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Assessing College Students' Literacy Knowledge and Practice Growth to Impact Future Teaching: Pre-service Teacher One-on-One Intervention Outcomes Survey

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Abstract: *Preparing pre-service teachers is a crucial element to consider when looking to improve student success. Many teachers are not given sufficient resources and feel unprepared when entering the profession particularly around the topic of reading instruction. This study examined the effectiveness of an undergraduate course, with an embedded community partnership, designed to train pre-service teachers in the areas of literacy assessment and intervention. In addition to this, upon completion of the course, pre-service teachers are required to take a state proctored exam, measuring the knowledge and ability to apply content that is taught throughout the course. Pre-service teachers must pass the exam in order to go on to the next phase of the education program. We measured the efficacy of the course by administering (a) a teacher knowledge survey focusing on knowledge and practice growth, and (b) the state-based literacy exam pre-service teachers are required to pass as part of their teacher training program. We found that the course, paired with the community-based individualized tutoring program, provided pre-service teachers the opportunity to gain significant knowledge about teaching literacy. They were able to immediately embed evidence-based instruction into their tutoring sessions, and they felt confident about their ability to do this.*

Keywords: pre-service teacher, growth, assessment, explicit instruction, literacy knowledge

UNDERGRADUATE CONTRIBUTIONS

Under the supervision of a faculty mentor, I created the survey, interpreted the survey data, reviewed already published research, and extracted main themes from the survey results. I completed my portion of the presentation and presented at the *World Literacy Summit* held at *Oxford University* during the spring of 2023. I also formatted the paper and references and received and integrated feedback from my faculty mentor as part of the writing process.

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INTRODUCTION

In the United States, research demonstrates that pre-service teachers (PSTs) are not adequately prepared for their future teaching endeavors. (Porter et al., 2021; Risco & Reid, 2019; West 2020). Often, PSTs are not provided with the proper skills and training to teach literacy to young learners (Porter et al., 2021; Risco & Reid 2019). Research by Peltier and colleagues (2020) suggest that by providing a structured approach combining a high-quality preparation course where literacy content knowledge is explicitly taught paired with field-based tutoring experiences, PSTs are more likely to succeed in their pedological practices while simultaneously having the confidence to execute high-quality literacy instruction.

As part of their teacher preparation program and for this study, PSTs took an assessment and intervention course and were provided an opportunity to tutor elementary students one-on-one concurrently. Upon completion of the course, we administered an outcomes survey and a knowledge assessment to all college participants. Previous research suggests that when these modes of instruction are embedded, there are better learning outcomes for PSTs (Bos, 2001).

LITERATURE REVIEW

Over the past two decades, there has been a robust body of literature published that emphasizes the importance of training teachers on literacy instructional practices aligned with the science of reading (Bos et al., 2001; Moats, 2009; Peltier et al., 2020; Porter et al., 2023). Pre-service teachers first must have a solid understanding of the findings from the National Reading Panel, which includes evidence that reading instruction should encompass instruction in comprehension, fluency, phonics, phonemic awareness, and vocabulary (National Institute of Child Health and Human Development, NIH, DHHS, 2000). Since then, decades of research support the practice that literacy instruction must be explicit across all the components of reading (Foorman et al., 2016).

HIGH QUALITY PREPARATION PROGRAMS

What is the importance of PSTs literacy knowledge practice and growth? Teachers who attend high-quality teaching programs are more likely to be successful in their classrooms (Risco & Reid, 2019). When teachers are not given practices enabling them to explicitly teach literacy skills, negative repercussions in student outcomes occur within the classroom (Binks et al., 2012). Research suggests that student outcomes are greater when the knowledge of the PST is higher (Carlisle et al., 2011; Porter et al., 2023).

FIELD BASED EXPERIENCE

Even though PSTs benefit from lectures and discussions in a university classroom, it is important that PSTs are being provided with monitored hands-on experience with feedback to ensure that their instruction will benefit students (Gan et al., 2021; Nelson et al., 2020). Leland (2013) demonstrated that a survey-based study revealed that 96% of the participants believed that the early literacy course with field experience impacted their perspectives on teaching. Another essential component includes faculty being actively involved in the teaching, supervising, and mentoring of PSTs in authentic classroom settings for them to receive feedback and the support they need to be successful in their teaching and to better understand the field experience (Nelson et al., 2020; Risco & Reid, 2019; West, 2020).

Theoretical Framework

For this study, we used a sociocultural theoretical framework to help us interpret the survey findings as we explored self-efficacy and knowledge gained across the PST participants. (Nelson et al., 2020; Pajares, 1996; Suddeath, 2019). Sociocultural theory surrounds the idea that an individual's abilities are shaped also by external factors (Solari, 2022). Bandura wrote that the human mind possesses the ability to engage in self-reflection, regulate one's behavior and also suggests, that people's behaviors are generalized through the reflection of confidence (Pajares, 1996). Confidence in teaching literacy skills can impact a PST's ability to successfully implement instruction (Suddeath, 2019). Self-efficacy can be defined as an individual's judgment of their own capabilities and abilities to execute a given task (West et al., 2020). Individuals may have higher motivation when they have a higher level of self-efficacy (West et al., 2020). In addition to this, when PSTs establish high levels of self-efficacy their teaching practices are elevated (Suddeath, 2019); thus, the importance of measuring self-efficacy.

Purpose

The purpose of this study was to evaluate the knowledge and practice growth and perceived literacy knowledge of PSTs when combining a tutoring practicum with a traditional course as part of a teacher preparation program.

Design and Methodology

We used qualitative survey data and a state-wide exam to identify the perceived literacy knowledge and the actual content knowledge obtained by PSTs during a given semester after taking the literacy assessment and intervention course. The survey included a series of questions that addressed application of literacy content that was taught over the duration of the course. Examples included asking how PSTs felt about administering different assessments, explaining the results, and communicating with parents. The exam included items measuring knowledge of assessment terminology, types of assessments, mini-case studies, and ability to interpret data.

Research Question

The purpose of the study was to chisel at the following research question: What are the greatest areas of knowledge and practice growth for undergraduate students learned during this community/school partnership?

Participants

Twenty-one participants, who attended a small liberal arts college in the Northwest, agreed to participate in the study. Participants completed the literacy assessment and intervention course in the fall of 2021, 2022, or 2023 and were pursuing a degree in education. Most participants were juniors or seniors (juniors = 5; senior = 15), but there was also one sophomore.

Survey Development

Based on previous research, the research team developed a series of 10 Likert scale questions focused on the major concepts of the literacy course designed to measure the PST's

confidence towards certain taught elements in the course (Leland, 2013). Each question's response choices ranged from 1-5; one was "not confident", and 5 was "very confident". After each of the Likert scale questions, a follow-up extended response question was included to give PSTs an opportunity to elaborate or describe the reasoning for a given response. In addition, a question regarding the literacy exam score was included, where participants were asked to select the range in which their score fell. A total of 25 questions were included in the survey.

Data Collection

The survey was administered to participants in a quiet setting sometime after they had completed the literacy assessment and intervention course. This allowed the students to have an adequate set of knowledge regarding the entire semester of instruction and field experience. Survey responses were anonymous.

Analysis

The lead author organized the qualitative and quantitative data in an excel sheet where responses could be evaluated as well as central themes could be identified. Main themes were extracted from each of the participants and the number of mentions were calculated.

Results

Themes

After initial analysis, we identified the following major themes as most often mentioned in participants' responses indicating the greatest areas of knowledge and practice growth (a) knowledge, (b) practice, (c) communication, (d) reflective practice, and (e) feedback. Table 1 indicates themes and the number of overall mentions.

Table 1
Themes Identified and Number of Written Mentions in Extended Responses

Identified Theme	Number of Mentions
Knowledge	100
Practice	65
Communication	41
Reflective Practice	46
Feedback	32

To more fully answer the research question, we organized the responses to indicate the areas of highest perceived knowledge and self-efficacy around a given task. See Table 2 for summary of responses in order from "highest" areas of knowledge. Sub-skills listed were skills included in the course content and taught through lecture, student presentations, readings, and practiced during tutoring sessions. These items were listed as part of the survey. The middle column demonstrates the number of participants that selected a four or five on the Likert survey questions. The most common response among all participants was the selection of four, which demonstrates that high levels of confidence were indicated by participants by the end of the course. The final column depicts themes that participants mentioned in their responses.

EXAM

Question 24 of the survey asks participants about their test scores from the literacy assessment and intervention state-wide exam. The assessment asked PSTs about their knowledge about assessments, when to administer them, how to successfully monitor student progress, and measured mastery in knowledge that align with evidence-based practice. See Figure 1.

Table 2
Preservice Teachers Perception of Literacy Knowledge Ranked from Highest to Lowest

PSTs Sub-Skill	Perceived "High" Knowledge (n = 21)	Themes
Main Themes: knowledge, practice, communication, reflective practice, and feedback.		
Administering different assessments	20/21	Practice / Feedback
Preparing a lesson plan based on student needs	20/21	Practice / Feedback / Knowledge
Changing lesson plans when needed	20/21	Feedback
Reflecting on individual lessons	20/21	Reflection
Explaining Purposes of different assessments	19/21	Practice
Confidence regarding future teaching and assessments	19/21	Communication
Explaining results in parent friendly language	18//21	Communication
Selecting an assessment specialized to the student needs	18/21	Knowledge
Helping other PST's about assessments	16/21	Knowledge / Communication
Administering assessments to multiple students	11/21	Practice

LIKERT SCALE RESPONSES

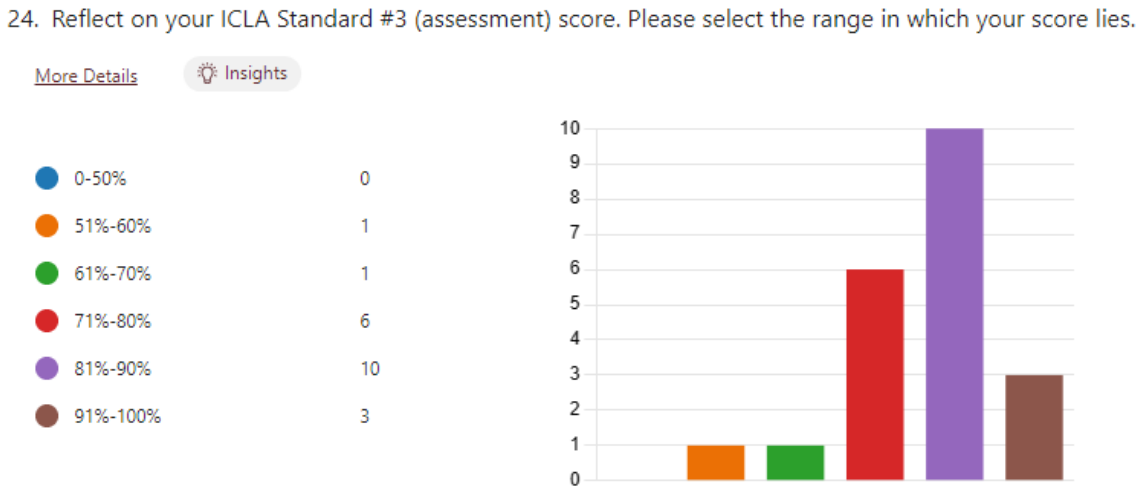
Table 3 depicts the Likert scale portion of the survey. A score of one indicated that the preservice teacher did not feel confident in demonstrating the actions asked in the question. Whereas, in contrast, a score of five demonstrated utmost confidence towards the provided statement. Each row of the table shows a question that was asked in the survey, and the column displays the number that was most selected and number of times it was selected. As the data shows,

the participants selected scores of four and five most often throughout the survey, which shows that the self-efficacy and confidence of PSTs was relatively strong.

Extended Responses

Table 4 includes exam score ranges, the most common response for each participant, and quotations indicating their experience. We were able to see here that the participants documented feelings of growth and confidence throughout the course.

Figure 1
State Exam Reported Score Ranges



Note: PSTs documented state knowledge-based assessment scores at the end of the term.

ANALYSIS OF DATA (MEASURES)

The results gathered qualitatively support the idea that when PSTs are provided with a literacy assessment and instruction course embedded with the opportunity to administer assessments and implement explicit, systematic instruction to young learners, the PST's confidence is high. The highest reported ranges of the scores on the state-wide exam were between 70% to 90%, all passing scores. Only two students scored below 70%. From here, we were able to conclude that the knowledge that participants received within the course was retained and able to be demonstrated in terms of content knowledge on an assessment.

Table 3
Confidence Level Across Survey Questions

Questions	Mode	# of times
After participating in this course and in the Literacy Learning Lab, how confident do you feel about explaining the purposes of different types of assessments?	4	15
How confident do you feel about administering different types of assessments?	4, 5	10, 10
How confident do you feel about writing/explaining assessment results in parent friendly language?	5	11
How confident do you feel in preparing successful lesson plans according to student need?	4	11
After this course, how confident do you feel about reflecting on your teaching with your assigned student?	5	15
How confident do you feel about making decisions about changing your lesson based on formative assessments?	4	13
How confident do you feel in administering assessments to multiple students in a class?	3	8
How confident do you feel in selecting the type of assessments that best suit a student?	4, 5	9, 9
How confident do you feel about helping other pre-service teachers or others in knowing how, when, and why to administer different forms of assessments?	4	11
After this course, do you feel confident that you will be successful in assessing your future class one day?	5	11

Table 4
Exam Score, PSTs Confidence Levels, and Extended Responses from Likert Question 7: What specifically do you feel made you improve in administering assessments from pre-test to post-test? Please explain in detail. (Highest (exam score) to Lowest)

Participant #	Exam Score Range	Confidence Level: Mode	Quote
Participant 2	91%-100%	5	I felt that the time I spent working with my student made me improve in administering assessments from pre-test to post-test. During the 14 sessions, I gained experience in informally assessing my student. I began to understand what assessment I needed to conduct based on the purpose of the lesson for that day. When it came time to do the post-test, things went smoother because I felt more confident and comfortable. I understood what I had to do more after practicing. I also felt that the first time I administered assessments I didn't quite understand what I was doing, but the post-test I did.
Participant 10	91%-100%	4	I improved in administering assessments from pre- to post- test because I was given feedback from Dr. Brown or the class assistant that helped me understand what I needed to change or improve on. I felt like it was easier to administer the post-tests because I had experienced the test before and I knew what the results meant as well.
Participant 13	91%-100%	4	I had more practice the second time, and I was more comfortable as I had been teaching that entire semester as opposed to never really having done anything like that before.
Participant 1	81%-90%	4	In pre-test, I was a little bit of a rookie. It went fluently but I remember doing a couple of assessments wrong and having to go back and redo them. Throughout the term, we learned in great detail about the different types of assessments through reading and PowerPoints and I believe that helped me. But what helped me most of all was the experience. Because after I did the initial test (and redid some of my mistakes), I interpreted it and then had to present it in a parent report. Once I learned how to interpret

			it, that is where I gained the most knowledge and when it came to the final assessment, I knew I was ready
Participant 3	81%-90%	4	One factor that specifically made me feel as though I improved in administering assessments from pre-test to post-test was the administration of informal assessments throughout the tutoring sessions. This helped because it allowed me to create a more relaxed relationship with giving assessments.
Participant 4	81%-90%	4	The first time I administered the assessments with my 5th grader was stressful. I wanted to make sure I was doing them right and I also wanted to make sure that my student felt comfortable. Each assessment is different, and some are easier than others. Once I got through the assessments the first time I was feeling better about the whole process. After a few weeks of tutoring it was time to assess my student again to see the growth. I felt so much better about giving the assessments this time around because I had already practiced.
Participant 5	81%-90%	4	Just experiencing administering assessments made the world of difference of improving my administration. We had practiced on each other during class time before we met our students but doing peer work like that isn't as beneficial as getting into the classroom. I felt confident going into pre-test assessments but it was awkward. I struggled with not using language that would hint at if they got the answer correct (good job, ok, nice). But after I did the pre-tests I understood what it looked like and what I needed to do, so the familiarity helped me going into the post-tests.
Participant 7	81%-90%	5	Similar to the previous answer, but practicing administering the assessments helped me work out any awkward kinks or pauses when explaining what to do as well as how to hold the sheets so they don't stress etc.
Participant 18	81%-90%	5	I think the in person time helped me to feel more confident in administering these assessments. In the beginning, I was not

			confident at all and was unsure of how my child would respond to all of the assessments but by the end, I knew how she would respond as well as I had gained confidence in my skills throughout lessons.
Participant 12	81%-90%	5	I improved in administering assessments because of the repeated testing of students. I was able to find my footing and figure out how to administer the tests at a good pace. This helped to decrease student fatigue.
Participant 16	81%-90%	4	I feel that I knew what I was doing, and what exactly I needed from the assessment data to chart my student's growth the second time assessments were administered. Because I had done them before, I knew what my role was in explaining them, what I could and couldn't say during the assessment time, and how to best progress from one to another.
Participant 14	81%-90%	5	More practice and learning from what I did before.
Participant 15	81%-90%	5	Having the practice throughout the time we had with out tutees, to figure out what worked and what didn't. Pre-test were first times, and by post-tests, i knew the language of how to administer them and felt confident in my ability to describe what i was asking of my tutee.
Participant 21	81%-90%	5	Practice, practice. In society we have heard the phrase, practice makes permanent, when in reality is practice makes permanent. Reviewing past assessments, keeping up to date on current data from the child. The key to improvement is being open to feedback and communication. As we are learning there will needed to improvements made and being open to feedback pushes that growth exponential.
Participant 6	71%-80%	4	It helped a lot knowing what section she struggled with and what section she was proficient in so for the post test I was able to focus on those struggling strategies and not waste time on sections I know she is at grade level with.
Participant 11	71%-80%	5	Having done the assessment one time, it was easier to adjust for the post-test. The pre-test allowed me to see how my student responded

			to specific cues. I was prepared for the student reaction and how to redirect their focus to the assessment.
Participant 20	71%-80%	3	Practice, practice. In society we have heard the phrase, practice makes perfect, when in reality is practice makes permanent. Reviewing past assessments, keeping up to date on current data from the child. The key to improvement is being open to feedback and communication. As we are learning there will needed to improvements made and being open to feedback pushes that growth exponential.
Participant 17	71%-80%	5	I understood more so my role in administering these assessments. I think when I gave the pre test my instructions may have been vague, I hardly modeled anything. So, after conducting tutor sessions and coming back for the post test I recognized that I could still set him up for success, even though I cant help him specifically.
Participant 19	71%-80%	5	I would say just knowing my student more and being more comfortable with him really helped because I was used to him, he was used to me, we were both comfortable with each other. It made it a lot easier to give him directions because at that point I was so use to it by then.
Participant 8	61%-70%	4	I was able to learn from my mistakes after giving the pre-test. What I left out on the first time and what I needed to add when giving the post-test
Participant 9	51%-60%	5	The preparation to prior years, we have been working on our assessments since freshman year which then lead us to master the pre and post assessment when we got the chance to assess the student.

CONCLUSIONS

Reflecting on our findings from the survey and the exam scores, we resurface our research question and distinguish the specific elements of instruction that are the best for content retention and delivery of literacy instruction among PSTs. What are the greatest areas of knowledge and practice growth for undergraduate students learned during this community/school partnership? Based on our findings, the greatest areas of knowledge and growth included (a) administering

assessments, (b) lesson planning, (c) adapting lesson plans, and (d) reflecting on lessons. The overall theme that was most often mentioned was knowledge growth.

This study also emphasizes the importance of PSTs not only learning content knowledge related to literacy assessment and instruction, but also having the opportunity to practice the skills they have learned through one-on-one tutoring with feedback. We see that when explicit instruction was embedded into teaching PSTs in their future practices in the field experience settings, increased self-efficacy is demonstrated. which then generally coincided with passing exam scores. However, we were unable to experimentally compare PSTs that had an embedded tutoring practicum to PSTs that did not have an embedded tutoring program.

Reflecting on the results of the study, there are limitations. The sample size was limited to 21 participants, partly due to the time constraint placed and conducting this research at a small institution. Finally, because this research was conducted in the form of a qualitative survey, there is the possibility that participants skewed their answers to fit the satisfaction of the question and not what occurred. Further research in this area could include experimental studies that compare PSTs enrolled in a course that includes an embedded tutoring practicum and PSTs enrolled in a traditional course only. Researchers also could include the actual results from a teacher knowledge survey instead of asking PSTs to report their score range.

Teaching literacy is one of the most complex practices required of future educators. To reach the literacy levels that this nation is striving towards, steps such as preparing PSTs at the university level, while also embedding structured tutoring that included evidence-based practices with feedback are the foundational blocks needed to improve student reading outcomes. Starting here and embedding it across grade levels is crucial to creating change.

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