementing effective, research-based educational practices, and dispositions that support ELLs and advocate for their rights. Teacher education programs most often require some form of field experience work with students in schools. Some programs include a requirement to complete field work in schools with ELLs, which can benefit the development of knowledge, skills, and dispositions of pre-service teachers (Coady, Harper, & de Jong, 2011; Cowan & McCloskey, 2004; Danielson, Kuhlman, & Fluckigier, 1998). The effectiveness of these experiences is for the ELL students with whom the university pre-service teachers work is less clear although no less important.

Public school demographics in the U.S. show that the percentage of white, non-Hispanic students has been decreasing while Hispanic student enrollment has been on the rise. Between fall 2002 and 2012, white, non-Hispanic students in public schools in the U.S. decreased from 59% (28.6 million) to 51% (25.4 million). During the same time period, Hispanic student enrollment increased from 18% (8.6 million) to 24% (12.1 million). The percentage of ELLs has also been increasing, according to the National Center for Educational Statistics. Nationwide, in 2012-13, 9.2% (4.4 million) of public school students were ELLs, with the percentage in California as high as 22.8%. In six states (i.e., Alaska, California, Colorado, Nevada, New Mexico, and Texas) and Washington, DC, the school population included 10% or more ELLs. In 18 states (i.e., Arizona, Arkansas, Delaware, Florida, Hawaii, Idaho, Illinois, Kansas, Maryland, Massachusetts, Minnesota, New York, North Carolina, Oklahoma, Oregon, Rhode Island, Virginia, and Washington), ELLs composed between 6% and 9.9% of the public school population (National Center for Educational Statistics, 2015).

ELLs educated in mainstream settings need teachers with the strength of knowledge and skills and the dispositions to support and advocate for their ELLs' learning as well as confidence in taking a complex, supportive perspective. De Jong, Harper, and Coady (2013) call for a three dimensional preparation of pre-service teachers who will work with ELLs, which supports the development of the following: (1) an understanding of bilingual learners within the context of their linguistic and cultural heritage; (2) knowledge and skills for teaching and learning that are strengthened by an understanding of the function of language and culture with the schools; and (3) capacity in working with and in support of change in educational policies that do not support the learning of their ELL students. Furthermore, Bartolome (2004) advocates that effective teachers for ELLs question dominant ways of thinking, such as support for meritocracy (i.e., support for a social order based on on the belief that those who have more are more deserving), refuse to view their students as demonstrating deficits in skills, do not adhere to views of the superiority of the white, middle-class in the U.S., experience positions of low status or thoughtfully observe others in such positions, and view their role as advocates for their students.

Many teacher education programs require field experience with ELLs, and investigations have found this to be of benefit to pre-service teachers. Through field experiences that were enhanced by opportunities and requirements for reflection, both in class with peers and professors as well as in writing, pre-service teachers are better able to develop their own knowledge, skills, and dispositions about pedagogy as it relates, in particular, to culturally and linguistically diverse students (Danielson, Kuhlman, & Fluckigier, 1998). Field experiences that are embedded in coursework can provide opportunities to apply research to practice, actively engage in learning, learn from observations of peers working, and plan cooperatively, applying strategies and course content through their practice (Cowan & McCloskey, 2004). Reports from teacher education

graduates have shown that field experiences that provided opportunities to work directly with ELLs, including field observations and individual and small group teaching, were the piece of the teacher preparation program that was most helpful in preparing to teach ELLs (Coady, Harper, & de Jong, 2011).

Preparing pre-service teachers to work with diverse students is complex, due to many factors (Gandara & Maxwell-Jolly, 2006). Many pre-service teachers have different backgrounds than their diverse students. For example, nationwide, the gap between the percentage of teachers and diverse students continues to increase. According to data from the National Center for Educational Statistics (2012), in 2012, diverse students composed nearly half of the school population, while only 18% of teachers were diverse. When considering racial and ethnic backgrounds specifically, the gap was largest for Hispanics. The demographics at the state level present similar issues, with nearly every state presenting a significant gap. The data at the district level in California, Florida, and Massachusetts (which include 20% of all public school students in the U.S.), often present even larger gaps (Boser, 2014).

This difference in background between teachers and their diverse students can create different expectations for diverse students. In one study (Terrill & Mark, 2000), pre-service teachers' expectations for racially and linguistically diverse students differed significantly from their expectations of students from the dominant culture. The pre-service teachers expected their diverse students to exhibit more discipline issues, experience higher rates of child abuse, include lower numbers of gifted and talented students, and demonstrate lower motivation levels than the rest of their students. Pre-service teachers may view their ELLs as having cultural and linguistic deficits and that they are a burden to the teacher (Pappamihiel, 2007). In another study (Xu, 2000), preparing pre-service teachers to work with diverse students exhibited complexities regarding pre-

service teachers': (1) individual differences in the ways in which they understood diversity, even when given similar opportunities for interaction with diverse students and for reflecting on and discussing those experiences, (2) exposure to diversity at different levels, and (3) application of understanding of diversity and knowledge of instructional strategies. Pre-service teachers with more coursework in diversity and cross-cultural experiences and those with the ability to speak another language have been shown to have more positive beliefs about diversity (Author & Szecsi, 2007).

Through field experiences with diverse students, pre-service teachers have the opportunity to develop knowledge, skills, and dispositions regarding effective education for all, including diverse students (Council for the Accreditation of Educator Preparation, 2013). Additionally, through field experience that includes reflection and discussion in support of the experience, pre-service teachers can strengthen their understanding of second language acquisition (Fitts, 2012; Zainuddin & Moore, 2004) as well as their tolerance and sense of support for ELLs and their families (Bollin, 2007; Hutchinson, 2013; Pappamihiel, 2007). These experiences have also been shown to help pre-service teachers develop skills in examining personal biases, seeing situations from the other's perspective, awareness of discrimination and social injustice, accepting their own responsibility in addressing community needs, and appreciating another's culture (Bollin, 2007). Working with ELLs in field experience can result in promoting pre-service teachers' interest in teaching ELLs, especially bilingual pre-service teachers (Gomez et al., 2009). It is recognized that field experiences with ELLs which are connected with a course on second language acquisition and effective ELL instruction are most beneficial for the pre-service teacher's development (Fitts, 2012).

Working with university students in one-on-one or small group settings has shown some promise; however, there is a paucity of studies that specifically focus on results for ELLs. Two extensive examinations of extant research on (1) the effectiveness of reading programs for ELLs and language minority students and (2) the effectiveness of one-on-one reading tutoring programs for struggling readers, respectively (Cheung & Slavin, 2005; Elbaum et al., 2000), reveal positive effects for children working with university student tutors. Tutoring programs in reading for upper elementary, Spanish-dominant students were effective with repeated readings, vocabulary, and comprehension instruction when working with undergraduate education majors (Cheung & Slavin, 2005; Denton et al., 2004). For students needing help in reading, for example, in a meta-analysis of one-on-one tutoring programs for struggling readers, university students have been shown to provide effective help to struggling readers, although ELLs were not singled out (Elbaum et al, 2000). There is some promise regarding the effectiveness of university students as reading tutors to struggling readers and to language minority students.

The Context

ELLs in Florida. In 2015-2016, 9.8% (273,570) of Florida's public school students were classified as ELLs (Florida Education Department, 2016). In the decade preceding 2012-13, there was an upward trend in the percentage of ELLs in Florida, resulting in a cumulative increase of 28% (Florida Department of Education, 2013). According to the National Center for Education Statistics (2011), while 2010-2011 state-level data, overall, indicated that ELLs composed 6% of the school population, Florida reported 8.7%, and the number of ELLs in Florida was the second highest number among reporting states.

The school district in which the research project took place reported an ELL population of 14.2% in 2012-13, which represented a 7.8% increase over the previous 10 years (Florida

Department of Education, 2013). In 2015-16, the school district reported an elementary level ELL population of 23% district wide. In the same year, the population of the school in which the study took place included 8% ELLs, 21% students with Spanish as their home language, 3% of students with Haitian Creole as their home language, 36% students with Hispanic (26%), Black, Asian, Multi-racial, and Indian backgrounds (Florida Department of Education, 2016).

According to the National Center for Education Statistics (2016), ELLs' development of proficiency in reading is far behind that of their non-ELL peers. In 2015 in Florida, 9% of 4th grade ELLs' scores indicated proficiency in reading, compared to 91% of students who were not ELLs. For 8th grade ELLs and non-ELLs in Florida, the gap in reading proficiency scores is wider: 5% and 95%, respectively.

Teacher Education and ELLs. Federal law stipulates that teacher preparation programs must provide professional development to teachers, administrators, and staff who will work with ELLs that is research-based, focuses on effective methods, and is sufficient to have a positive and lasting influence on ELLs, and, currently, more than 30 states' requirements do not go beyond the federal requirement. Only Arizona, California, and Florida require an endorsement or certification for teachers working with ELLs in general education programs (Education Commission of the States, 2014).

The Florida Consent Decree of 1990 outlines the actions that must be taken for the education of ELLs to meet state and federal law, jurisprudence, and civil rights stipulations. The Consent Decree resulted from a lawsuit brought by several groups and individuals against the State Board of Education, which was settled out of court. Among the required remedies of the Consent Decree, as of 2001, the ESOL Endorsement must be provided by state approved teacher preparation programs (United States District Court for the Southern District of Florida, 1990).

While literature in the field addresses issues of pre-service teacher preparation and the benefits of quality field experiences, literature on the effects of field experience on the skills of the English language learner participants is lacking. This may be due, in part, to the complicated nature of such a study: lack of a control group if all or nearly all ELLs participate, the possible ethical dilemma of excluding ELLs from such a study, the practical and logistical nature of the scheduling of field experience during the university class time as well as during the school master calendar allotment for academic time across all grade levels. This investigation examined the benefits of a university course-based field experience conducted during extended class time onsite at an elementary school between pre-service teachers and ELLs. The research questions that guided the study were:

1. What are the perceived benefits of the field experience, according to the university professor, the pre-service teachers, and the ELL teacher?
2. Do elementary ELLs, who receive focused literacy instruction from pre-service teachers, make gains in their literacy skills? If so, in which kinds of skills is growth shown?

Methodology

The Field Experience Context

The university field experience was conducted at an elementary school located in a suburban area of a county school district in the southeastern U.S. The school has a long-standing professional development relationship with the College of Education. School demographics indicate that 71% of the students have a home language of English, and 29% of the students have a language other than English at home (i.e., Spanish 21%, Haitian Creole 3%, Other 5%). Eight percent of the students are classified as ELLs, and another 2% were recently exited from ELL services. The school is racially/ethnically diverse with 64% white, non-Hispanic, 25% Hispanic,

6% Black, 2% Asian, 2% multi-racial, and less than 1% Indian. Over the seven semesters of this study, the percentage of students receiving free or reduced-price lunch was between 28% and 37% of the student population (Florida Department of Education, 2016).

The university students who provided the tutoring to the elementary level ELLs in this study were enrolled in an accredited, integrated undergraduate teacher preparation program, which provides the ESOL Endorsement, as required by the state of Florida, using an infusion model. While the state requires five courses for the ESOL Endorsement, undergraduate programs are permitted to provide two to three stand-alone ESOL Endorsement courses while infusing the content of the rest of the required content throughout the rest of the program. For example, students enrolled in a literacy methods course in the program might study effective literacy instruction for ELLs within the course, and students in an assessment course might study cultural and linguistic considerations in appropriate assessment techniques.

Pre-service teachers enrolled in the program were required to complete two stand-alone ESOL Endorsement courses. The teacher candidates who worked with the ELLs in this study were enrolled in the first of these 2 courses, which is typically taken in the second semester of the junior year, and which addresses issues of second language acquisition, cross-cultural communication, and culture. The second course, typically taken in the first semester of the senior year, addresses ESOL methods as well as curriculum and materials development.

The first course includes the field experience, which provides the context of this study. This field experience includes 10 hours (1 hour per week) working with an assigned classmate to plan and implement lessons for groups of, typically, 2-3 elementary ELLs. Students are provided with the school's grade-level curriculum guides at the start of the semester and are guided to plan lessons to address the content their ELL students would be missing by being out of class. ELLs

participate in the field experience primarily during their literacy block and, far less frequently, during their mathematics instructional time. Lessons target areas of need in productive and receptive language and literacy skill development, as determined by the results of literacy and language testing and by teacher input, to encompass all four aspects of language: listening, speaking, reading, and writing. The emphasis on language development occurs through literacy skill development.

Teacher candidates are required to reflect on their experiences both within a field experience log as well as within class discussions. Such reflection is key to helping teacher candidates understand their learning, developing awareness of issues, and growing abilities of observation and planning and implementing effective learning opportunities for ELLs (Nasir & Heineke, 2014). In their reflections, students are asked to connect specific and varied course content in second language acquisition, cross-cultural communication, and culture to their experiences and vice versa.

Measures and Procedures

To investigate the observations of university students, the ELL teacher, and the researcher as well as the literacy growth of the ELL participants, the following instruments were used:

Survey. An anonymous survey was used to collect information about preservice teachers' assessments of the field experience at the school site, as opposed to taking the course on the university campus and completing field work at a school individually. The survey was administered during the last class period of the semester and was revised over time. Both versions were similar in content regarding assessing the opportunity to work with ELLs and the level of importance placed on taking the course onsite at an elementary school. The two surveys differed somewhat in the questions asked, with the first including items related to the university students'

level of perceived confidence in working with ELLs and connection with course content and the later version including items about whether and, if so, how the experience was beneficial for them and for their ELL students.

Observations. The ELL teachers' and the researchers' observations were recorded by each individually at the conclusion of 10 semesters of collaboration (i.e., 7 semesters in which data was collected and 3 subsequent semesters).

The Florida Assessment for Instruction in Reading (FAIR). FAIR is a K-12 assessment that was designed and administered by the Florida Department of Education to be informative for instruction. The assessment was individually administered 3 times per year via the computer and provides reports that link to resources for instruction. The test was controversial (Jester, 2014; Solocheck, 2014) and was replaced with the FAIR-FS (Florida Assessments for Instruction in Reading – Florida Standards) in 2014 (Florida Center for Reading Research, 2014).

> There are two versions of the FAIR test: one for kindergarten through second grade and another for third through fifth grade. The test for kindergarten through second grade consists of a Broad Screen/Progress Monitoring Tool (BS/PMT), with provides a score for the Probability of Reading Success (PRS), a Broad Diagnostic Inventory (BDI), which includes subtests for reading comprehension, listening comprehension, and vocabulary, and a Targeted Diagnostic Inventory (TDI), which includes subtests for more specifically targeted skills, such as phoneme blending. The teacher can examine the scores for BS/PMT as well as the BDI and then can look at the TDI tasks to determine a student's targeted needs. The FAIR is intended to allow for an examination of trends within grade levels, within teachers, and across grades (Foorman & Greenberg, 2011). ELL participant testing data was collected via a thrice per year testing protocol, as determined by the Florida

Department of Education. The FAIR testing was conducted in the early fall, in the winter, and in the late spring, thus providing pre-/post-testing data for the fall (i.e., fall/winter) and for the spring (i.e., winter/spring) university semesters during which the university students worked with the ELLs. The Probability of Reading Success (PRS) predicts to a nationally normed test. The Vocabulary subtest is criterion-referenced and provides a percentile rank, which is based on Florida's grade-level norms and is part of the Broad Diagnostic Inventory (Foorman & Greenberg, 2011).

The FAIR assessment for third through twelfth grades included a BS/PMT for reading comprehension for all students, and maze and word analysis subtests. Progress monitoring in reading comprehension, which predicts to the criterion of passing the Florida standards assessment, allows for identification of students who may fall short of grade level literacy standards by the time of the state's high-stakes assessment unless they receive additional instruction that targets their literacy needs. The Lexile measure, part of the BS/PMT, is considered an indicator of the text level at which a student can read at 75% comprehension. The Maze subtest is meant to aid in determining whether a student has difficulty in text reading efficiency and low levels of reading comprehension. The Maze and Word Analysis subtests are part of the Targeted Diagnostic Inventory (TDI). Word Analysis provides information about fundamental literacy skills, especially in decoding and accurate reading and writing. The percentiles used for the broad screen, Maze, and WAPR are based on Florida's grade-level norms (Foorman & Greenberg, 2011).

Participants

Observations were collected from the researcher, the ELL teacher, and the university students. The researcher is a university professor with sixteen years of experience teaching the

second language acquisition course and 8 years of experience teaching the course at the elementary school site and coordinating with the ELL teacher.

The ELL teacher has 14 years of experience working with ELLs and coordinating with teachers. This is the second school at which she has worked with ELLs, and she has been at this school for 9 years.

The university students completing the surveys were primarily white, non-Hispanic with limited exposure to languages other than English. The 55 students completing the survey included 6 students of Hispanic descent, 6 students originally from Haiti, 52 females and 3 males. All were first semester juniors in the second semester of the teacher education program.

The elementary school students were all classified as ELLs, as determined by the Comprehensive English Language Learning Assessment (CELLA), an assessment of English language listening, speaking, reading, and writing, which is administered online upon registration to school to determine English language proficiency as well as by paper annually in the spring as one measure used to determine continuation of or exit from ELL services. For a student to be classified as an ELL, they must have scored as limited in their English proficiency in at least one subtest. Among the ELL participants, there were 117 K-2 students and 102 students in third through fifth grades. (See Table 1.) However, participants with incomplete FAIR data were deleted from the analyses, so there is some variance in sample size across analyses.

Table 1.
ELLs Participants across Semesters

Semester:	1	2	3	4	5	6	7	Totals
Grade K	2	1	0	6	6	11	13	39
Grade 1	11	3	0	4	4	9	9	40
Grade 2	8	7	0	8	4	7	4	38
Grade 3	9	4	3	8	2	4	6	38
Grade 4	9	7	2	7	5	0	0	30
Grade 5	3	10	6	10	7	0	0	36
Grades K-2	21	11	0	18	14	27	26	117

Grades 3-5	21	21	11	25	14	4	6	102
Totals:	42	32	11	43	28	31	32	219

Data Analysis

Observations. Observations by the researcher of the ELLs, the university students, and the ELL teacher to provide a richer picture of the situation over 10 semesters. The survey data was examined for recurring themes, and the written observations of the ELL teacher and the research are provided here within.

Test data. In this study, for participants in kindergarten through second grades, the PRS and the Vocabulary subtests were included for analysis based on the number of complete pre-/post-test data points for participants for each subtest, the contribution of the skill measured by each subtest to the overall picture of reading growth, and recommendations of the Florida Department of Education (Foorman & Greenberg, 2011). Data analyzed for third through fifth grade participants include Lexile, Reading Comprehension Percentile Rank (RCPR), and Reading Comprehension Ability Score (RCAS), all part of the BS/PMT, and the Maze and Word Analysis Percentile Rank (WAPR) scores.

The differences in means of FAIR subtest scores between pre- and post-tests were calculated for the participants for each of the seven semesters under investigation. For each of the subtests, a one-sample t-test was used to determine whether the mean participant score demonstrated significant progress over no progress at all (i.e., was significantly different from 0). The t-tests were two-tailed with an alpha level of 0.05. The scores analyzed resulted from the following subtests: PRS and Vocabulary for the kindergarten through second grade students and the Lexile, RCPR, Maze and WAPR for participants in third through fifth grades.

Surveys. Survey responses from the university students included both Likert-type responses and open-ended responses. The Likert-type responses were tallied, and the open-ended

responses were themed and grouped according to theme to examine the predominance as well as lack of responses.

Results

Observations

University professor's observations. Going beyond test results to sharing observations of participants in a study provides a deeper picture of what is happening by showing the impact, experience, adaptations, responses, and individual stories. Thus, description of the observations of a scientist in regard to a patient's or a participant's reactions to a treatment or situation can provide some of the most important information, even often more importantly and beyond that of quantitative data (Sacks, 2013). Here, I offer my observations related to the field experience over 10 semesters.

The elementary ELLs. The ELL participants would almost always enter the room looking a bit shy, at first, and checking out their new surroundings. When meeting in the Media Center, they seemed to be more comfortable entering during the first few sessions than when we met in adjoining classrooms, possibly because the students were more accustomed to going into the Media Center than into other classrooms.

The ELLs' level of comfort was observably improved with subsequent meetings with their university partners, and, most often, they would enter the room with smiles on their faces and return greetings from me. While working with their university partners, the students were engaged and motivated, especially with university partners who, according to the project guidelines, worked to plan activities that were less traditional (e.g., worksheets, flashcards) and more motivating. The university partners frequently reported in their field logs that their ELLs expressed wanting to continue working with them, both at the ends of sessions or at the end of the semester. This, of

course, was clearly gratifying to my students, who often expressed their sense of satisfaction in having connected with their buddies and having provided educational experiences for them that they wanted to continue.

The university students. Holding the course at the elementary school site allows for added support for the pre-service students before, during, and after the field experience from the university professor, the ELL teacher, and peers. Additionally, planning with an assigned class partner provides additional professional support as well as experience in professional negotiation.

The university students, possibly knowing I would be circulating to see what they were doing with the children, were almost always consistently well-prepared and working in sync with one another and the children. As reported in their field logs and reflections, they were most often professional in their collaborations with one another and often recognized the benefits of such collaboration. They also reported feelings of sadness when the experience was over. For some students who were able, they would return to the classroom of one or more of their ELLs after the required field experience concluded, so that they could continue their work with the child(ren).

In our ongoing, collaborative in-class reflections, students were asked to bring learning experiences and challenges to the attention of the class. I would ask that they share experiences that they thought we could learn from together as well as challenges about which they thought we could brainstorm together to try to find a solution. Oftentimes, they would report back to the class on how the implementation of a particular suggested solution went and, sometimes, ask for additional ideas.

There were few, but some, instances where professional collaboration was challenging for pairs of students. I always invited students to come to talk with me privately, individually or with their partner, if they found themselves in such a situation. In these sessions, I would ask students

to share what was happening with their partner, how they had tried to resolve the situation and the effectiveness of those efforts, ideas they might have for what else they might try, and any ideas I might have for possible solutions. Then, we would narrow down the options to 1 or 2 activities they thought had potential to help resolve the situation. I always invited students to come back to talk with me to share the results and, if needed, discuss further options. Most often, students reported that the situations were resolved based on ideas we discussed.

The ELL teacher. I respect teachers and their considerable work load. Due to this fact, I always carefully consider any request I make to the knowledgeable, respected, and willing ELL teacher with whom I collaborate at the school. She has never given me any indication that the extra work associated with her lion's share of creating this experience for my university students and her ELLs is a burden in any way. For a long time, I was unsure if this was due to her kindness, her competence, her efficiency, or, possibly, a feeling that it was expected of her by the school administration, which was supportive of the partnership with the university.

I received at least a partial answer to this question one semester when I told her that, due to scheduling issues at the university, we would not be able to hold class and field experience at the elementary school in the upcoming semester. It is often in the split second of an initial reaction that one receives the most honesty. In that split second, I saw her face fall. Then she expressed her disappointment in our not being there for the coming semester. She said that it was so beneficial to her ELL students and that it was really too bad for them to have to miss out on this opportunity, and she asked if I sure it was not possible and if there was another way. This was, for me, significant anecdotal data in this project and gave me a renewed sense of purpose in continuing our collaboration as well as gratitude in knowing that she valued this collaboration as much as I did, because she saw it as beneficial for her students, as did I for my own students.

The ELL teacher's observations. I have worked to support ELLs under different roles for 14 years: as an ELL tutor for 4 years, an ELL Resource Teacher for a year, and as an ELL Contact/Immersion Teacher for 9 years. These experiences have given me a myriad of perspectives on how to better assist ELLs. I am passionate about ELLs, because I am ELL as well; I understand how they feel moving into a completely different culture and unknown environment and being expected to achieve district and state academic goals.

When I was approached to collaborate in this partnership, I was uncertain at first, not knowing what to expect. However, when I had an opportunity to meet the university professor, Dr. Giambo, and as we started to plan and organize, I was excited and optimistic knowing the field experience would be a win-win situation for both the ELLs and pre-service teachers. I expected that this type of experience would provide the university students with experience about how to better serve ELLs when they come into the classroom. I anticipated benefits for my ELLs as well, since they would get some one-on-one time that they might not get in their classrooms with 20 other students.

With experience in this partnership, I have become more committed to do my best to keep the partnership going for many years to come. Why? Simple. It benefits the university students as well as my ELLs. It is an eye opener for pre-service students, because they become more prepared regarding expectations for ELLs and they learn about misconceptions and the importance of background knowledge for ELLs. I have also observed these same benefits among some teachers at our school, who were hired after going through this kind of experience in the program, compared to other teachers in the school. Furthermore, seeing the level of commitment the pre-service teachers exhibit in the preparation and delivery of the lesson plans, based on the students' curriculum and standards was, and still is, truly remarkable. I knew that my ELL students had

benefitted by receiving one-on-one instruction based on their academic needs, because I saw their increased confidence and enthusiasm. For example, 5th graders, who do not typically get excited about academics kept asking when the university students were going to start again. Some ELLs began the experience shyly and then opened up showing more confidence in how they conducted themselves. Witnessing the enthusiasm and willingness the ELLs have shown semester after semester to participate in the field experience tells me we must continue with this partnership.

I have observed various reactions from the teachers whose ELLs participate in the tutoring. Some teachers have welcomed this partnership and have seemed more open to it. I think that is because they see the one-on-one time as beneficial for their ELLs. At the same time, some other teachers have expressed concern about the time the ELLs spend out of the classroom and about the demands of the curriculum, especially with standardized testing. In my opinion, the one-on-one time and benefits for the ELLs that I have observed serve to address the concerns that some teachers have expressed.

Most importantly, looking at the data gives me the reassurance that what we have been doing for over 10 semesters was, and still is, the right decision/approach to take, if we want to support our ELL students. That extra hour of weekly support that the ELLs receive makes a difference in their language, academic and social development. Really, I hope others take notice of this partnership and try to incorporate this type of experience into the ELL Endorsement courses in universities across the state. Ultimately, we all want what is best for our ELL students, and I believe this is an option that others should embrace.

Reading Skill Development

Probability of Reading Success (PRS), K-2. A two-tailed, one-sample t-test was conducted to compare the difference in means from pre-test to post-test of participants' PRS. The

mean difference between pre- and post-test scores on PRS (M = 7.98, SD = 29.21) was statistically significantly different from 0, t(94) = 2.66, p < 0.01. Participants in kindergarten through second grade demonstrated statistically significant growth in PRS during the semesters they worked with the university students. (See Table 2.)

Table 2:
One Sample t-test on Pre-/Post-Probability of Reading Success Scores

n	95
Mean Difference	7.98
Standard Dev of Difference	29.21
Standard Error of Difference	3.00
T statistic	2.66
T alpha half 95% CI	1.99
Lower Confidence Level	2.11
Upper Confidence Level	13.85

Vocabulary, K-2. A two-tailed, one-sample t-test was used to compare the difference in means from pre-test to post-test of participants' Vocabulary scores. The mean difference between pre- and post-test scores on Vocabulary (M = 22.25, SD = 21.12) was statistically significantly different from 0, t(27) = 5.5737, p < .05. Participants in kindergarten through second grade demonstrated statistically significant growth in Vocabulary during the semesters they worked with the university students. (See Table 3.) The sample size for this analysis was smaller than the previous analysis (n = 28), since data from 88 participants had to be deleted from the analysis due to missing data from the pre-test, post-test, or both.

Table 3:
One Sample t-test on Pre-/Post-Vocabulary Scores

n	28
Mean Difference	22.25
Standard Dev of Difference	21.12
Standard Error of Difference	3.99
T statistic	5.57
T alpha half 95% CI	2.05
Lower Confidence Level	14.43
Upper Confidence Level	30.07

Maze, grades 3-5. Differences in means of third to fifth grade participants' Maze scores from pre-test to post-test were analyzed with a one-sample t-test (two-tailed). The mean difference between pre- and post-test scores on Maze (M = 6.26, SD = 13.23) was significantly different from 0, $t(76) = 4.1521$, $p < 0.0001$. (See Table 4.) Results indicate that participants in third through fifth grades demonstrated statistically significant growth in Maze levels. The analysis included complete data for 77 participants.

Frequencies of growth (Figure 4), provide additional information. Frequencies indicate that 15 students made no growth while the scores of 41 students were between 5 and 20 points higher at post-test. The remainder of the frequencies fall in the 25 to 65 point gain range (n = 7) or in the negative range (n = 11).

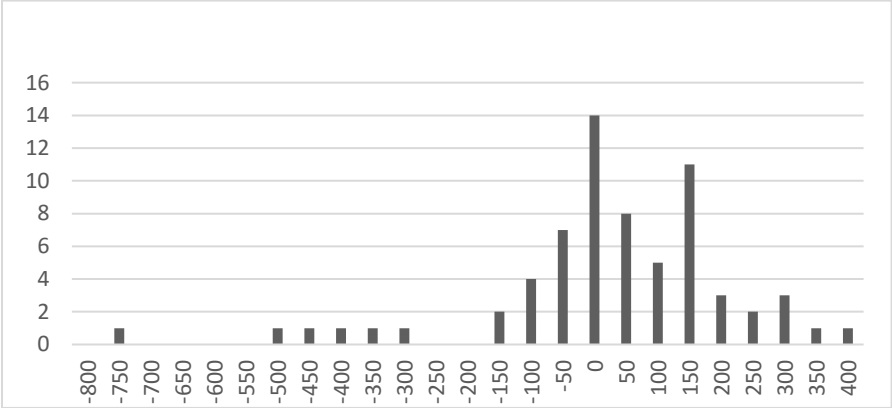
Table 4:
One Sample t-test on Pre-/Post-Maze Scores

n	77
Mean Difference	6.26
Standard Dev of Difference	13.23
Standard Error of Difference	1.51
T statistic	4.15
T alpha half 95% CI	1.99
Lower Confidence Level	3.30
Upper Confidence Level	9.22

Lexile, grades 3-5. To compare the difference in means from pre-test to post-test of third to fifth grade participants' Lexile scores, a one-sample t-test (two-tailed) was conducted. The mean difference between pre- and post-test scores on Lexile (M = 3.36, SD = 200.40) was not significantly different from 0, $t(66) = 0.1372$, $p = 0.89$. Results indicate that participants in grades three through five did not demonstrate statistically significant growth in Lexile levels during the semesters they worked with the university students. Incomplete Lexile subtest data was removed for 37 of the total participants, leaving complete data for 67 participants.

In spite of the lack of statistical significance in the t-test, frequencies of growth (Figure 1), provide additional information. Frequencies of the differences between pre- and post-test scores indicate that 14 students made no growth while the scores of 24 students were between 50 and 150 points higher at post-test. The remainder of the frequencies fall in the range higher than 150 (n = 10) or in the negative range (n = 6).

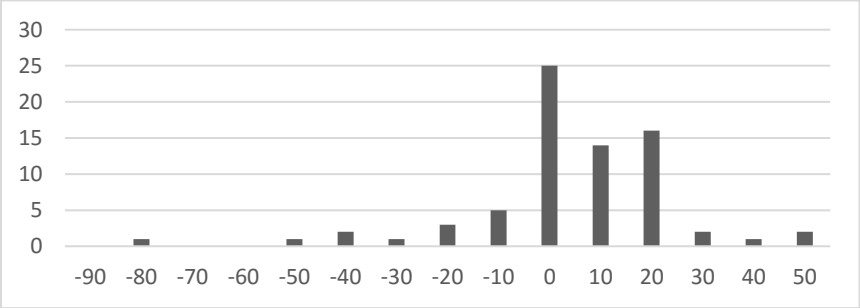
Figure 1.
Frequencies of Lexile Pre/Post Differences



Reading Comprehension Percentile Rank, grades 3-5. Differences in means of third to fifth grade participants' RCPR scores from pre-test to post-test were analyzed with a two-tailed, one-sample t-test. The mean difference between pre- and post-test scores on RCPR (M = -0.04, SD = 19.85) was not significantly different from 0, t(72) = -0.0177, p = 0.99. Results indicate that participants in third through fifth grades did not demonstrate statistically significant growth in RCPR levels. The analysis included only complete data for 73 participants.

Frequencies of growth (Figure 2), provide additional information. Frequencies of the differences between pre- and post-test scores indicate that 25 students made no growth while the scores of 30 students were between 10 and 20 percentile points higher at post-test. The remainder of the frequencies fall in the 30 to 50-point gain range (n = 5) or in the negative range (n = 13).

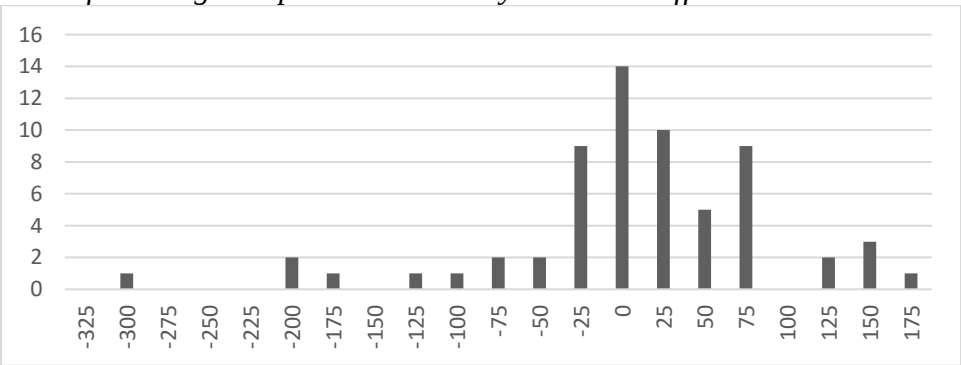
Figure 2.
Frequencies of Reading Comprehension Percentile Rank Pre/Post Differences



Reading Comprehension Ability Score, grades 3-5. Differences in means of third to fifth grade participants' RCAS scores from pre-test to post-test were analyzed with a one-sample t-test (two-tailed). The mean difference between pre- and post-test scores on RCAS (M = -4.57, SD = 84.47) was not significantly different from 0, t(62) = -0.4295, p = 0.67. Results indicate that participants in third through fifth grades did not demonstrate statistically significant growth in RCAS levels from pre- to post-test. The analysis included only data that was complete for 63 participants.

Frequencies of growth (Figure 3), provide additional information. Examination of the frequencies of the pre-/post-test differences indicate that 14 students made no growth while the scores of 24 students were between 25 and 75 points higher at post-test. The remainder of the frequencies fall in the 125 to 175-point gain range (n = 5) or in the negative range (n = 19).

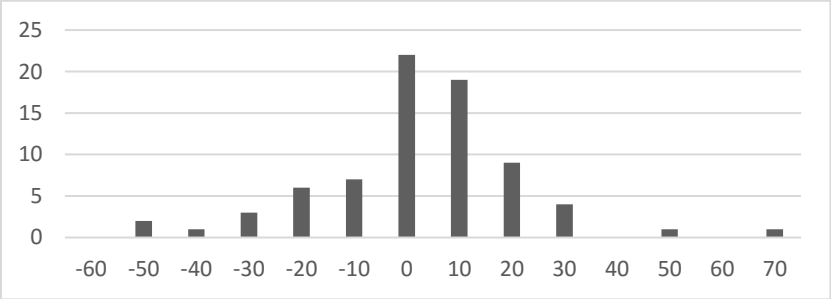
Figure 3.
Frequencies of Reading Comprehension Ability Pre/Post Differences



Word Analysis Percentile Rank, grades 3-5. To compare the difference in means from pre-test to post-test of third to fifth grade participants' WAPR scores, a one-sample t-test (two-tailed) was used. The mean difference between pre- and post-test scores on WAPR (M = -1.67, SD = 19.48) was not significantly different from 0, t(74) = -0.7411, p = 0.46. Results indicate that participants in third through fifth grades did not demonstrate statistically significant growth in WAPR levels during the semesters they worked with the university students. The analysis included complete pre-/post-test data for 75 participants.

In spite of the lack of statistical significance in the t-test, frequencies of growth (Figure 5), provide further information into the picture of growth. Frequencies indicate that 22 students made no growth while the scores of 32 students were between 10 and 30 points higher at post-test. The remainder of frequencies fall in the 50+ range (n = 2) or in the negative range (n = 19).

Figure 5.
Frequencies of Word Analysis Percentile Rank Pre/Post Differences



A summary of the frequencies of pre- to post-test growth for each of the subtests for which the t-tests were not statistically significant for third to fifth grade students indicate that most of the students showed educationally significant growth from pre- to post-test. (See Table 5.) On the Lexile subtest, while 14 students showed no growth, 34 students showed positive growth, with the bulk of the participants gaining 50 – 150 points. From pre- to post-test on RCPR, 25 students showed no growth, and 35 students showed positive growth, with most of the growth in the 10 to

20-point range. On RCAS, 30 students showed positive growth while the scores of 14 did not change. For WAPR, 34 students showed positive growth, while 22 did not show growth. In each of these cases, the number of participants who showed negative growth was far less than the number who showed positive growth.

Table 5.
Summary of Frequencies of Pre- to Post-test Growth Totals

Subtest	n	Growth
Lexile	14	No growth
	24	+ 50 – 150 points
	10	+ 51 or more points
	6	Negative growth
RCPR	25	No growth
	30	+ 10-20 percentile points
	5	+ 30-50 points
	13	Negative growth
RCAS	14	No growth
	25	+ 25-75 points
	5	+ 125-175 points
	19	Negative growth
WAPR	22	No growth
	32	+ 10-30 points
	2	+ 50 or more points
	19	Negative

Field Experience Survey

University students' survey feedback showed positive overall student assessment of the experience. All of the university students (n = 55) acknowledged the priority they placed on taking the course at a school site, which included completion of field experience during class time. Ninety-one percent of university participants expressed that the opportunity to work with ELL students was beneficial to them as pre-service teachers. For example, one student noted, "I was completely uncomfortable working with these students beforehand, because I felt I was ill-equipped. The experience broke me out of my shell." Another stated, "Since we had class right

after [field experience], it was a good way of getting suggestions from the other students [in the class.]" Another student wrote, "I was able to take what I've learned in my College of Ed experience thus far and work with my students – an amazing learning opportunity!" Another stated, "At first I was nervous, now I know that I made the right decision to become a teacher."

Students' self-assessments indicated a growth in self-confidence to work with ELLs. In the earlier version of the survey (n = 35), 86% of participants expressed that, as a result of their field experience, they felt confident to work with ELLs, and 91% acknowledged that the field experience supported the course content. For example, one student noted, "It was a great way to connect the course content to real teaching experiences with students for more meaningful learning."

University students' perceived the field work beneficial to their ELLs, overall. The later version of the survey (n = 20) revealed that 95% of participants felt that the field work was beneficial to their ELLs, while one student stated that the ELLs with whom s/he worked had a high level of English proficiency, and so, little progress was noted over the time of the field experience. More specifically, 85% of the university students noted gains in literacy skills, language, and/or content knowledge and skills, and 1 student attributed the lack of growth to the children's high English proficiency. One student noted, "This made me realize how much of a difference I can personally make in one student's life in such a short period of time."

Discussion

Over the course of the semester in which the ELL students were working with the university students, there was variation in growth as demonstrated by the pre-/post-test scores on the FAIR. For students in kindergarten through 2nd grade, statistically significant growth was demonstrated by the scores on Probability of Reading Success and Vocabulary, which were the

two subtests with sufficient data for analyses. For students in 3rd through 5th grade, there was statistically significant growth on the Maze subtest, indicating growth in text reading efficiency as well as reading comprehension. While the Lexile, Reading Comprehension Percentile Rank, Reading Comprehension Ability Score, and Word Analysis Percentile Rank scores did not show statistically significant growth from pre- to post-test, the growth may be considered to be educationally significant, as large numbers of participants showed positive growth in their test scores over the semester.

As many teachers know, children can show inconsistencies in the correctness of their responses as they acquire new knowledge (Gila, Dreyfus, Hershkowitz, 2010; Schneider & Hardy, 2013). Over the 7 semesters during which data were collected, 39 of the 221 participants showed 0 or negative growth. Six of the participants who showed negative growth for a semester later showed positive progress across one or more other semesters. This slower rate of growth is consistent with second language development which shows that time is needed to develop academic language proficiency (e.g., Cummins, 1979).

Some of the results can be considered to be consistent with literacy growth and demands as well. For example, some students who worked with university students in the primary grades showed some negative growth in third grade, which may be a result of continued limited English proficiency combined with the increased literacy demands in third grade. Another example that demonstrates consistency with both language and literacy growth is that only 3 participants who showed negative growth in one or more subtests did not show positive growth in other subtests. With the exception of 3 participants, all participants with negative or 0 growth in one or more areas showed positive growth in other areas. This inconsistency across subtests can be expected as students acquire new knowledge (Gila, Dreyfus, Hershkowitz, 2010; Schneider & Hardy, 2013).

While comparison of the participants' scores on the FAIR with a comparison group, such as ELLs statewide would provide a clearer picture of the effects of working with university students on targeted language and literacy needs, the comparison data was not released by the Florida Department of Education upon submission of a detailed request. The reason given was that the results of the study were not anticipated to be beneficial to the Department, although the results could inform both the education of ELLs as well as teacher preparation, both of which fall under the purview of the Department. In discussion with some teachers (personal communication, April 27, 2016, names withheld on request), questions arose as to why the statewide data would not be released, and teachers expressed the sense that sharing the data might open a Pandora's Box to reveal more problems with the assessment.

Some students' scores may have gone down from one administration of the test to another, even with some of the native English-speakers, due to many variables, including the computer-adaptive nature of the FAIR test for reading comprehension ability and percentile rank in grades 3 through 5. The reading comprehension subtest is computer-adaptive, which means that test items a student receives are determined by their success in answering earlier items. If a student answers earlier test items correctly, the difficulty level of subsequent items rises (Florida Department of Education, n.d.; Foorman, Kershaw, & Petscher, 2013). It is feasible that a student may receive more difficult items in subsequent administrations of the test, thus creating a more challenging test and, in a sense, a moving target for the student. Although a student may demonstrate progress in their skills in class, such progress may not be reflected on an increasingly difficult assessment. Teachers often have other assessments to show student progress, even when it is not reflected on the literacy assessment. The ELL teacher explained that another factor that could have affected the scores was that some of the ELLs who participated in this field experience had been receiving

interventions during the time period of the field experience and were later identified as eligible for special education services. She estimated that 10% of the ELLs at the school have specific learning disabilities or language impairments.

Some data availability issues may have affected the results of the study. In some semesters, some subtests were not administered to all ELL students. This may appropriately be the result of teacher professional judgement regarding which subtests might be most appropriate for a student when considering English proficiency as well as likely to provide the teacher with beneficial instructional information. Additionally, in some cases, data entered into the district's database indicated the same scores or 0's for multiple pre- and post-subtests (but not necessarily for all) for a given participant, which raises the question as to whether both pre- and post-tests were administered and entered into the database. If not, this, too, may appropriately be a result of teacher professional judgement regarding whether to administer a test to a student for whom it might not be appropriate nor the results informative at a given time. Clearly, a more complete data set would have provided a more complete picture of student growth.

University students expressed positive reactions to the experience. Almost all assessed the opportunity to work with ELLs as beneficial to them, and all expressed that it was beneficial to take the course onsite at an elementary school. Students expressed growth in confidence in working with ELLs, as a result of the field experience at the school, and recognized that the field experience supported their course content. Overall, students felt the experience was also beneficial for their ELL students and noted growth in language, literacy, and/or content knowledge and skills.

Limitations

The results of this study are limited by various factors. The lack of a control group, due to logistical factors as well as the inaccessibility of state-level data, limits the possibility to conclude

that working with the pre-service teachers resulted in growth in literacy and language skills, as opposed to other factors. Additionally, interviews with ELL students, which are justifiably limited during instructional time, and with classroom teachers could supplement the results of this study. Without them, stakeholders' input is limited. Furthermore, bias is inevitably present in the observations of the university professor, the ELL teacher, and the pre-service teachers, as each of these stakeholders has a vested interest in positive outcomes of the field experience.

Implications & Recommendations

It is beyond controversy that field experience with ELLs in teacher education programs can help to better prepare pre-service teachers learn to provide effective instruction with increased sensitivity to language and cultural issues. Field experience provided at the school site during extended class time so as to access support from the university professor and the cooperating teacher, who knows the ELLs and their skill levels, may benefit both the pre-service teachers as well as with the ELLs with whom they work. Additionally, curriculum guides used by classroom teachers can help the pre-service teachers to plan their instruction most efficiently. Opportunities for reflection, both individual and as a class, can support student learning.

Future research is needed to provide comparisons between ELL participants and ELLs who do not participate in the field experience so as to facilitate conclusions regarding the effects of the field experience. Examination of the factors that contribute to the ELLs who make gains may inform the efficiency and effectiveness of instruction.

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Pre-Service Teachers' Field Experiences with Key Components of Response to Intervention: A Systematic Review

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Abstract

Schools across the United States have widely adopted a Response to Intervention (RtI) framework yet the literature suggests teachers are entering the field feeling unprepared to implement key features of RtI such as screening, multi-tiered evidence-based instruction, data-based decision making, and progress monitoring. This systematic review of the literature from 2004-2016 examines the field experiences of pre-service teachers related to using key components of the RtI framework. A thorough electronic database search followed by a hand search of publication reference lists resulted in a total of eight publications. Results reveal a gap in the peer-reviewed literature on pre-service teacher field experiences implementing the RtI framework and its key components. More studies are needed to identify field experiences and activities that prepare pre-service teachers to enter the teaching profession well trained and ready to effectively use key elements of RtI to make educational decisions and monitor student progress as novice practitioners.

Keywords: pre-service teachers, field experiences, Response to Intervention, RtI

Schools across the United States have widely adopted a Response to Intervention (RtI) framework yet the literature suggests novice teachers are entering their classrooms feeling unprepared to implement key features of RtI such as data-based decision making and progress monitoring (Barrio & Combes, 2015; Barrio, Lindo, Combes, & Hovey, 2015; Burns & Ysseldyke, 2009; Prasse et al., 2012). Thus, this is a review of the literature from 2004-2015 examining pre-service teachers' field experiences using the four main components of RtI: screening, multi-tiered evidence-based interventions, data-based decision making, and progress monitoring.

RtI was proposed in the Reauthorization of the Individuals with Disabilities Education Act (IDEIA, 2004) because of concerns related to the discrepancy model. IDEIA (2004) required educators provide instructional support to struggling learners and document the effectiveness of interventions implemented. Within an RtI framework, teachers screen all students and those experiencing academic or behavioral difficulties are provided high quality evidence-based intervention (Fuchs, Fuchs, & Compton, 2004), student progress is monitored, and data is collected and analyzed to make instructional decisions. Prior to RtI, the IQ-achievement discrepancy model was the primary means of identifying students for special education services. For students to be identified as having a specific learning disability (SLD), students had to show a significant discrepancy between their academic achievement and their cognitive ability (Kavale & Spaulding, 2008). The discrepancy model was perceived as a "wait to fail" approach while RtI is considered an early intervention and prevention model.

RtI core principles have been extensively researched and are believed to improve educational practices by encouraging educators to implement evidence-based supports and comprehensively monitor student progress (Fuchs & Vaughn, 2012; Hollenbeck, 2007; Hoover,

2010; Stuart, Rinaldi, & Higgins-Averill, 2011). Not only did RtI alter the way in which students with SLD would be identified, it changed teachers' duties and responsibilities. Before RtI, screening, assessing, and educating students with learning difficulties was primarily the responsibility of special education teachers (Barrio & Combes, 2015). Today, schools adopting an RtI framework require general education teachers to screen, implement evidence-based multi-tiered interventions, monitor students' responsiveness to intervention, and collect and use data to drive their instructional decisions. Thus, the traditional roles and responsibilities of special education and general education teachers have changed as a result of schools adopting an RtI framework (Fuchs, Fuchs, & Stecker, 2010).

As researchers examine the effectiveness of teacher preparation programs (Brownell, Ross, Colón, & McCallum, 2005; Compton et al., 2012; Denton, 2012; Vaughn et al., 2009) and pre-service teachers' perceptions of RtI (Barrio & Combes, 2014; Conderman & Johnston-Rodriguez, 2009; Tillery, Varjas, Meyers, & Collins 2010), an understanding of the ways in which field experiences help prepare pre-service teachers to implement key components of RtI becomes critical. Given the current emphasis on screening students, selecting and implementing evidence-based interventions, making data-based instructional decisions, and monitoring student progress, an understanding of how best to prepare pre-service teachers in these elements of RtI is needed. In order for pre-service teachers to enter the field and demonstrate effectiveness as novice practitioners, teachers in training must acquire not just pedagogical knowledge but also authentic experiences (Prasse et al., 2012) that expose them to the increasingly wide range of student needs found in today's classrooms (Conderman & Johnston-Rodriguez, 2009).

Research published over the past decade has shown the effectiveness of properly implemented RtI (Fuchs & Vaughn, 2012) and the significance of quality teacher preparation

(Compton et al., 2012; Denton, 2012; Fuchs, Compton, Fuchs, Bryant, & Davis, 2008; Vaughn et al., 2009). However, studies on RtI suggest practitioners do not completely understand (McCombes-Tolis & Spear-Swerling, 2011) or feel prepared to implement (Barrio & Combes, 2015) all components of the RTI framework. According to Conderman and Johnston-Rodriguez (2009), teachers' feelings regarding skills associated with making data-driven instructional decisions and monitoring student progress are negative due to perceived feelings of being unprepared to undertake these tasks.

A variety of factors likely contribute to pre-service teachers feeling negatively in regard to their perceived ability to implement components of RtI. Conderman and Johnston-Rodriguez (2009) and Tillery et al. (2010) posit pre-service teachers feel an overall lack of readiness to teach students with learning and behavioral difficulties. Barrio and Combes (2015) concluded that pre-service teachers' concerns were related to a lack of experiences related to RtI. For those reasons, teacher preparation programs must examine how pre-service teachers are being prepared and provide field experiences that increase pre-service teachers' knowledge and readiness to implement RtI.

Field Experiences

The National Research Council (2010) identified field experiences as a critical component of effective teacher preparation. Field activities such as classroom observations and student teaching allow pre-service teachers to gain experience and understanding first-hand. This helps fill gaps in knowledge and gain practical experience while under supervision (Hallman, 2012). Ingersoll, Jenkins, and Lux (2014) suggest field experiences serve an important purpose in teacher preparation because teaching is not an innate gift but learned through practice. Coffey (2010) proposes field placements offer a context by which pre-service teachers can connect theory with

practice. Research by Conderman, Johnston-Rodriguez, Hartman, and Walker (2012) found participants believed clinical experiences had the highest impact on their professional preparation. For instance, participants noted the benefits of having "real life experiences" as well as the value of observing in-practice teachers implementing a variety of different instructional strategies. Moreover, respondents felt they needed more training in topics such as RtI and especially components such as progress monitoring.

Eisenhardt et al. (2012) note that pre-service teachers need to see and practice pedagogical knowledge acquired through university-based coursework since pre-service teachers often begin their field experiences with preconceived notions about teaching and learning based on their personal learning experiences. Athanases and Achinstein (2003) found that pre-service teachers lack understanding of students' academic skills because they have not had opportunities to work directly with students. Furthermore, results from Rinn and Nelson (2009) revealed that pre-service teachers have difficulty identifying student strengths, yet are able to identify student weaknesses. The authors go on to suggest field experiences are valuable because pre-service teachers are able to work closely with students in actual classroom settings.

Working directly with actual students allows pre-service teachers to gain an understanding of and recognize the different academic levels of their students. Hawkins, Kroeger, Musti-Rao, Barnett, and Ward (2008) believe in-depth field experiences must be developed that specifically allow pre-service teachers to not only practice skills but to reflect on their instructional decisions. Hanline (2010) found pre-service teachers reported benefits from observing effective teaching and seeing their cooperating teachers implement best practices.

Rationale and Objectives for this Review

The purpose of this systematic literature review is to examine the existing research on pre-service teachers' field experiences with RtI presented in peer-reviewed journals from 2004 to 2015. This literature synthesis attempts to address the following research questions: 1) To what extent are pre-service teachers' field experiences with the components of RtI being addressed by the literature? and 2) Which experiences during fieldwork increase pre-service teachers' feelings of preparedness to implement RtI as novice educators?

Method and Data Sources

A systematic review of the literature occurred in two phases: 1) a thorough search of electronic databases and 2) a comprehensive hand search of reference lists of publications that met all inclusionary criteria. Inclusionary and exclusionary criteria were established prior to the examination of publications. A total of eight peer reviewed journal articles met inclusion criteria.

Identification of Studies

A systematic electronic exploration of the literature was conducted using database searches. Databases searched include: Academic Search Complete, Eric via EBSCOhost, JSTOR, Professional Development Collection, PsychINFO, Sage Journals Online, and Taylor and Francis Online. A Boolean search using the descriptors preservice AND (field experience OR fieldwork OR practicum) AND (response to intervention OR screening OR tiered instruction OR tiered intervention OR progress monitoring OR data-based decision making) were used to search and resulted in an initial identification of 16,508 publications.

The goal of only including highly relevant publications necessitated the formulation of inclusionary and exclusionary criteria. For inclusion, studies must have taken place in the United States and been written in English since educational practices and terminology vary around the world. Furthermore, RtI or at least one component of RtI (e.g., screening, tiered intervention,

progress monitoring, or data-based decision making) must have been mentioned in relation to pre-service field experiences. Thus, studies focused on in-service teachers were excluded because the goal of this review is to better understand the field experiences pre-service teachers have with RtI. Also, studies must have been published between January 2004 and December 2015 in a peer-reviewed journal. The rationale for beginning the search in 2004 was the recommendation to use RtI contained in IDEIA (2004). Additionally, limiting publications to those published in peer-reviewed journals is because journals employing a peer review process strive to maintain standards of quality in their field. Also, the manuscripts received at least one level of review prior to publication. Publications not meeting all inclusionary requirements were excluded. After narrowing the search using inclusionary and exclusionary criteria, the results were reduced to 83 articles.

In order to locate additional publications relevant to this systematic review, a thorough hand search of the reference lists of the 83 publications were examined to identify articles that were not located through database search. Hand search resulted in identification of an additional 16 publications. One of the 16 publications met eligibility criteria and was deemed appropriate for addressing the research questions and included in this review.

After systematic evaluation of all publications, a total of eight studies were selected for inclusion in this literature synthesis. All publications were thoroughly read, coded, and study characteristics identified. Publication results were systematically summarized and the content analyzed prior to synthesizing results for this review.

Coding Procedures and Data Analysis

The author coded the following features of each article: (1) source information (i.e., author(s), journal, and year of publication), (2) type of study and sample size (i.e., quantitative

study, qualitative study, mixed methods), (3) grade level focus (i.e., elementary, secondary, K-8, K-12), and (4) RtI component(s) addressed (i.e., progress monitoring, data-based decision making, RtI in general). Table 1 represents a summary of publication features. Frequencies of response for each of the categories in the coding system were used for descriptive statistics. To ensure reliability of coding, an assistant researcher coded all eight of the publications included in this literature synthesis. The inter-rater coding reliability was 100%.

Synthesis of Findings

A total of eight published articles were selected, coded, and analyzed based on the search criteria. The eight publications combined to represent 281 pre-service teachers in three geographic regions of the United States (e.g., Midwest, Southeast, and Mountain West). Three studies took place in the Midwest, one in the Southeast, one in the Mountain West, and two studies did not specify the location. Five of the eight publications discussed RtI in a general, one publication focused on progress monitoring, one publication specifically discussed data-based decision making, and one publication addressed both progress monitoring and data-based decision making. The majority of publications (75%) focused on pre-service teachers whose field experiences were in elementary settings. Two studies had participants seeking elementary as well as participants seeking secondary certification (25%). No publications focused exclusively on pre-service teachers seeking secondary certification. The publications meeting the inclusionary criteria used either qualitative methodology (62.5%, n = 5) or mixed methodology (37.5%, n = 3). No publication meeting the inclusionary criteria addressed all four key components of RtI.

Table 1

Publications selected and their features

Author	Year	Journal	Type of Study	Grade Level Focus	RtI Component
Al Otaiba, Lake, Freulich, Folsom, & Guidry	2010	*Reading and Writing*	Mixed methods (N = 28)	Elementary	RtI in general
Brannon & Fiene	2013	*Education*	Mixed methods (N = 26) 1st semester (N = 21) 2nd semester	K-8	RtI in general
Conderman, Johnston-Rodriguez, Hartman, & Walker	2012	*Teacher Education and Special Education*	Mixed methods (N = 64)	K-12	RtI in general
Eisenhart, Besnoy, and Steele	2012	*SRATE Journal*	Qualitative (N = 58)	Elementary	Progress monitoring and data-based decision making
Hanline	2010	*Teacher Education and Special Education*	Qualitative (N = 15)	Elementary	Progress monitoring
Hawkins, Kroeger, Musti-Rao, Barnett, & Ward	2008	*Psychology in the Schools*	Qualitative (N = 2)	Elementary	RtI in general
Ross & Lignugaris-Kraft	2015	*Journal of the National Association for Alternative Certification*	Qualitative (N = 3)	Elementary	RtI in general
Wilkins & Shin	2010	*Kappa Delta Pi Record*	Qualitative (N = 64)	Elementary	Data-based decision making

RtI = Response to Intervention

Response to Intervention Components

According to the Center on Response to Intervention at the American Institutes of Research (AIR), screenings, along with multi-tiered evidence-based interventions, progress monitoring, and data-based decision making are the main components of RtI. Although RtI's components have been extensively researched (Fuchs & Vaughn, 2012; Hollenbeck, 2007; Stuart, Rinaldi, & Higgins-Averill, 2011), ensuring effective implementation of RtI components is difficult because of the considerable teacher expertise required (Robinson, Bursuck, & Sinclair, 2013). For example, Catts, Nielsen, Bridges, Liu, and Bontempo (2015) point out that in order for RtI to be truly successful, progress monitoring must be accurate. Additionally, teachers must implement evidence-based interventions with fidelity. Therefore, it is imperative for teacher preparation programs to train pre-service teachers in each of the RtI components.

Screening. Student screening is a proactive means of identifying students who might be at risk for developing an academic or behavioral issue (Catts et al., 2015; Gresham, Hunter, Corwin, & Fischer, 2013). A study of pre-service training in RtI by Hawkins et al. (2008) found general education kindergarten students' literacy skills were screened three times a year. Screening data of students was evaluated and those students showing lack of adequate progress were provided with pull-out intervention assistance. Similarly, a case study by Ross and Lignugaris-Kraft (2015) examined the experiences of three pre-service teachers in a two-year non-traditional teacher preparation program that placed general and special education certification seeking undergraduates in high need schools to implement multi-tiered evidence-based academic and behavioral interventions. Thorough training in the RtI tiers allowed the pre-service teachers to effectively identify struggling students in need of tiered evidence-based interventions.

Multi-tiered instruction and evidence-based intervention. A survey of 64 recent special education graduates by Conderman, et al. (2012) found that teacher candidates felt confident in their ability to provide students with individualized instruction. The authors believe pre-service teacher confidence in that and other areas such as behavior management was likely the result of extensive coursework and authentic clinical-related projects focused on those topics. Similarly, a mixed-method study by Al Otaiba, Lake, Greulich, Folsom, and Guidry (2012) found that pre-service teachers who receive university based-coursework in conducting assessments and using evidence-based practices report feeling well-prepared and confident about their teaching during field experiences.

Progress monitoring. Hanline (2010) conducted a qualitative study with 15 early childhood education majors as they completed their field experiences. The findings from Hanline's study suggest that although pre-service teachers struggled with the time commitment required to collect assessment data, they recognized data collection as necessary for progress monitoring. Eisenhardt, Besnoy and Steele (2012) had similar findings. The pre-service elementary teachers in their study found observing and recording student progress provided valuable insight which helped the teacher candidates to plan instruction. Furthermore, one participant noted that recording student learning progress is an essential task for teachers. These findings suggest that field experiences that allow pre-service teachers to practice components of RtI such as progress monitoring help them understand the value and applicability of practices associated with RtI.

Data-based decision making. Wilkins and Shin (2010) followed 64 pre-service elementary teachers as they used peer feedback during a year of fieldwork to reflect on data-driven practices. Findings suggest pre-service teachers benefited from receiving feedback by

improving pre-service teachers' professional practice, student learning, and classroom instruction. Eisenhardt et al. (2012) followed 58 pre-service teachers as they collected data and conducted assessments on two elementary students identified by their classroom mentor teachers as "struggling." The Eisenhardt research team found that pre-service teachers reported that assessing and documenting their assigned students helped them make more effective instructional decisions.

Discussion

The findings from this literature review highlight the lack of studies focusing on pre-service teachers' field experiences with the components of RtI. Although thousands of journal publications mention RtI or its components and fieldwork, a fraction of one percent actually address teacher candidates' field experiences with RtI implementation while under university supervision. Studies examining this specific topic are needed since teachers' responsibilities in the classroom have expanded due to initiatives such as RtI. Teacher preparation programs must train pre-service teachers to effectively implement the key components of RtI. As such, it is crucial that preparation programs provide their pre-service teachers with the coursework, training, and field experiences necessary for them to enter the field feeling prepared to effectively carry out these duties. Providing structured in-depth field experiences with a wide variety of students under the supervision of skilled and supportive collaborative teachers is warranted and may improve the level of confidence and feelings of preparedness pre-service teachers have regarding implementation of the RtI components.

Making changes to teacher preparation curriculum is not easy or quick (Conderman & Johnston-Rodriguez, 2009). Nevertheless, Sayeski and Higgins (2014) encourage teacher education programs to focus on providing pre-service teachers with the knowledge and skills they

will need to be successful practitioners. In keeping with the opinions of Conderman and Johnston-Rodriguez (2009), Sayeski and Higgins note that institutional habits often create barriers to program change. For instance, some faculty may be resistant to making changes and instead cling to the status quo. Furthermore, deciding which content to remove in order to make room for new requirements is often difficult. Even though program change is difficult, the results of this systematic literature review suggest that high quality field experiences are needed. These studies on pre-service teachers' field experiences with RtI indicate that practical experiences are beneficial and improve pre-service teachers' feelings of confidence and preparedness to fully implement RtI.

Training teacher candidates to feel confident and competent in their ability to make data-based instructional decisions and in monitoring progress as well as in the other key elements of RtI should be a focus of teacher preparation programs. Doing so is important since Prasse et al. (2012) note the growing body of research demonstrating the relationship between teacher efficacy and positive student outcomes. Harvey, Yssel, and Jones (2015) examined institutions of higher education in the Midwest to see how teacher preparation programs prepared their pre- service teachers in RtI. Harvey and colleagues found 33.8% of teacher educators either did not know if their department did (20.3%) or if their department did not (13.5%) provide pre-service teachers with field experiences that allowed for engagement with RtI planning, assessment, and progress monitoring.

These percentages should be surprising considering Kuo (2014) suggests it is important for teacher educators to understand the experiences related to RtI that their pre-service teachers have to effectively prepare their candidates to enter the field as practitioners. Since teacher educators may have little control over the activities pre-service teachers participate in during their field

experiences, it becomes imperative that university coursework include comprehensive instruction on each component of RtI and provide opportunities for teacher candidates to practice skills associated with RtI.

Limitations

There are several limitations associated with this synthesis of literature on RtI and pre-service teachers' field experiences. First, the inclusionary and exclusionary criteria established for this review must be considered. Although the purpose of this review was to better understand the experiences teacher candidates have with RtI components during fieldwork, identifying publications was difficult due to the lack of literature on this topic. Additionally, the search for literature was based on specific descriptors that other researchers could choose to expand. Thus, caution is advised in trying to generalize the findings of this literature synthesis.

Implications and Recommendations

Although a wealth of research on teacher preparation has linked coursework that is interwoven with field experiences to teacher preparedness (Darling-Hammond, 2012; Wilson, Floden, & Ferrini-Mundy, 2001; Zeichner, 2010), the National Research Council (2010) points out that there is no definitive evidence as to which aspects of field experiences have the most impact on teacher effectiveness. For that reason, it is imperative research on pre-service teacher field experiences be conducted to gain a better understand of which activities provide teacher candidates with opportunities for practicing the key components of RtI while in natural environments. Supervised field experiences allowing for supervised implementation of RtI components and opportunities to observe components being implemented by skilled cooperating teachers is warranted. These observations and experiences may help increase the feelings of confidence and preparedness of novice practitioners. Follow-up research with pre-service

teachers who have had extensive practice implementing RtI components is need to identify whether high-quality field experiences do in fact increase practitioner effectiveness.

Field work is a necessary component of teacher preparation programs. Although pedagogical knowledge is important, to best prepare novice teachers to provide effective instruction to students at all academic levels, pre-service teachers need opportunities to implement the components of RtI under skilled supervision during field experiences. Hawkins et al. (2008) agree emphasizing there is a need for field experiences with RtI that are supported by coursework.

One issue with providing pre-service teachers with practical experience with implementing the components of RtI is variability inherent in field experiences. For example, Brannon and Fiene (2013) suggest traditional fieldwork tends to lack structure which is contrary to recommendations of researchers such as Eisenhardt et al. (2012) who suggest that pre-service teachers are likely to benefit from having highly structured field placements that provide them with "up-close and personal" interactions with students. Brannon and Fiene (2013) agree and recommend providing pre-service teachers with in-depth and extensive opportunities to work with students who are struggling.

It reasons that the more structured experiences teacher candidates have with students at various ability levels while under supervision, the more prepared they will feel to support all students upon entering the field. Brannon and Fiene further point out the benefit of field experiences that weave theory and practice together so that content knowledge can be applied in actual classroom situations. This recommendation aligns with the findings of Leko and Brownell (2011) that pre-service teachers may benefit from opportunities to situate their curricular knowledge in practice. There is clearly a need for RtI to be more thoroughly address in teacher preparation programs; both in coursework and in field experiences. However, coursework in RtI

is not enough, teacher candidates need field experiences that include skilled mentorship so they can observe RtI in practice followed by opportunities to implement RtI.

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