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From the Editor

Dear Readers of *The Field Experience Journal:*

This edition of *The Field Experience Journal* is my last as editor. In the Spring of 2023, I retired from my faculty position at the University of Northern Colorado. For me, it is time for the next chapter in this life. To those of you who have submitted in the past, thank you for choosing this journal for sharing your professional research and work. Truly, I have gained in my supervision of teacher candidates by reading the submissions from others.

Joyfully, I am sharing that the journal will now be edited by a team of faculty from Stephen F. Austin State University. The editor will be Mark Montgomery (montgomems@sfasu.edu). Ronda McClain (mcclainrs1@sfasu.edu) will be an Associate Editor in charge of copy editing. Adam Akerson (akersona@sfasu.edu) will also be an Associate Editor in charge of reviews and reviewers.

This is a team that I have come to know and appreciate from their attendance and presentations at the National Field Experience Conference. Additionally, I am also announcing that the April 2025 National Field Experience Conference will be held on the campus of SFASU in Nacogdoches, Texas.

Please continue to share your work whether successes or setbacks from which we continue to learn and refine our craft.

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

Ensuring Inter-Rater Reliability: The Critical Role of Calibration in Assessment

Tina L. Allen

Louisiana Tech University

Ensuring consistency of ratings across multiple evaluators is fundamental to the validity and credibility of an assessment (Brookhard, 2013). Especially in educational settings where the quality of candidate performance is based on assessments, it is essential to ensure consistency among raters (Danielson, 2012). Often, assessments include some subjectivity that provides the potential for variability among raters. Ensuring that assessments yield consistent and comparable results regardless of the evaluator is essential for the validity and fairness of assessment outcomes (Chappuis & Stiggins, 2002). Without reliable ratings from multiple evaluators, evaluations of pre-service teachers could lead to inaccurate judgments about quality and effectiveness (Danielson 2012).

Inter-rater consistency, the extent to which two or more raters agree, is crucial for providing candidates with accurate and reliable feedback on their performance and progress (Brookhart, 2013). An estimation of inter-rater consistency can be determined by correlating scores assigned by one rater with those assigned by another rater and computing the proportion of times the candidate performance receives the same score from both raters (Miller et al., 2013). According to Miller et al. (2013), "Achieving a high degree of interrater consistency requires the development of consensus among raters regarding the types of performances that are valued." (p. 119)

One key strategy for enhancing inter-rater consistency is calibration, a process by which raters align their judgments or scoring criteria to ensure consistency and fairness (Chappuis &

Stiggins, 2002). Calibration should be conducted any time multiple evaluators share assessment of a single group of students (Schoepp et al., 2018). Through calibration exercises, raters develop a shared understanding of what constitutes high-quality performance, which in turn increases the potential for consistent ratings. The significance of calibration stems from key factors that underscore the importance of aligning raters' judgments and criteria. Without calibration, variations in raters' interpretations of criteria can lead to discrepancies in ratings, resulting in unfair evaluations and undermining the credibility of the assessment process (Danielson, 2012). By calibrating raters, stakeholders can ensure that assessments produce consistent results, enhancing the reliability and trustworthiness of the evaluation outcomes and providing teacher candidates with clear feedback for improvement of their practice.

Calibration promotes fairness by minimizing biases and subjectivity in assessment judgments (Brookhart, 2013). Through calibration exercises, raters become more aware of their biases and strive to apply assessment criteria objectively and consistently (Wiliam, 2011). This fosters a fairer assessment process, where individuals are evaluated based on their actual performance rather than irrelevant factors. Through calibration discussions and exercises, raters engage in critical reflections on the alignment between assessment criteria and learning objectives (Stiggins, 2004). This process helps refine and improve assessment criteria, making them more robust and reflective of the desired outcomes (Marzano & Kendall, 2007). Calibration also contributes to the professional development of raters by enhancing their expertise in assessment practices (Joint Committee on Standards for Educational Evaluation, 2011). The iterative process of the calibration activities fosters a deeper understanding of assessment principles and enhances raters' ability to make informed and consistent judgments (Kane, 2013).

These benefits underscore the importance of calibration as a cornerstone of effective assessment processes.

The Calibration Process

Training evaluators to score performance using a rubric is called norming, which is a way to calibrate raters so that scores are consistent across raters. (Creating and using rubrics, n.d.) The steps involved in conducting the calibration activity are summarized below.

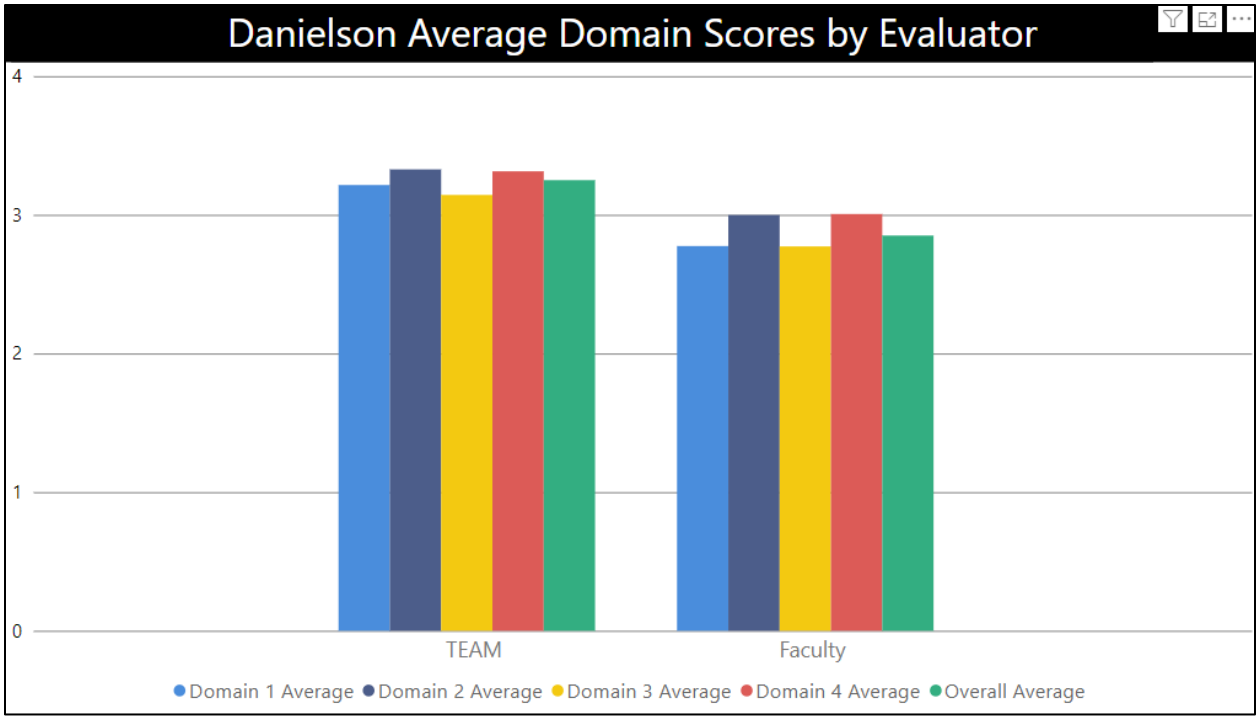
1. Select assessment artifacts. Artifacts could include student work samples, performance recordings, or written responses (Brookhart, 2013).
2. Establish clear criteria. Criteria should reflect the learning objectives or competencies being assessed and should be articulated in a rubric or scoring guide (Chappuis & Stiggins, 2002).
3. Provide training before the calibration activity to ensure that all raters understand the expectations for each level of performance and are familiar with the assessment rubric (Wiliam, 2011).
4. Conduct the calibration exercise: Provide the selected assessment artifacts to the raters asking each to independently evaluate the artifacts based on the established criteria and assign scores or ratings accordingly.
5. Collect and share ratings. After raters have evaluated the artifacts, display the ratings so that everyone can see the degree of agreement. Facilitate a group discussion where raters discuss any discrepancies or differences in their judgments. (Danielson, 2012) and resolve any disagreements through dialogue and negotiation (Kane, 2013).

6. Repeat the calibration exercise with additional assessment artifacts if necessary to ensure that raters have achieved a consistent understanding of the assessment criteria and are applying them consistently across different contexts (Stiggins, 2004).
7. Document the outcomes of the calibration activity, including any revisions to the assessment criteria or scoring guidelines that were made as a result of the calibration process. Keep records of the calibrated scores or ratings for future reference.
8. Follow up with raters periodically to ensure that they continue to apply the calibrated assessment criteria consistently. Provide additional training or support as needed to maintain inter-rater reliability over time.

By following these steps, calibration activities can be effectively conducted so that assessments are consistent and fair and the reliability and validity of assessment outcomes will be enhanced.

Problem

Clinical residents at Louisiana Tech University are evaluated on the TEaM Model. The Model is comprised of live and virtual evaluations with feedback conducted by multiple evaluators. During the residency year, candidates are formally evaluated each academic quarter (fall, winter, spring) using the Danielson Framework for Teaching (FFT). These include a self-evaluation, a faculty evaluation, and an evaluation by the mentor teacher team. The evaluations combined provide multiple lenses for growth of the candidate across the academic year and are conducted every 3-4 weeks between August and May. A review of clinical evaluation data from the 2021-22 academic year revealed discrepancies among mentor and faculty scores resulting in the inflation of scores assigned by the mentor teachers.



Calibration Activity

As previously stated, without reliable ratings from multiple evaluators, evaluations of pre-service teachers could lead to inaccurate judgments about quality and effectiveness (Danielson 2012). To address the identified discrepancies, calibration training with both faculty evaluators and mentor teachers was scheduled for fall 2022.

The first step in the process was to select a sample teaching video that all evaluators would watch and rate using the Danielson FFT. A video that reflected a "middle of the road" performance was selected so that for some items the expected ratings would be low and for others the rating would be higher. Early in the fall quarter, all mentor teachers and faculty evaluators who were assigned a resident teacher candidate for that year were emailed the 2022 Danielson FFT, a sample lesson plan, and the short teaching video. They were asked to

individually review the materials, rate the teaching in the video using the Danielson FFT, and submit their ratings through a Qualtrics survey.

After ratings were submitted, the data were exported from Qualtrics and analyzed to determine the level of consistency in the scores. Faculty and mentors then met virtually through Zoom to discuss the results. Twenty-six participants were in attendance (6 faculty and 20 mentors). The meeting, facilitated by the department's assessment coordinator, began with a brief overview of the definition and importance of validity and reliability and emphasized that the focus of this meeting was reliability, specifically inter-rater reliability. The breakdown of ratings for each criterion and critical attribute for Danielson FFT Domains 1, 2 and 3 were presented (see Appendix A). As can be seen in the charts, there was no consistency in ratings, with most receiving three different ratings and some receiving ratings at all four performance levels.

The ratings were discussed with those in attendance at the Zoom meeting, and specific questions from the group were answered. Faculty evaluators provided their rationale for the ratings they gave, and consensus was reached among those present. The mentors who were in attendance indicated that the discussion was very helpful, and the opportunity to hear the rationale from the faculty evaluators helped to provide clarification of how the rubric descriptions should be interpreted.

Key Takeaways

Although inter-rater reliability was not specifically calculated with the ratings from the calibration activity, the visual representation of the ratings shown in the charts in Appendix A indicated there was too much variability in the scores. When teacher candidates receive higher scores from one evaluator and lower scores from another, there are mixed signals, leaving the

candidate unsure of their strengths and areas that need to be improved. It is important that everyone is on the same page so that we are providing consistency to our candidates.

In terms of increasing inter-rater reliability in the future, feedback from those present for the calibration discussion meeting was very positive about the impact of the calibration activity. It was also suggested that having an exemplar video with ratings to use as a guide could also help to improve inter-rater reliability, as well as allow faculty and mentors to meet to discuss ratings when scoring an actual student. One takeaway that was brought out during the discussion was that it was important for the evaluator to remove their own bias and emotional connection to the candidates because those can skew ratings. Instead, evaluators should take a "clear, almost courtroom look" and ask themselves if the evidence is there to support the score. Ratings should be based only on the evidence seen in the video. Overall, participants felt the discussion helped them gain a better understanding of how the rubric was set up and how the ratings were to be entered in Qualtrics.

Impact on Inter-Rater Reliability

While the calibration activity itself serves to align evaluators prior to the formal rating process, interrater reliability statistics can serve as a check on the ratings after the fact (Schoepp et al., 2018) to ensure the calibration process was effective. Following the calibration activity in fall 2022, inter-rater reliability was examined in 2023-24 by double scoring (mentor/faculty pairs) an evaluation for each candidate with the percent adjacent agreement calculated for a random sample of 10% of the evaluations. Adjacent agreement, rather than exact agreement, was chosen because the mentor teachers are with the teacher candidates each day and often base their evaluations on factors not seen by faculty supervisors in the isolated lessons they observe. Faculty within the department agreed that if scores were adjacent, that would be acceptable. The

overall inter-rater reliability of the assessment was 97% for adjacent agreement, which is above the research standard of .75 or 75%. Further analysis showed the inter-rater overall reliability for Domain 1 was 95%, Domain 2 was 99%, and Domain 3 was 98%.

Conclusions

Calibration is essential whenever multiple evaluators are assessing the same group of students. While calibration can have a positive impact on inter-rater reliability, it is important to realize that once inter-rater reliability is achieved it may not continue to be maintained over time. Rater drift, when raters return to their previous tendency of rating, can occur. Frequent training over time can help to prevent drift and sustain inter-rater reliability. This ensures candidates receive consistent feedback that allows them to recognize areas for growth so that they are able to become more effective teachers. In summary, calibration is a fundamental aspect of assessment practices, ensuring interrater reliability and enhancing the credibility and validity of assessment outcomes. By prioritizing calibration, assessment processes can provide consistent, fair, and meaningful evaluations.

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Appendix A

Ratings from the Calibration Process

The table below shows the number of ratings given for the critical attributes in each indicator within the domains of the Danielson Framework for Teaching.

		# of Ratings			
Domain 1		1	2	3	4
1a	Critical Attribute #1: Disciplinary Expertise	0	9	34	3
	Critical Attribute #2: Pedagogical Content Knowledge	0	15	28	3
	Critical Attribute #3: Knowledge of Interdisciplinary Relationships and Skills	0	16	24	6
	1a: Overall	1	15	26	4
1b	Critical Attribute #1: Respect for Students' Identities	13	16	17	0
	Critical Attribute #2: Understanding of Students' Current Knowledge and Skills	2	7	33	4
	Critical Attribute #3: Knowledge of Whole Child Development	5	21	15	5
	Critical Attribute #4: Knowledge of Learning Process and Learning Difference	3	13	27	3
	1b: Overall	6	20	19	1
1c	Critical Attribute #1: Value and Relevance	0	9	25	12
	Critical Attribute #2: Alignment to Grade-Level Standards	1	6	32	7
	Critical Attribute #3: Clarity of Purpose	1	5	33	7
	Critical Attribute #4: Integration of Multiple Aspects of Student Development	2	24	17	3
	1c: Overall	2	21	20	3
1d	Critical Attribute #1: Instructional Materials	1	7	32	6
	Critical Attribute #2: Technology and Digital Resources	2	21	22	1
	Critical Attribute #3: Support for Students	4	22	18	2
	1d: Overall	1	29	14	2
1e	Critical Attribute #1: Tasks and Activities	0	18	23	4
	Critical Attribute #2: Flexible Learning	5	15	24	1
	Critical Attribute #3: Student Collaboration	2	12	30	2
	Critical Attribute #4: Structure and Flow	0	11	31	4
	1e: Overall	1	17	27	1
1f	Critical Attribute #1: Congruence with Instructional Outcomes	0	20	25	1
	Critical Attribute #2: Criteria and Standards	2	14	29	1
	Critical Attribute #3: Planning and Formative Assessments	0	19	25	1
	Critical Attribute #4: Analysis and Application	2	15	24	4
	1f: Overall	1	22	21	1

Domain 2		1	2	3	4
2a	Critical Attribute #1: Positive Relationships	0	4	35	6
	Critical Attribute #2: Sense of Belonging	1	12	30	2
	Critical Attribute #3: Cultural Responsiveness	8	14	22	1
	Critical Attribute #4: Positive Conflict Resolution	0	5	35	5
	2a: Overall	0	16	27	2
2b	Critical Attribute #1: Purpose and Motivation	2	10	27	6
	Critical Attribute #2: Dispositions for Learning	0	11	24	10
	Critical Attribute #3: Student Agency and Pride in Work	3	13	28	1
	Critical Attribute #4: Support and Perseverance	0	16	26	3
	2b: Overall	1	12	30	2
2c	Critical Attribute #1: Purposeful Collaboration	1	9	29	4
	Critical Attribute #2: Student Autonomy and Responsibility	2	9	32	2
	Critical Attribute #3: Equitable Access to Resources and Supports	0	10	33	2
	Critical Attribute #4: Non-Instructional Tasks	0	9	18	18
	2c: Overall	1	18	25	1
2d	Critical Attribute #1: Expectations for the Learning Community	1	8	30	6
	Critical Attribute #2: Modeling and Teaching Habits of Character	1	10	32	2
	Critical Attribute #3: Self-Monitoring and Collective Responsibility	1	7	30	7
	Overall 2d:	1	11	32	1
2e	Critical Attribute #1: Safety and Accessibility	0	4	40	1
	Critical Attribute #2: Design for Learning and Development	0	4	31	10
	Critical Attribute #3: Co-Creation and Shared Ownership	4	20	19	0
	2e: Overall	0	15	30	0
Domain 3		1	2	3	4
3a	Critical Attribute #1: Purpose for Learning and Criteria for Success	1	9	30	5
	Critical Attribute #2: Specific Expectations	0	13	31	1
	Critical Attribute #3: Explanations of Content	0	7	30	8
	Critical Attribute #4: Use of Academic Language	0	6	35	4
	3a: Overall	0	14	28	3
3b	Critical Attribute #1: Critical Thinking and Deeper Learning	1	17	25	1
	Critical Attribute #2: Reasoning and Reflection	2	16	21	5
	Critical Attribute #3: Student Perception	2	22	18	2
	3b: Overall	1	26	17	0
3c	Critical Attribute #1: Rich Learning Experiences	2	20	23	0
	Critical Attribute #2: Collaboration and Teamwork	2	21	21	0
	Critical Attribute #3: Use of Instructional Materials and Resources	0	18	27	0
	Critical Attribute #4: Opportunities for Thinking and Reflection	1	18	25	1
	3c: Overall	1	19	25	0
3d	Critical Attribute #1: Clear Standards for Success	5	25	15	0

	Critical Attribute #2: Monitoring Student Understanding	3	15	26	1
	Critical Attribute #3: Timely, Constructive Feedback	4	12	25	4
	3d: Overall	2	18	25	0
3e	Critical Attribute #1: Evidence-Based Adjustments	3	13	22	5
	Critical Attribute #2: Receptiveness and Responsiveness	1	18	24	0
	Critical Attribute #3: Determination and Persistence	3	14	25	2
	3e: Overall	2	17	24	0
Domain 4		1	2	3	4
4a	Critical Attribute #1: Self-Assessment of Teaching	0	13	20	3
	Critical Attribute #2: Analysis and Discovery	1	12	22	0
	Critical Attribute #3: Application and Continuous Improvement	0	12	22	1
	4a: Overall	0	16	19	0
4b	Critical Attribute #1: Student Progress Toward Mastery	0	18	15	1
	Critical Attribute #2: Shared Ownership	3	13	18	0
	Critical Attribute #3: Maintaining Reliable Records	0	14	20	0
	4b: Overall	2	18	13	1
4c	Critical Attribute #1: Respect and Cultural Competence	4	16	12	0
	Critical Attribute #2: Community Values	5	15	12	0
	Critical Attribute #3: Instructional Program	5	15	12	0
	Critical Attribute #4: Engagement in Learning Experience	6	14	12	0
	4c: Overall	6	14	12	0
4d	Critical Attribute #1: Relational Trust and Collaborative Spirit	3	11	18	0
	Critical Attribute #2: Culture of Inquiry and Innovation	4	10	18	0
	Critical Attribute #3: Service to the School	3	13	15	0
	4d: Overall	3	14	14	0
4e	Critical Attribute #1: Curiosity and Autonomy	2	12	15	1
	Critical Attribute #2: Developing Cultural Competence	3	11	15	1
	Critical Attribute #3: Enhancing Knowledge and Skills	2	13	15	2
	Critical Attribute #4: Seeking and Acting on Feedback	2	13	14	1
	4e: Overall	3	13	13	1
4f	Critical Attribute #1: Acting with Care, Honesty, and Integrity	0	12	17	2
	Critical Attribute #2: Ethical Decision Making	0	11	18	2
	Critical Attribute #3: Advocacy	0	8	22	1
	4f: Overall	0	11	19	1

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Empowering Educators: Addressing Teacher Shortages and Retention through National Board Certification and Professional Development

Michelle Stubbs and Jeffrey L. Leffler

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Introduction

Across the nation, school districts are struggling to fill teacher vacancies in all content areas, but especially in math, science, and special education (Sutcher, Darling-Hammond, & Carver-Thomas, 2019). While teacher shortages have existed for years, the lack of quality certified teachers is growing faster each year. The American Association for Employment in Education (AAEE) conducts surveys in school districts across the country each year. In 2016 – 2017, their research found that two-thirds of the districts reported that they were facing large obstacles to employ certified teachers. This finding was more than double the rate of the survey performed in 2013-14 (AAEE, 2017). According to Ingersoll, et al (2019), 45% of teachers in the United States leave during the first five years. This is known as Early-Career Teaching (ECT) attrition, and it costs districts a lot of money. The south has the highest average teacher attrition rate of 16%, while the northeast has the lowest average of 10%.

Prior research indicates that the reason for the teacher shortage across the nation is that teachers are leaving the field for reasons unrelated to retirement more than retirement itself (Carver-Thomas & Darling-Hammond, 2019). In Mississippi, retirement accounts for less than 5% of the total 18% of teachers leaving schools or moving to other jobs inside the school (Carver-Thomas and Darling-Hammond 2017). While surveys and studies can give us numerous reasons for teachers leaving, there is consistency with three areas in most research. Evidence

from the empirical research in this paper seems to be pointing to teacher stress from testing expectations, a lack of continuity in resources and support, and lower income.

Reasons for Leaving

Testing Expectations

When the No Child Left Behind (NCLB) Act (2002) was put into place, the argument was that it would bring improvement in student learning across the board. Schools were challenged to show that students were performing at grade-level or above each year. To achieve this, teacher qualifications and state testing were pushed to the forefront. Funding was set aside to aid in growing highly certified teachers sitting in districts and to recruit highly certified teachers. State mandated testing became the focus of schools across the nation as they were challenged to grow and move students through grade levels and standards. States across the nation were left struggling to meet the requirements of the universal accountability model. To help lessen some of the burden, the *Every Student Succeeds Act* (ESSA, 2015) gave states some flexibility in how they measured student growth. "Although the new law transferred decisions about school improvement and accountability to states and districts, public schools are still in the process of implementing the law and ensuring it makes good on its promise to ensure equity for all students" (Long 2019, para. 1). Unfortunately, NCLB and ESSA established testing requirements for students have left many teachers with a sour taste for state testing. These requirements of student growth are often tied to funding and results are published and discussed in communities. These teachers felt trained to teach to a test written by companies instead of to specific students' needs. Because these tests are given at the end of the year, success depends on how a student might perform on a high-stakes test on that day. If students did not perform where administrators wanted them to perform, teachers were left holding the short stick. Of the teachers

that left the profession, 25% listed that testing pressures was a reason for leaving (Carver-Thomas & Darling-Hammond, 2017).

The Impact of Salary

Teachers with licensure in math, science, special education, and English are leaving for better pay outside of the classroom. Title I schools are seeing a 70% greater loss in math and science teachers (Carver-Thomas & Darling-Hammond, 2019). Teachers in low-income schools that serve most students of color are also leaving because of lower salaries and a lack of resources. Teachers in these types of schools usually come from an alternate route program which has a 20% leave rate (Carver-Thomas & Darling-Hammond, 2017). Research involving teachers of color, black and Latino, found that these teachers are tired of not having a voice. They want to see themselves and their students represented in their classroom materials. They also typically come from families that cannot afford to help supplement their income when their teaching salaries do not pay the bills (Dixon, Griffin & Teoh, 2019).

Administrative Support

Carver-Thomas & Darling-Hammond (2017) reported that 21% of teachers that left the profession stated that they did not feel supported by their administrators. “Principal leadership literature reveals that the principal’s relationship with teachers is positively correlated with the attitudes of teachers, the classroom practices of teachers, the school learning culture, and the student learning outcomes” (Fox, Gong, & Attoh, 2015, pg. 7). School culture drives attitudes among both teachers and students. Good administration creates a cohesive culture where teachers have a voice and buy-in. Teachers want to know that administrators respect them and want their input on the happenings inside the school (Prather-Jones, 2011). School administration is often focused on the technical aspects of budgets, building and material management, and staffing

issues that can consume a large part of their attention. However, Dinham (2005) recognized that the focus should be on relationships, collaboration, and trust. Martin, Epitropaki, Thomas, and Topakas (2010) also found that relationships are "crucial in shaping their understanding of, and therefore reactions to, their work experience" (p. 36).

National Boards for Professional Teaching Standards

The National Board for Professional Teaching Standards (NBPTS, n.d.) was established in 1987 and focused on "maintaining high and rigorous standards for what accomplished teachers should know and be able to do" (nbpts.org, n.d.). The NBPTS is based on the foundation of the Five Core Propositions and the Architecture of Accomplished Teaching. These are fundamental pieces that can be used and implemented by all teachers to attain good teaching practices. The five core propositions are:

1. Teachers are committed to students and their learning.
2. Teachers know the subjects that they teach and how to teach those subjects to students.
3. Teachers are responsible for managing and monitoring student learning.
4. Teachers think systematically about their practice and learn from experience.
5. Teachers are members of learning communities. (National Board for Professional Teaching Standards, 2017b:1)

The Architecture of Accomplished Teaching (AAT) is a double helix that combines the Five Core Propositions into a learning map for students that teachers can follow (nbpts.org, n.d.). Teachers must know their students so that they can set high, appropriate goals that meet the needs of those students at that time (Proposition #1). Once the goals have been established, teachers implement instructional strategies that move those students toward achieving those goals (Proposition #2). During instruction, teachers should monitor student learning to make sure that students are moving toward goal achievement (Proposition #3). As teachers reflect on

student learning, they should work to identify the effectiveness of the instruction. This should include student growth, instructional design strengths and weaknesses, and identification of any concerns that need to be addressed (Proposition #4). Upon the lesson's completion, teachers should determine the next steps for student learning. New appropriate and worthwhile goals should be identified for these students at this time/learning level (Proposition #3 again). Proposition #5 is not registered in the AAT but is essential to the overall goal of the National Boards for Professional Teaching Standards. It focuses on the need for teachers to be members of professional learning communities that continue to grow and hone their craft of teaching. These two things represent established and time-tested standards on which all teachers can base effective instructional practices that lead to enhanced student learning outcome.

Impacts of National Board Certification

Mississippi

Mississippi State University's National Strategic Planning and Analysis Research Center (NSPARC) completed a study using data that was collected from the Mississippi Department of Education (MDE) and the National Board for Professional Teaching Standards (NBPTS) to determine the impact of National Board Certified Teachers (NBCT) on literacy in kindergartners and third graders. "The MDE and NBPTS data were merged so that kindergarten and third grade Mississippi public school students with an NBC reading teacher could be distinguished from their peers without an NBC reading teacher" (NSPARC, 2017, p. 4). The Mississippi K-3 Assessment Support System (MKAS2)-Kindergarten Readiness Assessment is assessed twice during the year and has four official score categories. "A student is categorized as achieving growth if they either (a) achieved a higher score category on the post-test than on the pre-test or (b) achieved a proficient score on both the pre-test and the post-test" (NSPARC, 2017, p. 5). The

Mississippi Assessment Program (MAP) has an English-Language Arts test for 3rd graders that is taken in the spring and has five official score categories. A student's measure of literacy is based on if they score proficient or advanced (the two highest categories).

The NSPARC study results included both descriptive analysis and multivariate analysis. The descriptive results found that students who had a reading teacher with a NBCT status were statistically more likely to score higher on their MKAS2 reading test and their MAP English-Language Arts test. For the MKAS2, 30.73 percent of students without a NBCT scored proficient while 35.84 percent of students with a NBCT scored proficient. For the MAP, 32.16 percent of students without a NBCT scored proficient, while 42.89 percent with a NBCT scored proficient. The multivariate analysis "figures show that students taught by an NBCT have more favorable literacy outcomes than their peers not taught by an NBCT after controlling for student demographic and academic characteristics, teacher experience, and overall school performance" (NSPARC 2017). For MKAS2, students with a NBCT had 30.7 percent higher odds of attaining proficient scores after holding all other characteristics constant and 18.6 percent higher odds after controlling for other factors. For MAP, students with a NBCT had 10.7 percent higher odds of attaining proficient scores after holding constant other factors.

Other States

Across the nation, research is showing that students with National Board Certified teachers are showing a higher growth in core content areas than students with non-board certified students. In Washington State, Cowan and Goldhaber (2016) found significant learning gains among middle school math students of almost six weeks, while elementary reading students showed additional gains of almost two weeks. In Los Angeles in 2012, the Strategic Data Project (SDP) found that "National Board Certified teachers outperformed other teachers with the same

levels of experience by two months of additional math instruction and one month of additional ELA instruction" (p. 5). In that same year, the SDP conducted research in Gwinnett County Public Schools, Georgia and found that while there was no difference in effectiveness between alternate certified and traditional certified teachers, National Board Certified teachers did outperform their peers of consistent experience.

Recruitment and Retention

Many states across the nation are recognizing the importance of National Board Certification in recruitment and retention efforts. States are offering additional payment supplements for teachers who achieve and maintain certification. These supplements can be up to ten thousand dollars per year, depending on the state. Mississippi is one of the consistent leaders in National Board supplements at six thousand dollars per year. In 2018, the Center for Educator Recruitment, Retention, & Advancement (CERRA) conducted a study on turnover rates in South Carolina. The report found that National Board Certified teachers were on average one-third less likely to leave the teaching profession than non-certified teachers.

Discussion

The results of these studies show that National Board Certified Teachers produce better student learning outcomes than their peers. Perhaps a systemic change is needed for professional preparation and support to include the National Board's Five Core Propositions as a blueprint for pre-service teachers. The National Board for Professional Teaching Standards shared survey results that showed "91% of teachers engaging with the National Board standards reported that it had a direct impact on their instructional practices" (npbts.org, n.d.). To build teachers that make an even bigger impact on student growth, we must focus on the researched based strategies that are established during the National Board certification process.

The first proposition states, "Teachers are committed to students and *their* learning" (nbpts.org, n.d.). Being committed to students can be defined in many ways. While data is important, there are essential qualities of individual students that stretch beyond their score on a test. Teachers need to know if their students like sports or music, working alone or in groups, are shy or outgoing, who and what makes up their home, where they come from, and who they want to be. Accomplished teachers study their students daily to collect information and then use that information to develop multiple opportunities for students to demonstrate what they know. In their book, What Teachers Should Know and Be Able to Do, the National Board for Professional Teaching Standards states, "Accomplished teachers therefore use everything they know about effective – and ineffective – practices to develop strategies that capitalize on their students' varied backgrounds, using diversity to enrich the learning environment for every student" (accomplishedteacher.org, 2016, p. 15). Without that knowledge, teachers do not know how to meet the needs of the students that they are teaching, and administrators lack the ability to support teachers in meeting those needs. Administrators can also use that knowledge to drive professional development seminars, conference attendance, and adding support staff. Teachers must be attuned to the ever-evolving circumstances that lead to ever-changing situations for all students.

"Teachers know the subjects that they teach and how to teach those subjects to students" is the second proposition (nbpts.org, n.d.). While all teachers should be masters of their content, accomplished teachers use specific pedagogical skills to facilitate learning across subject areas to form multiple paths to knowledge (accomplishedteacher.org, 2016). The Architecture of Accomplished Teaching's double-helix funnel shows how you must know your students (proposition one) in order to teach them (proposition two). Building off the first proposition of

knowing their students, teachers and administration can also identify the strategies that are most beneficial to their students for that specific year. Each year (and class) contains students with different needs, so teachers must know how to adapt lesson plans and strategies for those specific students. Research shows that alternate route teachers have high turnover rates, especially in schools with a high count of students of color (Carver-Thomas and Darling-Hammond, 2017). Alternate route teachers are often masters of their content area but have less training in teacher practices. It is important that teachers are trained during pre-service opportunities to use specific content-based strategies to meet the learning needs of each student.

When looking at managing and monitoring student learning (the third proposition), teachers need to be trained on what those two things look like for individual students (nbpts.org, n.d.). Teachers should focus on specific student knowledge and individual gaps in learning. They need to be trained on how to make sure that students are meeting established goals and making new goals once mastery is achieved. Continual monitoring of student learning standards and objectives allows teachers to also address individual gaps in student learning. Again, the Architecture of Accomplished Teaching's double-helix funnel shows how you must know your students (proposition one) in order to teach (proposition two), and then manage and monitor their learning (proposition three) during and after lessons. Accomplished teachers use every moment to encourage learning based on student interests. They organize learning environments while managing resources and systems that support those environments (accomplishedteacher.org, 2016). While state testing data is important, teachers need to look at what happens in between those testing sessions. Teachers are often held accountable to state established pacing guides. In trying to stick with these guides, students are often left with learning gaps that are not addressed. By intentional application of the third proposition, teachers can move forward but with

knowledge of individual needs of students that must be addressed in remediation or enrichment. One must meet the needs of the high achiever, the average student, and the low achiever.

Thinking systematically might be one of the harder things, especially for new teachers. Most districts offer a scaffolding guide for teachers to use, but they never explain the importance of filling gaps to lay foundational pieces to learning, especially in language arts and math content areas. The fourth proposition spotlights how teachers need to be aware that concepts build on each other (explained in the third proposition), and that learning is a lifelong process. One cannot just move on to make sure that you stay on pace. It is important to see what works and what did not, what needs to be retaught, and how to incorporate research into new opportunities. Just like students are learning, teachers and administrators should be learning what worked and how to do it better the next time. Reflection has been a buzz word for almost the last ten years, but most school districts do not take the time to make this a priority. Accomplish teachers are not afraid to reflect and persevere through achievements.

Finally, the fifth proposition reminds us that teachers are members of learning communities that should be focused on growing the students each year (nbpts.org, n.d.). Teachers need to know how to build relationships with their peers, administrators and other school leaders, students' parents, and all the other important people that make a school and a school district successful. Building these relationships must be intentional and a priority because they will help us with the other four propositions. Without them, we will not be able to achieve all the things that have been outlined in the previous paragraphs. School districts and schools are built with systems in place so that we can assist each other in growth for ourselves and our students. "Accomplished teachers need not teach alone" (accomplishedteacher.org, 2016, p. 39).

By focusing on these five core propositions in pre-service training, as well as professional learning communities at schools, teachers will have a continuity of professional development that research shows is successful. While one might argue that these things are already being taught in pre-service learning opportunities and in professional development across the nation, there is not continuity in purposeful honing of these specific skills. A reliable and continual approach of proven standards will allow teachers to make conceptual connections in their practices instead of changing with each new big idea that is presented.

These practices can also become a well-rounded approach to addressing the consistent reasons teachers give for leaving the classroom. Students will perform better on tests, thus lessening the stress from testing expectations. They will gain confidence in their abilities from continual practices that are based on foundational pieces instead of changing each year. Finally, many states offer salary incentives for teachers that achieve National Board certification and consistent training should help them achieve that certification.

Conclusion

In conclusion, the evidence presented in this paper underscores the urgency for addressing the persistent challenges of teacher shortages and high turnover rates, particularly in critical subject areas such as math, science, and special education. The data highlights the multifaceted nature of these issues, ranging from testing expectations and salary disparities to administrative support and the lack of continuity in resources and professional development.

The findings suggest that the implementation of National Board Certification standards and strategies holds promise in addressing several key aspects contributing to teacher attrition and improving student learning outcomes. Research indicates that National Board Certified Teachers (NBCTs) produce better results in literacy and mathematics, offering students enhanced

educational experiences and achievements. Moreover, states offering incentives for teachers to pursue and maintain National Board Certification demonstrate a positive impact on retention rates, suggesting the potential effectiveness of such initiatives in recruitment and retention efforts.

By aligning pre-service training and ongoing professional development with the Five Core Propositions of the National Board for Professional Teaching Standards, educators can cultivate a more supportive and effective learning environment. Emphasizing a deep understanding of students, subject matter expertise, effective instructional strategies, systematic thinking, and participation in learning communities can empower teachers to meet the diverse needs of their students and foster continuous growth.

Addressing the root causes of teacher attrition requires a comprehensive approach that prioritizes the well-being and professional development of educators while promoting student success. By investing in initiatives like National Board Certification and fostering collaborative learning environments, education stakeholders can work towards mitigating teacher shortages and creating a more stable and thriving educational landscape for all.

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Translating Theory into Practice: The Role of Vignettes in Preparing Candidates for Fieldwork and their Future Classrooms

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Introduction

Recent reports show an alarming number of teacher educators are leaving the field or considering exiting the profession (Amitai & Houtte, 2022). While there are a myriad of reasons leading to this exodus, many educators cite increasing stressors beyond the realm of content delivery (Walker, 2022). Faced with a pressing teacher shortage, educator preparation programs are looking for ways to best prepare their candidates to meet the daily demands in the field of education. University programs grapple to adequately prepare candidates to tackle current and often critical issues teachers face like bullying, race, gender, and transphobia. University instructors themselves are also often uncomfortable tackling these challenging topics, even though they desire to support their candidates. Educator preparation programs are examining innovative ways to address these complicated topics as they bridge theoretical frameworks with field-based observations and daily teaching practices. A growing body of research highlights how "vignettes can be used as a tool to help teacher candidates apply education theory to their own classroom observation and teaching experiences" (Jeffries & Maeder, 2011, p. 168).

These challenges were acutely recognized in our small private university in Southern California. While our focus on preparing candidates stressed lesson planning and delivery, it became evident that we were not adequately equipping them to navigate the myriad challenges educators face in real classrooms. Questions of profound significance began to arise: What

should be done if a child experiences bullying during a lesson and flees the classroom? How should we address situations where a classmate refers to a transgender student using their dead name during group activities? Our candidates, returning to our classrooms after their fieldwork experiences, were posing these powerful questions. In response, as a faculty, we ultimately decided to incorporate vignettes into our program as a thoughtful approach to tackle these complex issues. This article describes the transformative journey our program undertook in addressing these challenges and integrating vignettes as a key component of our educational approach.

Vignettes Defined and Themes Developed

Our initial step involved establishing a shared definition of vignettes and identifying critical topics. Throughout history, narratives, stories, and oral traditions have proven to be potent tools for teaching, modeling, and fostering discussions. In a number of teacher education classrooms, case studies have been used as a passive and indirect method of reviewing critical content (Jeffries & Maeder, 2006; Dinkelman & Cuenca, 2020). We agreed that vignettes would be defined as a snapshot, short story or problem of practice that are provided to discuss and reflect—in a safe learning environment—real-life situations teacher education candidates may encounter in the field.

Subsequently, we proceeded to categorize essential topics. Each vignette was aligned with ongoing K-12 education initiatives, encompassing the following key themes:

- Emotional well-being
- Neurodiversity
- Intersecting Identities
- School-based policies

- Cultural perspective and identities

Identifying Key Partners

During this transformation process, we secured a three-year grant in collaboration with the Branch Alliance for Educator Diversity (BranchED). The primary objective of the grant was to implement coaching strategies aimed at enhancing the diversity within our teacher pipeline and strengthening our program to better support candidates in addressing the specific requirements of our local districts. BranchED played a pivotal role as strategic thought partners during this transformative journey.

Within this framework, we actively identified educators in local districts who were willing to collaborate with our faculty in crafting authentic classroom narratives. These teachers drew upon real-life events from their own classrooms to compose the vignettes. Our faculty then worked to refine and develop reflective questions and protocols to accompany these narratives. BranchED engaged with additional partners, expanding the range of experiences captured in a comprehensive vignette guidebook titled "Complexities in the Classroom" (2021).

Designing a Scaffolding Process

We realized that responding to complex classroom scenarios can be a daunting task. To address this, we worked to design a process where our teacher candidates were supported through a collaborative learning community and a deliberate scaffolding process. This scaffolding process entails the systematic arrangement of guided activities, relevant content, and both teacher and peer support to facilitate progressive learning (Dickson et.al, 1993; Rosenshine, & Meister, 1992). As emphasized by Barron and Darling-Hammond (2010), scaffolding plays a crucial role in aiding learners by guiding them through incremental steps to master new skills and strategies, ultimately fostering inquiry and independence.

During our first year of implementation, we refined our scaffolding process for using vignettes in our classes into three steps: a) Instructor and learners complete a vignette together

with the instructor using in-the-moment verbal feedback and scaffolding; b) Learners complete a vignette in pairs or small groups followed by a structured whole group discussion; c) Learners complete a vignette independently that is used as a program assessment.

While the vignettes focus on a single scenario, the skills learned are transferable to a variety of classroom situations and settings. In a 2006 study, scaffolded vignette instruction was found to notably strengthen learners' abilities to remember and apply prior knowledge to new situations (Jeffries & Maeder, 2006). As candidates move into the field, they have amassed knowledge and skills to both anticipate and respond effectively to challenging situations in the classroom.

Incorporating Reflective Practice

The role of the instructor as a reflective practitioner is essential for cultivating professional competence and fostering the ability to think in action when confronted with teaching dilemmas (Schon, 1983). Vignettes serve as a valuable platform for both teacher candidates and course instructors to participate in profound reflective practices. Teacher candidates engage in introspection regarding their responses to the vignettes and explore ways to apply newfound insights in their fieldwork, student teaching, and future careers in education. Similarly, instructors reflect on their pedagogical approaches as they prepare candidates for the challenges highlighted in the vignettes, actively facilitating structured discussions around these scenarios.

Leat (1995) proposed that reflective practice—leading candidates to move from theory to practice—is often challenging and suggested using problems that candidates can solve to assist in bridging this gap. Vignettes provide a real world scenario and a look into an actual classroom before a teaching candidate needs to confront a situation like this during their fieldwork or future

classroom. Vignettes give the time and space for reflective practice before the in-the moment response is required when candidates have their own classroom. While the scenario may not be the same, the candidate will have walked through the reflective process for a similar event with their instructor and peers' scaffolded support.

Taking this into consideration, a set of reflective questions was crafted to guide candidates in examining the vignette from various perspectives. Candidates were prompted to articulate their response as if they were the teacher in the given scenario. Subsequently, they delved into the potential intended and unintended consequences of their chosen response. Moreover, candidates engaged in reflection on how their personal teacher identity and societal position might influence their decision-making process in responding to the scenario.

Vignette Reflective Questions

Think about the actions you selected through the lenses below and describe possible intended or unintended consequences (positive and/or negative) related to the actions you listed above:

a. Consider how your identity/role in society may impact your response and your actions

b. Consider how these actions might impact the social-emotional wellness of the child

c. Consider how the guardian/community might respond

d. Consider any relevant legal/policy considerations

e. Consider your professional responsibilities (Complexities in the Classroom: Vignettes for Teacher Candidates, 2021)

Vignettes for Program Improvement

Stecher et. al (2006) assert that vignettes' realistic description of classroom events can provide an effective strategy to measure instructional practice. By incorporating vignettes into teacher preparation programs, candidates have a chance to reflect on a standardized scenario

within a secure environment. This approach facilitates streamlined and standardized data collection since candidates are reflecting on the same event rather than individual experiences in their fieldwork classrooms. Simultaneously, vignettes offer candidates a platform to showcase reflective thinking and problem-solving skills, surpassing the capabilities of traditional assessment methods (Jeffries & Maeder, 2011). With this in mind, we designed a rubric to score the vignettes based off the reflective prompts at the end of each vignette. In addition, candidates rated their confidence in being able to address the situations presented in the vignette as very confident, confident, somewhat confident, and not confident.

Once the vignettes and the process for implementation were established, we held a training with all faculty and adjuncts (August 2022). We went through the vignettes ourselves and had active discussions on how to answer them and facilitate conversations in our courses. Prior to the training, several faculty had expressed apprehension about facilitating conversations around controversial topics. The training assisted in alleviating this as we all took turns in responding to the vignettes and providing ideas for our courses. In our initial implementation phase, faculty and adjuncts convened at the conclusion of each semester to review scores, offer suggestions for enhancing the implementation process, and engage in discussions on course improvements derived from insights gained through the vignettes.

Methodology

To assess program impact and guide steps for improvement, we organized two focus groups with instructors utilizing the vignettes following the initial year of implementation. When selecting a methodology, a qualitative approach emerged as the most suitable to delve into the attitudes and lived experiences of course instructors implementing vignettes with teacher education candidates. Yin (2014) asserted that the data from qualitative analysis comes from

extensive field work done by the researcher in the form of interviews and focus groups. Further, a phenomenological case study design was chosen as it is driven by exploration rather than by prediction of a specific topic (Baxter & Jack, 2008). These approaches were chosen as they allowed access to the experiences of the participants in the study and provided deep insight into the phenomenon of vignette implementation. Additionally, we explored the integration of vignettes and their role in revising class curriculum within an ongoing cycle of program improvement, aligning with the principles outlined by Shakman et al. (2020).

Vignettes were utilized in six of our courses, which is half of the multiple and single subject programs. Candidates typically take two courses per semester, so vignettes were implemented in one course per term, beginning with the first term and ending with the third term. In the fall of 2022, there were twenty-three course sections that utilized the vignettes, involving 375 teacher candidates. In the spring of 2023, vignettes were used in three course sections, involving 304 teacher candidates. Out of the twenty-three sections for fall and spring, half of the courses were delivered in synchronous online formats, and the other half were fully in-person or hybrid in-person. The same protocols were used regardless of the delivery format.

Seventeen instructors who used vignettes in the 22-23 academic year were invited to participate in the focus groups. A convenience sample was utilized due to the simplistic nature and ability to allow for statistical validity (Sedgwick, 2013). Five participants were selected based on their willingness to participate, role as faculty in teacher education, and experience implementing vignettes for at least one academic year.

For the focus groups, participants answered the following guiding questions:

- What has your involvement been in using vignettes over this academic year? (What classes did you use them in? How did you introduce them?)

- Do you think adding the vignettes has raised the confidence level of our candidates in knowing how to approach challenging situations in the classroom that can include race, bullying, neurodiversity, etc.? What was the general consensus surrounding the topic?
- Please describe some of the conversations that the vignettes have led to in your class?
- Has your own confidence changed in approaching these challenging topics with your candidates since using the vignettes?
- Did you make any connections to your curriculum? Are there areas to revise and incorporate the themes from the vignettes? If so, please elaborate

Analysis

The results of the focus group questions were coded into themes, patterns, and concepts (Hazzan & Nutov, 2014). We organized and prepared the data for coding by transcribing audio recordings and developing a list of preliminary patterns or themes. Coding is defined by Strauss and Corbin (1998) as the "careful scrutiny of data, line by line, that researchers are able to uncover new concepts and novel relationships" (p. 71).

Upon a thorough analysis of the data, codes were scanned for themes, themes were reviewed, and frequencies were extensively analyzed for patterns. A theme with a higher frequency helped to paint a picture of how vignette implementation and instruction impacted teacher educators. These key themes were then translated into findings which were used to further program improvement through dialoguing data, identifying challenges, identifying strengths, and setting programmatic goals surrounding each vignette.

Findings

The focus groups opened by sharing how they introduced the vignettes and best practices in implementing them. Themes emerged around the importance of scaffolding the learning by using a practice vignette first in small or partner groups and then leading into a whole class discussion. One faculty member shared how "rich feedback came from group discussions where students often shared about similar situations that they've been a part of." The idea of having supporting articles and class content built around the issues addressed in the vignettes was highlighted. One participant stressed that the "vignette itself forced me as an instructor to insert additional content around critical race theory."

In discussing the confidence level, a clear theme of personal and cultural identity emerged. If a teacher candidate had a personal experience or could relate to the vignette, their confidence was higher. In one vignette, a high school student going through a gender transition is called by their dead name and another student calls them a slur. Teacher candidates who are part of the LGBTQ community themselves rated themselves higher in confidence. Creating a safe place for all to share their viewpoints was paramount in the class discussions about confidence. One teacher candidate felt safe to share that his confidence level was low because of his personal religious beliefs and lack of experience in addressing these issues, but he knew he needed to act and protect the student in the scenario. He appreciated the class discussion in providing him clear ideas and actionable steps on how to respond.

Participants highlighted that while there was not one right answer to the vignettes, there were definitely inappropriate ways to respond. One key theme that emerged was that participants discussed issues that could be supported by the classroom teacher and when outside support such as that of a school administrator or counselor should be involved. Many of the instructors were able to reach higher level conversations as the example was given of how a class discussion

centered on the importance of the whole child and how “I was able to make connections to some of the course content relative to social and emotional learning, how it undergirds or supports academic and behavioral development and success.” This was also echoed by another participant who shared vignettes “gave students an opportunity to share their own personal story and funds of knowledge relative to each theme presented”.

Participants expressed a range of confidence levels in leading the vignette discussions. While some felt their years of teaching experience provided them with real world examples, others felt a robust disconnect from the world of teaching today versus how teaching was when they were in the classroom. All participants shared that these types of discussions were not part of their own teacher preparation programs and “students were able to see connections between their class content and the theme of each vignette”. An additional theme emerged of being transparent about their own growth and professional development with students and engaging in reflective moments with their classes. It was shared that “they have helped me bring up the conversations I have wanted to have but have not had a resource to do so”.

The focus group session ended by offering suggestions on how to further incorporate the themes of the vignettes into the curriculum and possible changes to our teacher preparation program. Out of this question, several main themes emerged. Many of the faculty members focused attention on the importance of both collaborating and supporting adjuncts teaching this content. Many adjuncts are currently in the field and can bring real world examples but may need support in how to frame these discussions. It was also shared that “there are still pieces of the vignette……that we would not be able to adequately address in our classes and there is a need to look for other opportunities to to include support for topics such implicit bias, culturally responsive practices, and education code”. This was furthered by a participant who highlighted

the importance of being more explicit about showing our teacher candidates how to create an inclusive classroom environment in their PK-12th grade classroom. Many of the situations in the vignettes might have been prevented by having an inclusive environment established in the class.

Overall, faculty emphasized the potency of vignettes as effective tools for contextualizing crucial issues prevalent in contemporary classrooms. They were amazed by the conversations that unfolded from these scenarios. Emphasizing the importance, they underscored that interns within their classes specifically requested a thorough exploration of these vignettes before candidates were approved as interns. This approach aims to better equip them to navigate real-world scenarios successfully. Candidates further pointed out that delving into these vignettes in detail contributed significantly to their enhanced readiness for fieldwork and student teaching.

Discussion and Next Steps

Significant emphasis was placed on the confidence levels of both candidates and instructors during our focus groups. To further bolster this aspect, we have initiated the incorporation of mixed-reality simulations based on vignette scenarios. In these simulations, an actor assumes the role of the students from the vignette, while avatars representing K-12 students are visible on the screen. Teacher candidates engage in mixed reality, responding in real-time to the actions of these student avatars. They have the flexibility to pause the scenario at any point to seek support from their peers or the instructor. Following the live scenario, the instructor facilitates debrief conversations once several students have participated. We piloted this approach in two classes during the fall semester and plan to expand its implementation in the upcoming spring semester.

According to Darling-Hammond et al. (2002), their study underscored a strong correlation between teacher preparedness and both teacher efficacy and the conviction that teachers play a crucial role in influencing student learning outcomes. Our program has observed

positive outcomes by incorporating vignettes, contributing to better preparation of candidates for critical conversations during fieldwork and internships. While feedback from faculty members has been encouraging, our next initiative involves conducting focus groups with candidates before and after utilizing vignettes to assess their impact on teacher preparedness. Through sharing our experience of integrating vignettes into our program, we aim to foster an ongoing discussion on best practices in teacher education programs.

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Utilization of Graduate Students as Clinical Resident Evaluators

Joanne L. Hood

Louisiana Tech University

Teacher evaluation seems to be at the center of most education policy reforms and a crucial aspect of the educational process. In some states, it has even been tied to teacher pay and certification. The information gathered in the evaluation process often serves as the basis for many decisions in a school and the majority of teacher evaluation systems rely upon, at least in part, a principal's assessment of a teacher's performance. Classroom observations can be formative and/or summative in nature and involve the supervisor or administrator rating a teacher's performance (Barrette, et al., 1995) for the purpose of improving teaching.

The evaluation of teachers, or clinical supervisory model, is a process that originated in the fifteenth century (Barrette, et al., 1995) and was refined by Goldhammer in 1969 when he suggested five phases: preobservation conference, classroom observation, analysis, supervision conference, and analysis of the analysis (Goldhammer, 1969). The purpose of these five phases is to provide an avenue for interaction and dialogue as it relates to student learning. In the preconference phase, the guidelines or framework for the observation are established and agreed upon by the evaluator and teacher. During the classroom observation, information is collected by the evaluator in the form of notes that record the events of the classroom as the teacher teaches. The third phase is the analysis phase which involves the evaluator using the collected data and converting it into a meaningful form. The post observation conference is the phase during which specific details and information from the lesson are used to help the teacher analyze the lesson. The post conference analysis is the fifth phase and often results in the establishment of next steps

for the teacher. The productiveness of the evaluation is examined in the final phase (Goldhammer, 1969).

By 1980, about 90% of school leaders used some form of the clinical supervisory model (Bruce & Hoehn, 1980) though it was often difficult for school leaders to engage in all six of Goldhammer's phases. In Sergiovanni & Green's book (2015), a three-step strategy, which includes the preconference, collecting the information, and post conference, is presented to streamline the process (Sergiovanni & Green, 2015). The purpose of the preconference is to identify the area to be observed and the tool to be used to collect the data. As the lesson is taught, the observer collects information that is relevant and compiles it into a format to be shared with the teacher. In the post conference, the results of the observation are discussed, and the observer ensures the teacher understands the information being shared.

The supervision and the evaluation of teaching is one of the many responsibilities of a school building administrator. The purpose is twofold-to ensure that minimum standards are being met and to help teachers grow and develop. As an instructional resource for teachers, school leaders need to be able to "clearly communicate criteria for judging staff performance, be considered an instructional support person, provide evaluation of teacher performance, and be knowledgeable about instructional resources" (Sergiovanni & Green, 2015, p. 61). School administrators are charged with the job of building the capacity of the individuals they work with (Sergiovanni & Green, 2015) and evaluations are one method to accomplish this.

The TEaM Model Approach

In response to feedback received from teachers, schools, school systems, and teacher preparation programs in a long-term study addressing teacher preparation, the Louisiana Department of Education (LDOE) launched a $4.89 million grant in 2014 to support partnerships

between school systems and preparation providers (LDOE, n.d.). These funds were to be used to offer preservice teachers a full year of practice, or student teaching, under an expert mentor during a nine-month clinical residency. The change from a semester or quarter student teaching experience to an immersive full-year clinical residency program was a concept not previously implemented in Louisiana.

To provide their students with the best field experiences possible, Louisiana Tech University's Clinical Residency and Recruitment Center (CRRC) developed the TEaM Model. This model is an August to May apprenticeship with a state approved mentor that is a collaborative effort between the university and school district partners. With strong foundations from the St. Cloud State University's Co-Teaching Model, the Danielson Framework for Teaching Tool Clusters, and adaptions from the University of Alabama Clinical Master Teacher Model, the TEaM Model is used to prepare teacher candidates for initial certification (Vessel & Basinger, 2021). What started with one school district and two elementary schools has now extended to seventeen school districts and thirty-five schools across north Louisiana. The TEaM Model utilizes Swivl technology as the observation and feedback tool which has provided equitable access to classrooms in a 75-mile radius of the university. Swivl's technology reduces travel time by evaluators, saves the university money with the reduction of travel costs, and provides efficiency in reviewing lessons by multiple observers. It was also an invaluable resource when the COVID-19 pandemic occurred.

Purpose of the Evaluation

The purpose of evaluations during a clinical residency is to provide residents with feedback to improve their teaching. Under the TEaM Model, they are formally evaluated three times during the school year using the system of evaluation outlined by Sergiovanni and Green

(2015). Each quarter, residents complete a self-evaluation, a faculty evaluation, and an evaluation by the mentor teacher team. Using this model, residents receive feedback from university faculty, school-based mentors, school leaders, and their faculty evaluator. Using Swivl technology, residents are also able to self-reflect when they review a lesson they record. By requiring multiple evaluations, growth can be expected.

The Danielson Framework for Teaching

The Framework for Teaching (FFT) was initially developed in 1996 by Charlotte Danielson for the purpose of enhancing the professional practice of teachers. The framework has been revised multiple times over the decades and has been used worldwide to "accelerate teacher growth, improve student outcomes, and create a more rewarding and sustaining professional environment (The Danielson Group, n.d.). The framework includes four domains: Planning and Preparation, Learning Environments, Learning Experiences, and Principled Teaching, and in each domain, specific knowledge, skills, and required dispositions to demonstrate competency are addressed. The Framework for Teaching is the basis for the instrument used to evaluate the clinical residents at Louisiana Tech University.

Role of a Faculty Evaluator

The faculty evaluator has the potential to provide high-quality feedback when they serve as a mentor or coach to the resident. Each quarter, the faculty evaluator conducts a preconference with the resident during which the lesson plan and preconference form are reviewed and discussed. For this conference, the resident tags Domain 1 of the Danielson rubric on his/her lesson plan. During the preconference, the evaluator provides guidance prior to the lesson being taught and recorded.

After the lesson is taught and recorded, the resident watches the video and tags Domains 2 and 3 by entering comments and evidence in the actual video. The resident will then complete the post conference form and share the Swivl video link and form with his/her evaluator. The faculty evaluator uses the Danielson Evaluation form to score the lesson plan and view and score the lesson. A post conference is scheduled during which time the evaluator provides feedback on the lesson plan and lesson and the three phases or stages of the evaluation process are completed.

Coaching New Faculty Evaluators

During the 2022-2023 school year, there was an unusually large cohort of clinical residents that were in need of faculty evaluators at Louisiana Tech University. To address the shortage, a pilot program was conducted involving the Master of Educational Leadership (MEDEL) students at the university. Graduate students in their final year of the degree program volunteered to serve as faculty evaluators. The students who were recruited were former Louisiana Tech TEaM Model Clinical residents, received evaluator training, and were supervised by an experienced faculty member who served as a clinical resident evaluator for several years and had been a school administrator for seventeen.

Prior to being assigned a resident, the new faculty evaluators were trained on the Danielson Framework. During training, each evaluator was given the Danielson rubric, a sample lesson plan, and a short teaching video to view. The new evaluators were asked to review the lesson plan, watch the video, and score both components using the rubric. The scores were then analyzed to ensure inter-rater reliability.

During the year, the MEDEL students' advisor provided support to the new faculty evaluators through in person and virtual meetings. The graduate students were given the opportunity to reflect upon and discuss the evaluation process with their advisor. The MEDEL

students acquired the skills needed to conduct pre and post conferences as well as work through the evaluation tool to provide appropriate feedback and recommendations to the clinical residents. When questions or concerns arose, the advisor was available to support the new evaluators. Where the role of the advisor was as a coach and mentor to the MEDEL students, the MEDEL students were then in turn a coach and mentor to the clinical residents thus developing the MEDEL students' skills in the evaluation process.

Conclusion

The work of a principal involves being a coach, mentor, and evaluator for his or her faculty and staff. As the instructional leader of the school, principals are directly involved in the teaching that occurs as they oversee and evaluate their teachers. When the focus of supervision is on teaching and learning, evaluation is an unavoidable aspect of the process (Sergiovanni & Green, 2015) and individuals seeking to pursue a career as a school leader must be equipped with the necessary knowledge and skills to be successful. The pilot program provided the graduate students at Louisiana Tech the opportunity to serve as a mentor and evaluator and thus develop skills that would help prepare them to be lead a faculty. The pilot program enhanced their educational experience at Louisiana Tech as it provided them with experiences they otherwise would not have acquired until they moved into an administrator role. Furthermore, the pilot program provided the clinical residents with timely feedback since the evaluator to resident ratio was manageable due to the utilization of the MEDEL students as faculty evaluators. The program was deemed a success and, in the future, as residency cohorts outnumber the available faculty evaluators, it is anticipated that the MEDEL students will again be utilized as faculty evaluators.

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Increasing the Field Experiences of Secondary Teaching Candidates to Impact Readiness for Professional Practice

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The confidence that teachers have to perform the everyday tasks of classroom instruction and impact student learning outcomes is defined as teacher efficacy (Bandura, 1997; Yost, 2006). This perception of ability can greatly determine the levels of effort and persistence that teachers show in the classroom (Pajares, 1996). High levels of teacher efficacy have been associated with enhanced instructional practices and greater levels of job satisfaction. Research focused on determining correlations between experience, job satisfaction, and efficacy indicate that teaching experience is positively associated with student achievement and ultimately their perceptions of effectiveness (Podolsky, Kini, and Darling-Hammond, 2019). This experience gained as a result of classroom practice, however, is not limited to the first few years of their career but can be encountered in teacher preparation programs.

Teacher preparation programs are designed to equip aspiring educators with the knowledge, skills, and experiences necessary to become effective teachers. Preparation program curriculum drives at supporting the theoretical knowledge of students that is ultimately necessary for licensure, but it must also support teaching candidates as they bridge theory into everyday practice. Through hands-on engagement in an active classroom setting, teacher candidates gain firsthand knowledge on implementing teaching strategies, managing diverse student populations, and differentiating practices to meet individual learning needs. Field experiences are a critical component of preparation for professional practice by providing teachers with real-world insights and practical skills (Zeichner, 2010). Field experiences can be a beneficial time for

students to practice their teaching, have an opportunity to see outcomes of their teaching, and potentially receive feedback from a teacher currently in practice (Knight, 2007; Soprano and Yang, 2012).

To this end, field experiences are necessary and supportive practices that can prepare preservice teachers for their future classrooms. Programs that prepare teachers must consider utilizing field experiences as a means for increasing teacher candidate knowledge and familiarity with classroom practice.

Context

The Louisiana Tech University College of Education and Human Sciences is home to the Curriculum, Instruction, and Leadership program, which supports the development of teacher candidates. The motto of the program used in promotional materials and on social media is "Preparing professional educators to positively influence learning outcomes and transform educational experiences for a better world." This program houses undergraduate teacher preparation programs that certify early childhood teachers (grades PK-3), elementary teachers (grades 1-5), and secondary teachers (grades 6-12) in the state of Louisiana. The program provides coursework for students as well as a year-long teaching residency that occurs in a student's senior year. The Secondary Education program certifies teachers in grades 6 through 12 in the areas of English Language Arts (ELA), Social Studies, and Agricultural education.

Process

As new secondary faculty were hired in the Winter of 2021 and the Fall of 2021, a programmatic evaluation of courses and outcomes was conducted. The findings from this evaluation determined the areas of needed growth and development. Based on this analysis, in the Fall of 2021, the Secondary Teaching program at Louisiana Tech University underwent

significant changes in order to increase both the amount and duration of field experiences for teaching candidates. Prior to this year, secondary teacher candidates had very little experience in the classroom, other than an initial Introduction to Education course via the K-8th grade lab school associated with the university. These experiences, while helpful, do not prepare students for understanding the pedagogy and practice necessary for being a successful secondary teacher. It became evident to secondary faculty that changes must be made to increase the depth, breadth, and diversity of field experiences. In order to better prepare teacher candidates for service during residency and increased effectiveness post residency, a growth area identified for pre-residency candidates focused on increased field experiences. These field experiences are defined as opportunities for teaching candidates to observe effective teaching practices and classroom management techniques of expert teachers. Also, the teacher candidates' complete assignments using evidence from the field.

Co-Construction of Field Experiences

As changes began, faculty felt it was necessary to begin by consulting with relevant stakeholders to co-construct a more effective model for providing students with some real-world experience prior to their year-long residency. Initially, the faculty met with principals of middle and high schools who were already participating in the TEAM model as a part of the Clinical Residency at Louisiana Tech. The TEAM Model was designed in the spring of 2015 to establish a research-based clinical residency program for Louisiana Tech University's College of Education and Human Sciences. Through state-funded programs such as Louisiana Believe and Prepare, Tech's TEAM model has grown into one of the most successful clinical residency programs in Louisiana. These principals represented eight schools in the district including five middle schools (6-8) and three high schools (9-12). These administrators were consulted on what

they felt would be reasonable expectations for the field experiences and what safety protocol was needed prior to visiting the schools. Principals suggested that the same state and federal background checks be conducted to ensure student safety and that students should obtain liability insurance prior to any field experiences. Further, principals provided the necessary guidance for meeting any professional and safety guidelines at their individual schools such as parking, points of entry, checking into the school, and regular school schedules.

Co-Selection of Field Experience Placements

After meeting with the principals, the recommendation was given to meet with district curriculum leaders in order to better understand their viewpoints on how the field experiences could be more effective in regard to pedagogy and practice. These curriculum leaders were aligned with the program certification areas of ELA, Social Studies, and Agricultural. The curriculum leaders made general suggestions of teaching characteristics that would need to be evident for teaching candidates to learn from the observations. General suggestions, such as being knowledgeable in the content, having strong pedagogical practice, and being effective classroom managers were all identified as necessary in order to host a Louisiana Tech teaching candidate. These curriculum leaders were then able to support the co-selecting of 29 field experience host teachers who would fit the criteria listed above. These 29 teachers consisted of 24 females and 5 males. Of the 29, 12 were in sixth through eighth grade and 17 were ninth through twelfth grade. The 29 volunteers represented 8 different middle and high schools among the district partnerships. Each of these volunteers were communicated with on a quarterly basis in order to determine their continued willingness to host a field observation placement. Further, as each host was assigned, consistent communication occurred between the volunteer host, the

teacher candidate, the secondary faculty members, school level administrators, and curriculum coordinators.

Design and Implementation of Field Experiences

As a part of the field experience placement experiences, the secondary faculty members of the university coordinated with host classroom teachers to design and implement a system of feedback in order to determine the success of the field experience placements. Each quarter, the hosts are requested to support the assignments completed by teacher candidates by providing necessary information on lesson plans, classroom activities, and management plans. Further, the hosts are requested to complete candidate disposition evaluations that support the understanding of how candidates are meeting the expectations and responding to feedback. These evaluations are similar to those used in the clinical residency program so that there is continuity in the ways that teacher candidates are evaluated throughout the program. As refinement continues to take place regarding the field experiences, focus groups have been identified as a future measure to determine the success of the process and progress of students. The participants of these focus groups will include, but are not limited to: district personnel, district curriculum coordinators, school building administrators, school building department chairs, host teachers, university administrators, university faculty, and teaching program completers. The goal of these focus groups will be to identify benefits of the field experiences, as well as identifying the challenges that might be encountered Also, it is imperative to provide host teachers an opportunity to communicate best practices for working with teacher candidates. Evidence from these focus groups will be used to make programmatic improvements and adjustments in subsequent quarters/school years.

Changes to design and implementation of field experiences were not the only changes made within the secondary coursework for students. Because of the need for increased field experiences, changes were also needed in the secondary education curriculum in order to be congruent with more field hours. Students in the secondary teaching program at Louisiana Tech complete a methods and materials course, a practicum course, and a secondary teaching course in the year prior to their clinical residency. As these changes were implemented, course syllabi were amended to meet the new expectations of field experiences. Further, new course assignments that would identify the elements of effective teaching (via the Danielson Framework for Teaching) were developed and implemented to align. These activities and assignments included lesson plan analysis, focused observations, host teacher interviews, analysis of questioning and discussion techniques, micro teaching activities, and the completion of field experience logs to document student activity and progress. These new assignments in conjunction with the increased field experiences provide students with a more wholistic perspective of secondary teaching on a daily basis.

Depth, Breadth, and Diversity of Field Experiences

The critical need within the secondary teaching program at Louisiana Tech University was identified as a need for teacher candidates to spend an increased amount of time in the field observing effective teaching practices. In order to ensure that the depth of the experiences met the needs of the teacher preparation program, course assignments were amended and created, as previously discussed. Also, as a part of the field experiences, students are encouraged to participate in professional development, school building professional learning communities (PLCs), cooperative planning periods, as well as any other opportunities for professional growth that might occur during their placement. The goal of the increased depth of field experiences is

to provide teaching candidates with greater perspective on what the day-to-day work of a full-time classroom teacher looks like.

Further, as the secondary program certifies candidates for sixth through twelfth grade, it became necessary to provide students with a greater breadth of field experiences that they could potentially encounter upon graduation. In previous years, it was possible for students to graduate from the program, obtain certification in a content area for grades 6 through 12 and not have had any time spent in a middle school classroom. Because of this, it was determined that students would report their preference for Clinical Residency at the beginning of their junior year. Students would select either middle school or high school and their pre-residency field experiences would begin based on this preference. For those students who identified Middle School as their preferred placement for residency, a high school placement would be provided in the fall quarter, a middle school placement in the winter, and another high school placement in the spring quarter. The goal of the high school placements would be to provide an "early" placement in ninth or tenth grade and a "late" placement in eleventh or twelfth grade. For those students who identified High School as their preferred placement for residency, the inverse would occur and a middle school placement would be provided in the Fall quarter, a high school placement in the Winter, and another middle school placement in the Spring quarter. The goal of the middle school placements would be to provide an "early" placement in sixth grade and a "late" placement in seventh or eighth grade. This breadth of placement experiences was designed to ensure that students spent time in as many of the grade levels as possible prior to certification.

Finally, the diversity of field experiences required changes in order to represent a variety of teaching environments in which candidates could serve upon graduation and certification. The Lincoln Parish school district provides diverse school environments in which students participate

in field experiences. The entire district is considered a Title 1 district with 93% of schools being federally eligible for funding to support low income students through various programs. Further, the district is racially diverse with 44.78% percent of students being white, 47.26% of students being African American, 5.16% being Hispanic, 1.35% being Asian, and less than 2% reported as Native American or Hawaiian/Pacific Islander. Participating in field experiences in schools that contain students of various ethnic backgrounds as well as of varying socioeconomic status can provide candidates with experience working with students from all backgrounds.

Conclusion

While the work of programmatic improvement must continue, the teacher preparation program at Louisiana Tech has made significant strides in ensuring increased field experiences to support the development of pre-residency teachers. This field experiences expose teacher candidates to real-world practice and provide a lens through which to view their theoretical knowledge. Further, through increasing the depth, breadth, and diversity of field experiences, the program is working to ensure that candidates are prepared for any school environment beyond graduation, thus potentially impacting their future levels of efficacy. Also, by involving key stakeholders in the processes of co-constructing the field experiences, co-selecting the most effective field experience placements, and working to design and implement the activities of field work, the program is seeking to ensure that the experiences provide candidates with the most relevant and supportive field work possible.

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Communication is Key:

Systems for Building Transparency in Field Experiences Introduction

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Field experiences are a critical component of teacher preparation programs (Darling-Hammond, 2006). During field experiences, pre-service teachers gain practice in authentic classrooms with real students to test how educational theories come to life in practice and bridge the gap between theory and practice (Allen & Wright, 2013). The traditional model of field experience is typically a triad between the pre-service teacher, the host teacher, and a university supervisor. However, communication breakdown between these three groups can occur. When is the pre-service teacher coming into the classroom? What is the pre-service teacher's responsibility? What are the host teacher's responsibilities? What is the university supervisor's role in this triad? While these questions may be relatively easy to answer at the culminating student teaching placement where the pre-service teacher takes over all classroom responsibilities for a set time, early field experiences and practicums may not be so straightforward and differ among teacher preparation programs.

Despite striving for strategic, mutually beneficial field experiences, we (two university faculty) consistently received anecdotal evidence showing some pre-service teachers and/or K-12 partners were unsure as to what the expectations were and who was responsible for what during field experiences. One course (co-taught by two of the authors) is a junior-level practicum experience and part of a partnership that has occurred over 15+ years. We realized that if our veteran host teachers hadn't figured out the expectations across a 15 year span, then clearly our

communication systems needed improvement. Therefore, we developed an action research project to study how increasing professional communication and transparency among all parties could be accomplished. In this article, we describe how we tested several strategies and evaluated them for their effectiveness.

Background

For field experiences to be successful, K-12 school and teacher preparation partnerships must be "strategic in meeting partners' needs by defining common work, shared responsibility, authority, and accountability" (CAEP, 2020). Such partnerships lend themselves to being mutually beneficial. CAEP (2020) specifically highlights the importance of regular communication, stating that "ongoing communication is one of the cornerstones of maintaining a successful partnership. Establish a system to share updates and feedback, and determine regular meetings or check-ins." To achieve regular, systematic communication between all stakeholders, including pre-service teachers, university faculty, and K-12 host teachers (or other K-12 school representatives), strategies need to be purposefully integrated into field experiences.

When developing communication strategies to use during field experiences, providing multiple instances and modes for parties to communicate can be highly effective. Wepner (1998) describes the benefit of fostering multiple opportunities for pre-service teachers, host teachers, and university faculty to communicate, in-person and electronically, and believes that this can lead to openness to change and create a connected learning community.

Within the field placement itself, clear, straightforward communication is important in establishing positive experiences for host teachers and pre-service teachers (Ryan & Jones, 2014; Allen & Wright, 2013). Allen & Wright (2013) studied pre-service teacher perceptions during a practicum experience and found that "opportunities to integrate theory and practice were varied,

with many participants reporting the detrimental impact of an apparent lack of clarity around stakeholders' roles and responsibilities" (p. 136). Effective communication can aid in creating a supportive learning environment for pre-service teachers. Without it, pre-service teachers may find themselves caught between conflicting concepts or differing expectations of their host teacher and university faculty (Ryan & Jones, 2014). Additionally, lack of clarity may lead pre-service teachers to be critical of their host teachers, who they feel are not supporting them in their program requirements or create circumstances where host teachers felt they did not receive clear expectations of their roles, placing the burden onto the pre-service teacher to clarify roles and responsibilities (Allen & Wright, 2013).

To address the lack of clarity and bridge the communication gap among all parties, thoughtful communication strategies can be employed as a starting point in improving the relationship between the university faculty, host teacher, and pre-service candidate (Ryan & Jones, 2014; Guise et al., 2017). For example, Ryan & Jones (2014) evaluated communication strategies during a pre-service teachers' practicum experience, including providing 1) hard copy documents outlining university requirements and forms, 2) email contact with host teachers three times during practicum (beginning, middle and end) and 3) a website containing resources such as guidelines, forms, etc. They found that host teachers "welcomed initiatives which might streamline the process" and preferred "a complementary partnership which allowed them to undertake their work with pre-service teachers in an efficient manner" (p. 115). Guise et al. (2017) studied co-teaching as a practicum model and found that more explicit training and conversations would help ensure understanding of the co-teaching model and its strategies, the expectations of mentor teachers, and the benefits of using the model.

Current research on communication in teacher education focuses on digital communication, online platforms, and virtual experiences in online field settings during the COVID-19 pandemic (Piccolo, et al., 2021; Varela & Desiderio, 2021; DeFeo et al., 2024). However, integrating specific communication strategies and practices in face-to-face field experiences need to be explored in the post-pandemic context. In order to create an in-person field experience that fostered multiple opportunities to communicate and focused on clear communication among all stakeholders, we developed the action research project described in this article.

Methodology

This project was an action research study involving two university faculty/researchers in combination with two pre-service teachers who participated in the field experience. We used Mills' (2018) criteria for action research in education and followed the action research cycle of plan, act, observe, and reflect.

Plan

During the planning process, we identified the problem of study as lack of transparency and communication among university faculty, pre-service teachers, and K-12 partners. The following question acted as a guide for the study: *How can we improve communication and transparency among the university faculty, pre-service teachers, and K-12 partners during early field and practicum experiences?* We also designed strategies to implement during each planning phase of the project, including 1) Student-Led Orientation and Midterm Check-In, 2) Online Video Orientation, 3) Google Field Folder, 4) Monday Memos, 5) Friday Recaps, 6) Field Focus Questions and Reflection Sheets and 7) Focus Groups, which were implemented or modified at different times during two action research cycles. (See Figure 1).

Act

During the act phase of action research, we implemented the strategies with pre-service teachers and K-12 partners during a junior-level field practicum course for candidates studying to become secondary education, content area teachers. The course was taught onsite at a local middle school where pre-service teachers participated in class for 90 minutes and then worked for 75 minutes in a content classroom for their field experience. Pre-service teachers then returned to class for 50 more minutes to debrief the field experience and continue the lesson for the day. The field experience was paired with a course on content area literacy which occurred weekly on Tuesdays and a course on supporting students with special needs on Thursdays. Pre-service teachers led class activities and lessons focused on using literacy strategies and creating modifications/accommodations for a variety of learners during their field experiences.

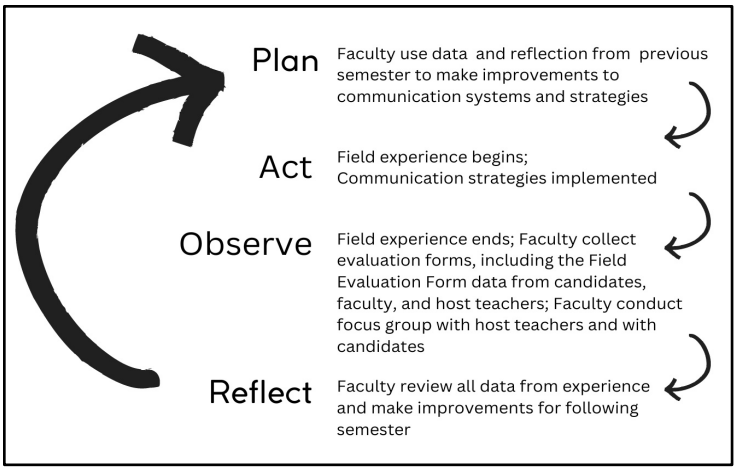
Observe

Course evaluations completed by pre-service teachers, field evaluation forms completed by pre-service teachers and host teachers and focus groups with both pre-service teachers and host teacher representatives generated data on the perceived effectiveness of the strategies as well as researcher notes and observation during this phase of the action research cycle.

Reflect

After each data collection cycle, we met as a research team to reflect on our data and use this data to inform the subsequent data collection cycle. Changes were made to the field experience and communication system in efforts for continuous improvement after each data cycle and to stay true to the action research model.

Figure 1: Action Research Cycle



Findings

With a focus on continuous improvement, we completed two cycles of action research where we explored the effectiveness of the following strategies: 1) Student-Led Orientation and Midterm Check-In, 2) Online Onboarding Document, 3) Google Field Folder, 4) Monday Memos, 5) Friday Recaps, 6) Field Focus Questions and Reflection Sheets and 7) Focus Groups.

1) Student-Led Orientation and Midterm Check-In

The Student-Led Orientation used a guide *(see Appendix A*) that outlined the expectations for the semester, set dates for the completion of assignments inside the host teachers' classrooms, and communicated the forms that need to be completed by the host teachers, as well as how the pre-service teacher was to communicate with their host teacher through the experience. Pre-service teachers met with their host teacher on the first day of the field experience and led them through the guide. By the end of the first day, the pre-service teachers and their host teachers had established professional communication and set the expectations for the semester. For accountability, the pre-service teachers were required to get a signature from their host teacher at the bottom of the orientation guide and sign the guide themselves.

The Midterm Check-In required the pre-service teachers to meet for a second time at the midterm mark. The Midterm Check-In had pre-service teachers verify with their host teachers

that expectations were being met and that all dates established at the beginning of the experience had not changed. This document, like the Student-Led Orientation, had both the pre-service teacher and the host teacher sign the checklist. By having both host teachers and pre-service teachers sign the two documents, both parties were held accountable in conducting/participating in the conversation. Signing off also guaranteed that both parties were in agreement on the terms discussed based on the Student-Led Orientation guide and the Midterm Check-In.

Pre-service teachers reported liking the Student-Led Orientation guide because they felt they had a plan and a mutual understanding of what their roles were. Pre-service teachers felt they knew what was expected of them while participating in the host classroom and felt like "there was no scrambling a week before they needed to do something." Doing the Student-Led Orientation helped them set dates and expectations weeks in advance, while the Midterm Check-In allowed the information to be brought back to the forefront of the experience. Pre-service teachers also found the Midterm Check-Ins to be a useful opportunity to get feedback from their host teacher and to evaluate their performance up to that point.

2) Online Onboarding Document

In addition to the Student-Led Orientation, we provided an online resource that all parties could view at any time during the field experience. To increase transparency among all parties, we developed a one-page Google Document and shared it via email. The document was divided into three sections, one that pertained to the host teacher, one to the pre-service teacher, and one to the faculty teaching the course (*See Appendix B*). Each section contained hyperlinks to training videos, evaluation forms, and basic program information. Although each section was specific to the person's role in the field placement, each person could access the information that was shared to the other roles as all parties had access to all links. However, it was only required

that the person view the materials related to their direct role as host teacher, pre-service teacher, or university faculty. The document remained active and accessible throughout the duration of the course.

Of the nine pre-service teachers in the first research cycle, five verified they had viewed the training materials on the Online Onboarding Document. Of the nine host teachers, four verified they had viewed the training materials on the Online Onboarding Document. In the second research cycle, only two of the 17 pre-service teachers verified they completed the training. No host teachers completed the training. From these poor response rates, one might conclude that this is not an effective strategy for increasing transparency in the field. However, upon reflection, there are several possible reasons as to why response rates were so low. First, the Student-Led Orientation or Monday Memos (*see section four below*) could have answered all the host-teachers' questions and therefore they might not have felt the need to access the additional online resources. Pre-service teachers and host teachers may have seen this communication as a supplement and not a required part of the course. Completion of the Online Onboarding Document, viewing of the training videos, and verification of participation was not collected as a course grade or emphasized in the course. A second possible explanation is that the host teachers who were returning hosts from the previous year may have already viewed the materials and felt they did not need to view them again. Moving forward, if the Online Onboarding Document is to be used, then it needs to be communicated in the course syllabus and class announcements and completed for a participation grade by the pre-service teachers. To encourage participation from the host teachers, they could be asked to view the documents prior to the Student-Led Orientation meeting and make a list of any questions they have for the pre-service teacher beforehand.

3) Google Field Folder

A Google folder was created for each pre-service teacher by the university faculty. Each folder contained the Orientation Guide, Mid-Term Checklist, Instructor Feedback, Host Teacher Feedback, Final Evaluation, and additional resources. During the course orientation, the university faculty defined each document for the pre-service teachers. Then, the folders were shared with the host teachers. The host teachers were also given an online orientation which described the folder. Giving access to the pre-service teachers, host teachers, and university faculty fostered transparency as the pre-service teachers were observed and evaluated.

Feedback was positive for the use of Google Field Folders to organize all the field experience documentation. Using the university learning management system (LMS) was not an option because host teachers would not be able to access the files. The Google Field Folder acted as an organization tool, and pre-service teachers were not "hunting all over for the documents. If we lost documents, we could easily access them again." The Google Field Folder remained active all semester for everyone to reference. Host teachers and faculty could see each other's observation forms and data immediately, which increased transparency and resulted in better support for the pre-service teachers. Additionally, the Google Field Folder was passed on to the instructor of the subsequent field experience. They were able to see where pre-service teachers need support moving forward in the program and use a similar set-up to track progress, thus increasing consistency between field experiences.

4) Monday Memos

After gathering data from the first round of focus groups, an instructor began sending weekly memos each Monday to the pre-service teachers, host teachers, and both faculty co-instructors. These Monday Memos described course topics for the week as well as provided

reminders for upcoming assignments, observations, etc. The weekly email opened lines of communication and set clear expectations for the pre-service teachers.

Feedback from the host teachers was positive regarding the introduction of Monday Memos. Host teachers made comments such as "I really appreciated the weekly emails and I found them very helpful," and "Honestly, I think that this year I had the opportunity to host two very strong students. Communication and expectations were clear and I really liked the weekly updates. I do not have any recommendations as to how to improve the experience."

5) Friday Recaps

Every Friday, the pre-service teachers were required to write an email to their professors and host teacher. These emails would recap the week and outline any planned activities for the upcoming week. As the pre-service teachers constructed their emails, it was a goal to discuss any key points from conversations with the host teacher and how those conversations connected to the Field Focus Questions (*see section six below*). By including Friday Recap emails in the coursework, pre-service teachers were held accountable for being active participants in the host classroom. This strategy was implemented to continue communication and establish professional rapport between the pre-service teacher, professors, and host teacher. The emails also allowed the professors to learn about the pre-service teachers' activities in the host classrooms due to the impossibility of observing every pre-service teacher every week.

At the start of the semester, all pre-service teachers were informed about the Friday Recap emails. This assignment was implemented to allow pre-service teachers to continuously practice professional writing and communication. Many pre-service teachers forgot to write their Friday Recaps for the first weeks of the field experience. Reminder emails from a professor were needed because of the shortage of pre-service teacher responses. Previously, there was a

general complaint among host teachers of lack of communication between the university professors, pre-service teachers, and host teachers. After implementing the Friday Recaps, a host teacher said, “I just wanted to let you know that the students that I am working with are doing a great job. This is the best communication I have ever had with [the School of Education] students!”

6) Field Focus Questions and Reflection Sheets

Each day that the pre-service teachers participated in the field experience they were required to fill out a Reflection Sheet they had received from the professors. The Reflection Sheets were used to organize the pre-service teachers’ thoughts and experiences while holding the pre-service teachers responsible for being active participants in their field experience.

Each day the pre-service teachers would go to their host teachers’ classrooms with two Field Focus Questions, written on their Reflection Sheet, that had been prepared in class. In one class the professor instructed the pre-service teachers to create original questions based on the central theme of that day’s lesson, while the second professor provided the pre-service teachers with aligned questions. These questions directly correlated with the topic of the class.

On the Reflection Sheet, the pre-service teachers had space to write down their questions and notes from the day. Before the pre-service teachers left their classrooms, they would have a brief conversation with their host teachers over their Reflection Sheets. On the Reflection Sheet, there was also a space for the host teacher to write comments about the pre-service teachers, or they had to sign if no comments were made. By forming Field Focus Questions based on the class, pre-service teachers were able to observe purposefully and reflect.

Overall, this strategy received mixed feedback from the pre-service teachers and the host teachers. Compared to years past, the Field Focus Questions and Reflective Sheet were more

successful in fostering meaningful conversations between pre-service teachers and host teachers. For example, one host teacher said, “This year was a lot better than years past. It seemed the candidates had more guidance and their prompts allowed for meaningful learning moments.”

Coming to class with focus questions and a theme helped guide conversations but it was only successful if pre-service teachers were prepared and willing to initiate and hold that conversation. One host teacher said, “I really noticed a difference with the sheets they had me sign. I saw an attempt at them asking about the teacher's purposefulness. It just wasn't consistent.” Another host teacher provided feedback on how to improve this strategy moving forward. They said, “It would be nice for student teachers to ask more questions and truly engage the cooperating teacher on the purposefulness of their lessons and management. Maybe have student teachers write down daily takeaways on what they are noticing. It also would really help with stimulating conversation and reflection.”

7) Focus Groups

After each placement two Focus Groups were created to debrief the effectiveness of the semester and identify improvements going forward. One Focus Group consists of host teachers while the other Focus Group was selected from pre-service teachers. Each group had a targeted list of questions and time to share their thoughts, experiences, and/or concerns. Feedback was collected from both Focus Groups for the university faculty to integrate.

The feedback was valuable as the university faculty adjusted the curriculum, assignments, and communication. Each year the feedback is saved to the course Google Folder as a reference as instructors reflect each year on how to make positive adjustments to communication strategies and classroom experiences for both the pre-service teachers and host teachers.

Discussion

Reflecting upon the communication strategies after the second action research cycle, we drew multiple conclusions regarding how we might improve communication and transparency among the university faculty, pre-service teachers, and host teachers during early field and practicum experiences.

1) Multiple Modes & Multiple Opportunities

First, we used and will continue to use multiple modes of communication and provide multiple opportunities to communicate expectations. Ryan & Jones (2014) found that "Supervisors liked the idea of the website as a backup but preferred documentation in their email and some were glad to receive a hard copy as well, " (p.115), while Wepner (1998) also noted the importance of multiple opportunities to communicate, both in-person and electronically. Through this field experience, multiple modes of communication were used including both online and in-person options. Communication was not just at the beginning of the experience, but consistently employed weekly through the entire experience. Pre-service teachers, host teachers, and faculty had multiple ways to access the course materials. There were online training videos that they could refer to anytime, in-person orientations, check-ins, reflections led by students, and weekly emails to provide updates and reminders. While we did not provide hard copies, that may be something to consider in the future.

2) Direct Communication

Next, we communicated directly with host teachers and pre-service teachers. Ryan & Jones (2014) recommended communicating directly with participants through regular use of email: "the use of regular email contact with teacher supervisors throughout the practicum to communicate practicum milestones and to provide opportunities for ongoing communication is

supportive and provides an accessible invitation to schools to make contact as required" (p. 118). Communication for this field experience was sent directly to host teachers and pre-service teachers each week and was not funneled through the school principal, human resources, or other administrators. We found that communication should be frequent and come from names/emails of familiar faculty. This type of communication helps develop familiarity among all parties and establishes relationships among participants in the experience.

3) More Explicit Training

Guise et al. (2017) argued for more explicit training and conversations for the host teachers. We achieved this through the Online Onboarding Document, Student-Led Orientation, and Midterm Check-In. We fostered conversations weekly during the experience with the Monday Memos, Friday Recaps, and Reflection Sheets. While it may appear to be an abundance of communication, we found the more, the better in this situation. One host teacher commented, "This is the best organization of curriculum I have seen for this block of the program. The information given to us [host teachers] was thoughtful and purposeful. I was able to see what students should know and be able to perform at this point in their education program. The video explanation was helpful, and the student feedback forms were appropriately pointed at what should be evaluated at this point in the pre-service teachers' journey. The two students who taught in the art room were the most prepared I have ever seen from [the School of Education]. I am so appreciative of the new format for this block. It was a positive experience."

4) Pre-service Teacher and Host Teacher Involvement

Zeicher et al. (2015) advocate for democratizing pre-service teacher education, involving host teachers and pre-service teachers in collaborative efforts to plan and enact curriculum. In this experience, we empowered the pre-service teachers to take the lead in many communicative

situations, such as leading the Student-Led Orientation, Midterm Check-In, and Friday Recap emails. By conducting the Focus Groups and collecting field evaluations, both pre-service teachers and host teachers used their voices to improve the experience. Having the pre-service teachers and host teachers heavily involved in the process made the experience run more smoothly, encouraged more buy-in from all participants, and felt mutually beneficial for all parties involved.

Conclusion

Ultimately, this study provided us with information on how we can improve our communication during field experiences and how other teacher preparation programs might employ new strategies in their own field experiences to foster better communication among all involved. Using multiple modes of communication as well as multiple opportunities to communicate, directly communicating with all parties, providing explicit training, and involving pre-service teachers and host teachers in the process has resulted in an improved experience overall. We recommend using a combination of the strategies outlined in this article to improve communication and transparency among the university faculty, pre-service teachers, and K-12 partners during early field and practicum experiences.

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Appendix A: Orientation Guide

Orientation Checklist	My Notes
Part I: Introduction & Background ___ I will introduce myself, share my content major, and have my host teacher introduce themself ___ I will ask my host teacher for details about their schedule and first period class, including: ● Level (7th or 8th grade) ● Content ● Number of students ● Students with IEPs, 504s, ELLs, other learning needs, etc. ● Seating chart ___ I will ask my host teacher how they prefer to be communicated with (phone, text, email, etc.) and record their answers here:	
Part II: Attendance Expectations ___ I will attend first period with my host teacher every Tuesday and Thursday this semester. December will be reserved for making up missed field hours if necessary. ___ During Homeroom, my teacher can be found in what room? ___ If I have to be absent for any reason, I will email both my host teacher and my instructor. I will plan to make up my absences the week of December 4th. My teacher's email is:	
Part III: Weekly Performance Expectations ___ I will be present in class from 9:45am-11:15am on Tuesdays and Thursdays ___ I will communicate professionally and consistently with my mentor teacher. ___ After each field experience, I will participate in a quick debrief with my teacher during passing periods and complete my daily reflection guide. ___ I will work with my mentor teacher (and co-candidate if applicable) to teach parts of their lessons on Tuesdays and Thursdays. These can be activities that they plan and I teach, or that I plan and teach. I need to develop a schedule of when my host teacher and I will decide what I am going to do each class. My schedule/plan for co-planning with my teacher is listed below:	
Part IV: Observations ___ I will be observed formally at least once by my course instructor and will be given written feedback in my Google Field Folder. I will reflect on this feedback. My instructor will share a list of observation dates.	

___ I will be observed formally at least once by my host teacher and will be given written feedback in my Google Field Folder. I will reflect on this feedback. My teacher and I will choose a date for this to occur.	
Part V: Final Assessment ___ I will write a lesson that I will teach in my host class. It will be content lesson, so if I am in a class that is not my content (e.g. social studies in an English room or science in a math room), I will need to plan accordingly with my host teacher (e.g. think a Humanities lesson, or a STEM lesson). ___ I will ideally teach the lesson on either 11/14 or 11/16 or 11/21. I need to confirm by midterm (fall break) with my teacher the date and topic. I need to make sure my co-candidate also has time to teach their lesson. ___ I will record myself teaching the lesson using a SWIVL device that I checked out from the School of Education. I will upload my video into the field Google Field Folder (my instructors will share this folder with me) ___ I will communicate with mentor teacher regarding logistics for completing this final project (this occurs in November)	
Part VI: Final Evaluations ___ At the end of the experience, I will complete a Field Evaluation Form on my experience. ___ At the end of the experience, my host teacher will complete a ● A **Final Feedback Form** on my performance ● A **Field Evaluation Form** on working with the School of Education	

Candidate Signature: _____

Mentor Teacher Signature:_____

Date:_____

Appendix B: Excerpt from Onboarding Document

Role	Onboarding Tasks & Times		Verification
Mentor Teacher	Introduction to the School of Education	1:11	Onboarding Completion Verification
	Introduction to Secondary Education Program Video or 2 page Overview	9:09	
	Mentor Expectations for SCED 345	7:04	
Resources: Field Evaluation Form Tier 2A Completed by the Host Teacher			

Role	Onboarding Tasks & Times		Verification
Pre-Service Teacher	Introduction to the School of Education	1:11	Onboarding Completion Verification
	Introduction to Secondary Education Program Video or 2 page Overview	9:09	
	Candidate Expectations for SCED 345	11:08	
	Candidate EDA Refresher	3:45	
Resources: Field Evaluation Form Tier 2B Completed by the Candidate			

Role	Onboarding Tasks & Times		Verification
University Faculty	Introduction to the School of Education	1:11	Onboarding Completion Verification
	Introduction to Secondary Education Program	9:09	
	Faculty Expectations for SCED 345	11:06	
	Faculty Introduction to the EDA (Part I only)	6:11	
Resources Link to Watermark (when available) Link to EDA Referral Form / Link to EDA Blank Assessment / Links to EDA Rating Form (FYI only) Field Evaluation Form Tier 2A Completed by the Host Teacher Field Evaluation Form Tier 2B Completed by the Candidate Field Evaluation Form Tier 2C Completed by the Faculty			

The Impact of a Classroom Management Field Placement on Preservice Teachers' Environmental Education Self-Efficacy

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Abstract

While reform efforts increasingly call for meaningful environmental education (EE) experiences in K-12 education (e.g., McCrae, 2006), preservice teachers in the United States often receive little to no training in EE (Franzen, 2017). Historically, preservice teachers enter schools with low EE personal efficacy, increasing the probability that their students will receive inadequate or little EE (Sia, 1992). Common barriers to EE training in teacher education are that there is little time to address it in current methods or content courses (e.g., Mastrilli, 2005). In this exploratory study, researchers employed a mixed methods design to investigate the impact of brief EE pedagogical instruction and related field experiences on the EE personal efficacy and outcome expectancy of 14 preservice teachers enrolled in a classroom management course. Researchers administered pre/posttests using a modified T-STEM survey. Findings indicated a statistically significant increase in EE personal efficacy and outcome expectancy ($p<.01$) after intervention with large effect. Interviews triangulated these findings and indicated that field experiences where they implemented the same EE lesson multiple times were most influential in improving their EE personal efficacy. While EE pedagogical content instruction was ranked highly important to building their confidence, all interviewees mentioned independent research of EE content as important as well. Implications for practice and suggestions for future research are provided as well.

Introduction

Contemporary educational reform efforts are increasingly calling for and/or requiring K-12 students to experience quality environmental education (EE) in school with a goal of environmental literacy for all (e.g., McCrae, 2006). Unfortunately, in-service and preservice teachers seldom receive training to implement EE and subsequently feel underprepared to teach their students about the environment (Franzen, 2017). While federally funded efforts focus primarily on EE training for in-service teachers, preservice teachers often enter their first year with little to no training in EE, making them less confident and less likely to employ EE in their classrooms (Sia, 1992).

One science methods course. That is what many elementary teacher education programs can squeeze into their packed curricula to prepare their teacher candidates to learn effective ways to teach all disciplines of science. Throw in science and engineering practices, cross-cutting concepts, Nature of Science, and many other crucial topics related to methods of science instruction, and it is easy to see why many teacher education candidates and inservice teachers may feel underprepared to provide environment-related learning experiences to their future or current students (Plevyak et al., 2001).

Consequently, many teachers do not receive training in EE during their teacher education programs. Franzen (2017) surveyed several Midwest university professors of elementary teacher education programs and found that most programs either did not address environmental education (EE) at all or did so to a small extent. EE in teacher education is usually led by professors with expertise in or passion for EE (Franzen, 2017), leading to the lack of its inclusion in curricula. Still, most teacher education programs that do incorporate EE do so implicitly (Franzen, 2017). Teacher educators typically blame a packed curriculum and too little time as

barriers to including EE in teacher education curriculum (e.g., Powers, 2004; Mastrilli, 2005). Plevyak et al. (2001) suggest that EE in preservice teacher education be integrated throughout the curricula in an interdisciplinary fashion.

Understanding the immense number of pedagogical concerns to be addressed in science methods courses and other barriers to EE in teacher education, we wondered if including an EE-based field experience and associated instruction in a core teacher education course, like classroom management, could provide a context that would impact preservice teachers' EE personal efficacy and EE outcome expectancy.

Literature Review

Self-Efficacy and Teaching Efficacy

Alfred Bandura (1994) defines self-efficacy as a perception or belief. More specifically he states that self-efficacy is "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives" (pg. 71). In describing teaching efficacy in general, Bandura (1993) states that teachers' efficacy can "predict students' level of mathematical and language achievement" when controlling for students' ability (pg. 140). Teaching efficacy is made up of two factors: 1) personal teacher efficacy- the belief in one's ability to teach effectively, and 2) outcome expectancy- the belief that good teaching is effective despite external factors (Enochs et. al., 2000). Many studies have highlighted the importance of teaching efficacy due to the impact it has on teachers' instruction and subsequently their students' beliefs and achievement, and these findings are often discipline specific. Bandura (1994) describes teaching efficacy as situationally specific. In other words, personal teacher efficacy as it relates to general science may be completely different from the same teacher's EE personal efficacy. Thus, EE personal efficacy is specifically related to a

teacher's belief about their individual ability to perform EE effectively and about their belief about how good EE instruction is effective despite internal and external factors. Although there has been a great deal of research on science teacher efficacy, research on teachers' EE personal efficacy is just emerging.

EE personal efficacy and EE outcome expectancy

Although there are many studies investigating the science teacher efficacy of preservice and in-service teachers, there are limited studies that investigate EE personal efficacy. The first published study on EE personal efficacy was conducted by Sia (1992). In this study, Sia modified the STEBI instrument which was originally developed to measure general science teaching efficacy to measure EE personal efficacy and EE outcome expectancy. Using the newly developed Environmental Education Efficacy Belief Instrument (EEEBI) Sia found that preservice teachers were relatively negatively efficacious about teaching students about the environment but believed that "good teaching and students' achievement in EE concepts were directly related. (p. 7)" Since this study, there have been several attempts to investigate how to increase preservice and in-service teachers' EE personal efficacy.

It is widely thought that employing instruction and professional development opportunities that allow active learning of content and pedagogy and encourage teachers to model recently learned appropriate EE teaching techniques are the best methods to increase EE teaching confidence (e.g., Bell, 2002), but what specific components of active learning and modeling is not clear. In fact, interventions that include EE field experiences and content knowledge do not always improve both EE personal efficacy and EE outcome expectancy. Mosley and Utley (2008) employed a mixed-methods, quasi-experimental research design to investigate the EE personal efficacy and EE outcome expectancy of an EE curriculum that

included EE-related content knowledge and outdoor EE inquiry experiences. The control group learned only Earth science-related content knowledge in an indoor lab and they increased their EE personal efficacy and did not experience an increase in EE outcome expectancy. The experimental group learned EE-related content and had an intensive teaching field experience with pre-developed lessons. Interestingly, the experimental group increased their EE outcome expectancy and did not experience an increase in EE personal efficacy.

Truath-Nare (2015) investigated the effect of a course that included EE content, EE pedagogy, and EE teaching field experiences. Findings from this study found that participants increased their EE personal efficacy, but not their EE outcome expectancy. Participants cited increased EE content knowledge and practical teaching experiences as influential in their positive efficacy change.

Richardson, Byrne, & Liang (2016) conducted a mixed methods study in a methods course to investigate whether the development and implementation of an EE unit of study with grade school students would impact the EE personal efficacy and EE outcome expectancy of 23 enrolled preservice teachers. In this study, participants experienced a statistically significant increase in both constructs with large effect sizes.

While the impacts of EE interventions are mixed, explicit EE content instruction, explicit EE pedagogy instruction, and EE teaching field experiences have been found to positively impact one or both constructs related to EE teaching efficacy. None of the studies we found and reviewed were in the context of a core education course whose primary learning objective was not EE content knowledge or EE methodological knowledge and performance. This study investigates the impact of Plevyk's (2001) suggestion that EE training be incorporated in an interdisciplinary fashion during preservice teacher education.

Drawing from our review of the literature, we designed a study to answer the following research questions:

1. How does an EE field-based experience in a core education course impact EE self-efficacy of preservice teachers?

2. How does an EE field-based experience in a core education course impact EE outcome expectancy of preservice teachers?

3. How did specific learning experiences influence preservice teachers' EE personal efficacy?

Methodology

In order to measure the impact of an EE field experience in a classroom management course on the EE self-efficacy and EE outcome expectancy of preservice teachers, researchers employed an exploratory mixed methods study design. For this study, participants were aspiring teachers of different majors attending a small liberal arts university in the Midatlantic area of the United States. Participants were enrolled in a spring section of a classroom management course. This course is required of all elementary and special education majors at the university.

Participants

The participants in this study were a diverse group of 14 aspiring educators from different majors (Table 1) enrolled in a small liberal arts university in the southeastern United States. 10 of the participants were aspiring elementary education majors while two were aspiring special education majors and two were aspiring English teachers. Both the elementary and special education majors require students to take and pass this course in order to be accepted into the program. 14% were English majors who intend to complete a master's degree in education at the university and were taking this course as an elective. Most participants were Caucasian (~71%), while ~21% were African American and one participant was Hispanic. The majority of

participants were female (~71%). Due to the need for increased amount of practice and review of classroom management strategies and skills, this course was recently moved earlier in the curriculum for our students, thus, first year, second year and third year students are taking this class at the same time.

Table 1

Participant demographics

Participant (Pseudonym)	Race	Gender	Endorsement Area Sought	Year
Alley	W	F	Elementary PreK-6	1
Alisa	AA	F	Elementary PreK-6	3
Amy	W	F	Elementary PreK-6	3
Carla	W	F	English (Secondary)	3
Chris	AA	M	English (Secondary)	1
Ella	W	F	Elementary PreK-6	1
Helen	W	F	Elementary PreK-6	1
John	W	M	Special Education (General Curriculum K-12)	3
Jane	W	F	Elementary PreK-6	1
Jade	AA	F	Special Education (General Curriculum K-12)	1
Marvin	H	M	Elementary PreK-6	3
Marsha	W	F	Elementary PreK-6	3

Nick	W	M	Elementary PreK-6	2
Sherry	W	F	Elementary PreK-6	2

Context

All participants were undergraduate students in a classroom management course that involved a partnership with two third grade and two fourth grade classes at a local private school. The partnership was initiated through a NOAA-funded B-WET grant project with a goal to provide teacher training and to embed EE in elementary grades at the school. The study was completed in Year 2 of the three-year funded project.

A unique aspect of the project was the collaboration of preservice and in-service teachers during the implementation of an EE unit using the Meaningful Watershed Educational Experience framework (Frungillo et al., 2022). While the primary goal of the course was for students to learn effective theory and strategies of behavior management, students were to apply their learning in the context of multiple environmental education activities and field experiences. These experiences are described below:

Introductory Video

Participants in the study initiated the 4th grade EE unit by developing a video that shared an overarching question, "How do our choices and behaviors impact our watershed?" with elementary students. All participants worked in small groups to develop one of four videos. Completed videos were sent to the elementary in-service teachers to share with their elementary students to initiate the EE unit.

MWEE 101 Online Module (NOAA, 2024)

An online module provided multimedia instruction on the MWEE framework for EE. Participants completed this module for homework at different times throughout the course.

Because learning EE methods and frameworks was a secondary goal of the class, the due date was set for the last week of class, but many students finished it early.

Background Lesson

Participants were then provided the basic structure for a background lesson on either seed dispersal (3rd grade) or movement of pollution throughout a watershed (4th grade). Both lessons aligned to the respective curriculum. Participants were to complete independent research on the environmental topics, add description to the lesson plans (e.g., what they would say, do and what management strategies would be employed), and submit lesson plans to the professor for review. After discussion and revisions, students implemented their lessons in small groups at the private school. The professor, in-service teachers, and each group debriefed immediately after the lesson.

Outdoor Environmental Activities

Participants were also provided with the basic structure for a brief inquiry-based environmental activity to be implemented on the university campus for elementary students. Similar to the Background Lesson described above, small groups of participants added important aspects to the lesson plan and submitted it to their professor for review. Elementary students arrived on the university campus to take part in these activities that were related to their EE unit. When elementary students left the campus, the professor and participants debriefed about the implementation of specific instructional and management strategies, noting strengths and weaknesses.

Stewardship Activity

Near the end of the course, participants traveled to the partner school to assist the students in invasive species removal. Participants were prompted to use specific management

strategies to guide students in using garden tools and to work together in clearing invasive plants around a pond. Again, a debriefing session occurred directly after the activity. Also, participants completed a final written reflection related to their entire experience with the EE unit, the teachers, and the students.

Instruments

The instrument used to collect quantitative data on participants' EE self-efficacy and EE outcome expectancy was a modified version of the T-STEM. Sia (1992) modified the well-known and widely used instrument for science teaching efficacy, the STEBI-B, replacing the word "Science" with "Environmental Education," in each survey question. Other researchers continued to use this method to measure the EE teaching efficacy and EE outcome expectancy finding it had high reliability (Guttman split half coefficient 0.9132) and validity (Moseley, Reinke, & Bookout, 2003). The T-STEM, developed by The Friday Institute (2012), is a contemporary instrument that measures science teaching efficacy and science teaching outcome expectancy. During its initial pilot, the survey scored within the Good (>0.8) and Excellent (>0.9) ratings on the Chronbach's Alpha for both the science teaching efficacy and science teaching outcome expectancy constructs. Similar to Sia (1992) who modified the STEBI-B, we modified the commonly used T-STEM by changing the word "Science" to "Environmental Education" on each survey question. We calculated the Cronbach's Alpha to assess the modified T-STEM's internal consistency on both the EE personal efficacy construct (Chronbach's Alpha=0.712) and the EE outcome expectancy construct (Chronbach's Alpha=0.724). Both constructs appear to be at an Acceptable level.

To triangulate quantitative findings and investigate what experiences may have impacted changes in EE teaching efficacy and EE outcome expectancy, we developed a semi-structured

interview protocol. One researcher developed the first draft of the protocol. The draft was presented to three other education researchers and the wording was modified for clarity and to eliminate leading phrases.

Data Collection

The modified T-STEM was administered as a pre/postest. The pretest was administered on the first meeting of class through a Qualtrics link. This occurred prior to any discussion about field experiences or content/skills related to the course or EE. The modified T-STEM was then administered again on the last day of class before the final exam week, again, using a Qualtrics link. In both cases, the survey was administered by the first researcher who was also the professor of the course.

Interviews were conducted during the final exam week by a graduate assistant from a different university. The graduate assistant was trained to give interviews by the first researcher and conducted five interviews on recorded Zoom calls. The interviews spanned in length from approximately 15 to 25 minutes.

Data Analysis

We focused quantitative analysis on two constructs measured by the modified T-STEM instrument: EE teaching efficacy and EE outcome expectancy. For both the pretest scores and the posttest scores, the mean and standard deviation were calculated. Researchers also reviewed individual participant's raw scores on the pre/posttest to look for changes. To ascertain if participants' self-efficacy and outcome expectancy was impacted by the intervention, we analyzed the pre/posttests using a two-tailed, paired t-test. We also calculated the effect size using Cohen's d.

After each interview, audio files were transcribed verbatim, and two researchers independently read through all transcripts to validate and triangulate findings on the modified T-STEM and coded two interviews for emergent codes (Strauss & Corbin, 1990). The research team then reached consensus on 50% of the transcripts and established thematic codes. These codes were used to analyze the remaining interview transcripts. Finally, the research team used the themes identified to triangulate the findings of the quantitative analysis and add rich description to the findings.

Findings

Pretest data from the T-STEM indicated that participants' mean EE personal efficacy (M= 3.25 out of 5; SD=0.45) and EE outcome expectancy (M= 3.39 out of 5; SD=0.51) was close to neutral, trending slightly positive prior to intervention. After intervention, participants' mean scores had increased in EE personal efficacy (M= 4.00 out of 5; SD=.56) and EE outcome expectancy (M= 3.83 out of 5; SD=0.59). Each participant's mean EE personal efficacy score increased from pre to posttest and all but one participant's mean EE outcome expectancy score increased from pre to posttest. One participant's mean EE outcome expectancy score remained the same across both administrations of the survey.

A two-tailed paired t-test was used to investigate whether the participants' increase in scores could be attributed to the intervention. Participants' EE personal efficacy increase was found to be statistically significant to a large effect ($p<.01$; Cohen's $d= 1.49$) and participants' EE outcome expectancy increase was also found to be statistically significant to a large effect ($p<.01$; Cohen's $d= 0.796$).

Table 2

Participants' EE personal efficacy (EEPE) and EE outcome expectancy (EEOE) scores

Variable	Pre		Post		M difference	*p*	Cohen's d
	M	SD	M	SD			
EEPE	3.25	0.44	4.00	0.55	+0.75	0.00002*	1.494
EEOE	3.39	0.51	3.83	0.60	+0.44	0.00371*	0.796

*statistical significance at a 99% confidence interval

Qualitative data supported the statistically significant quantitative increases in EE personal efficacy. Participants were asked if they felt their confidence in EE teaching decreased, stayed the same, or increased throughout the course. All interviewed participants confirmed that their confidence in EE teaching had increased throughout the course. Alisa confirmed that she was "…not well-informed" before the course.

> Definitely an increase. I will say, I was not well informed about… you know, the watershed and everything that we learned. So 100% increase (Alisa, Interview).

Still, although the interviewees indicated increased confidence, half indicated the need for more and possibly continuous learning.

> -I'll say that I'm taking biology now, and it's a little bit of a struggle. So like I know I need to do my own research (Alisa, Interview).
>
> -And I definitely think I'm open to learning more because I know that I don't know everything. But yeah, I had a wonderful experience. (Sherry, Interview).

Interviews also cast some light on participants' perceptions related to EE outcome expectancy. All interviewees mentioned that in order to be an effective teacher you must

research and know the content you are about to teach. Alley discussed this as a process that happened during lesson planning.

> So, we definitely talked through some things in our coursework and with (the professor) but like with the lesson plans that we were doing. But we kind of also had to do some prior research so we could effectively relay this information to the students that we were teaching (Alley, Interview).

In order to better understand what experiences or events influenced an increase in EE personal efficacy, participants were asked to rank EE related activities that occurred in the course. We associated these rankings with numbers: 1- being least influential and 5 being the most influential. All but one participant ranked the Outdoor Environmental Experiences as the most influential in building their confidence. The Outdoor Environmental Experiences allowed participants to teach the same inquiry-based lesson four times, providing them opportunities to modify the lesson if they found something did not work well. Martin expanded on why he felt this activity influenced his confidence.

> Yeah, for sure, seeing (students') growth in the short time span I had with them, working through this really like, increased my confidence in teaching (Martin, Interview).

Ranked as the second most influential was the MWEE 101 Online Module. Interviewees mentioned the videos and reflections in the module as helping them to understand the framework for implementing EE, but also mentioned that navigating the online module was somewhat confusing and arduous. Sherry also mentioned how she felt the MWEE framework could also be used across disciplines and that her learning in this course has transferred to other courses for her.

> I actually did a bunch of different field experiences for 3 of my classes during this semester. So, since then, I've noticed I've been able to kind of incorporate that framework into the other lesson plans and activities that I've been planning and conducting with the students (Sherry, Interview).

Interestingly, the stewardship activity and the one-hour classroom background lesson, which had participants work in small groups to guide or teach elementary students ranked similarly and below the MWEE 101 Online module. The introductory video ranked as the least influential.

Discussion

Findings in this study suggest that core teacher education courses that incorporate brief EE methodological instruction and EE field experiences with partner K-12 schools may positively impact preservice teachers' EE personal efficacy and EE outcome expectancy. Similar to other studies (Truath-Nare, 2015; Richardson, Byrne, & Liang 2016), findings suggest that field experiences like those in this study may be influential in building EE personal efficacy. Findings in this study also add to existing research suggesting EE field experiences, even activities where preservice teachers are leading instruction, may vary in influence. Although more research is needed to pinpoint exactly what about the Outdoor Environmental Experiences made that field experience most influential for participants, it is interesting that it was the only experience that allowed participants multiple opportunities to teach, and modify if needed, the same lesson while lower ranking field experiences were limited to one teaching experience. Bandura (1994) mentioned "mastery experiences" as important to increase self-efficacy. In their study, Clark and Newberry (2019) provided ambiguous definitions of mastery experiences to include typical one-off field experiences with debriefing, but our data suggests a more iterative

process where participants are able to teach, reflect, and modify may make more of an impact on EE personal efficacy.

Findings in this study also indicate that brief online modules that address pedagogical methods of EE can also influence preservice teachers' EE personal efficacy. This may relate to the findings that preservice teachers who complete methods courses experience positive impacts to their teaching efficacy (e.g., Richardson, Byrne, & Liang 2016). It is interesting that the MWEE 101 online module ranked higher in influence than three of the four field experiences in this course. Perhaps EE pedagogical theory and related pedagogical frameworks provide a foundation for preservice teachers to lean on when developing and implementing EE instruction, helping them to feel prepared and confident.

A common theme that emerged during interviews was the perceived importance of independent research of environmental science content while preservice teachers were lesson planning. All interviewees mentioned increased environmental content knowledge early in the interview as important to their EE personal efficacy. This may provide insight into why other studies that incorporated preservice teachers developing and implementing EE lessons found statistically significant increases in EE personal efficacy (Truath-Nare, 2015; Richardson, Byrne, & Liang 2016). Perhaps effort toward independent research and respective gains in content knowledge that directly impact knowledge of EE content they will teach helps preservice teachers to feel more confident in teaching EE.

Participants also experienced a statistically significant increase in EE outcome expectancy over the course of this study. Previous research on preservice teachers' EE outcome expectancy increases does not delve into statements that shed light onto why a change might have occurred in outcome expectancy. During interviews, all interviewees described the importance of

researching EE content to prepare for lessons and to feel confident answering students' questions. One of the interviewees mentioned the importance of learning more and practicing management strategies in order to better implement EE. Interestingly, none explicitly mentioned the need to research EE methodology or EE frameworks.

Conclusion

EE advocates and EE reform efforts in preservice teacher education often call for EE content instruction, pedagogy instruction, and field experiences to take place in science content or science methods courses. Even a well-intentioned professor will arguably find it difficult to add meaningful EE experiences into an already-packed science content or science methods course. The promising results in this study may provide a way to navigate this barrier. More specifically, while previous studies mention whole courses or curricula as impactful in increasing EE efficacy, our findings add the important implication that EE field experiences that include a teach, reflect, modify, framework may be more impactful on candidates' EE personal efficacy than one-off field experiences. This may guide the development of future syllabi to include EE learning experiences that provide greater impact.

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