

An Investigation of the Development of Pre-service Teacher Assessment Literacy through Individualized Tutoring and Peer Debriefing

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Many pre-service teachers lack deep understanding of assessment concepts and have low self-efficacy for using assessments but pre-service on-campus programs have been shown to support their assessment literacy development. Likewise, individualized tutoring has helped pre-service candidates improve instructional practice and peer debriefing has been found to help push their thinking. However, questions remain regarding the usefulness of these techniques to develop candidates' assessment literacy. The primary aim of this exploratory qualitative study was to describe pre-service teachers' perceptions of assessment literacy and the process of their assessment literacy development during a literacy assessment class containing an individualized tutoring component. Five teacher candidates in a literacy assessment and instruction course at a large urban university in the US engaged in individual semi-structured interviews and submitted written reflections and artifacts which were analyzed following the constant comparative and content analysis methods. Findings were that individualized tutoring allowed participants to apply the assessment techniques they were learning in class to determine their suitability with the diverse urban learners. Likewise, peer debriefing enabled them to share knowledge and ideas, offer mutual support and engage in collaborative problem solving to improve their tutoring. These findings support the conclusion that individualized tutoring and peer debriefing within a graduate class can be effective tools for deepening candidates' reflection, connecting theory to practice, and providing feedback on instructional technique to support their assessment literacy development.

Introduction and Background to the Study

Teacher assessment literacy has rapidly become an area of increasing concern for educators (Popham, 2004). As our modern knowledge-based societies require highly-literate citizens, teacher-administered, classroom-based formative assessments that provide rich nuanced data required to guide instruction effectively become increasingly necessary (Andrade & Cizek, 2010; Stiggins, 2005). Therefore, teacher educators now have to ensure candidates can demonstrate classroom assessment competence in terms of knowledge of assessment purposes, a clear sense of learning targets, students' ability level and how to support their progress toward the targets (Pollock, 2011).

Due to this historical lack of emphasis on assessment in teacher education programs, a dearth of research currently exists to support effective assessment education in general (Popham, 2004; Stiggins, 1999, 2004; Volante & Fazio, 2007) and in the assessment of reading and writing more specifically. Indeed, Afflerbach (2007) notes that “there is little research that describes how teachers develop as assessment experts or that demonstrates what types of classroom assessment training most benefits teachers and their students” (p. 278).

This state of affairs is problematic because “...[knowledge of] the pedagogical conditions that facilitate learning about assessment is critical for the design and delivery of effective teacher preparation programs” (DeLuca, Chavez, Bellara, & Cao, 2013, p. 129). The fact that we currently lack this knowledge may at least in part explain why, according to Popham (2010), “one of the most serious problems in today’s education profession is that the level of educators’ “assessment literacy” is so abysmally low” (p. 175). Although many of today’s teachers receive some training in assessment (Popham, 2004, 2009), their professional development in this area requires serious attention because they are increasingly accountable to the public to provide an informed rationale for their assessment and instructional decisions.

Significance of the Study

We do not presently know with any precision how to support teacher candidates’ assessment literacy development (Quilter & Gallini, 2000; DeLuca & Klinger, 2010) and “assessment courses [in colleges in education] continue to be few in number” (DeLuca & Klinger, 2010, p. 434). As a consequence, both novice teachers (Maclellan, 2004; Volante & Fazio, 2007) and practicing teachers (Conca, Schechter, & Castle, 2004) are largely unprepared to use a variety of assessment tools to appropriately inform their classroom activities. We need knowledge of assessment educational best practices to ensure that teachers do not simply continue unreflectively to use the same approaches to assessment that they observed throughout their own school experience (Maclellan, 2004). The present research can help us to learn how to better support teacher’s assessment literacy development.

Increased assessment literacy enables teachers to use a wider variety of assessment tools that accurately reflect student achievement and refine classroom instruction (Brookhart, 1999). Effective formative classroom assessment practices have also been linked to improvement in

summative achievement test scores so students whose teachers are assessment literate are better able to perform well on large-scale accountability measures (Black & Wiliam, 1998).

Review of Relevant Research

Assessment Literacy Needs of Pre-service and In-service Teachers

MacLellan (2004) contends that currently “the learning about assessment that has taken place [in teacher education programs] is still at a very unsophisticated stage” (p. 531). Pre-service teachers were also found to lack of deep understanding of formative assessment of technical summative assessment issues while also being overconfident in their assessment literacy (DeLuca & Klinger, 2010). These disturbing realizations call into question the preparedness of novice teacher to make accurate judgments about their students’ abilities. Fortunately, pre-service teacher candidates desired greater practical knowledge about assessment such as assessment tool development, scoring, and administration provided through assessment and evaluation courses (Volante & Fazio, 2007).

Pre-service on-campus assessment education programs can change candidates’ understanding of assessment and support their assessment literacy development (DeLuca & Klinger, 2010; Mertler & Campbell, 2005; Popham, 2009). For instance, Graham (2005) found that having pre-service teachers engage in formative assessment practices caused them to realize that assessment should be an ongoing – and often informal – practice. However, “such instruction may not develop teacher candidates’ knowledge, skills, and confidence in assessment and evaluation, in a consistent way” (DeLuca & Klinger, 2010, p. 434). Other research investigating assessment literacy growth during a teacher education program demonstrated that teacher candidates graduated with an inadequate grasp of key assessment concepts (e.g., validity, reliability and bias) and low self-efficacy for using assessments (Volante & Fazio, 2007).

In order to ensure that teachers receive the assessment education they need, we need to learn more about how teachers actually learn about assessment in their preservice education programs (Hill, Cowie, Gilmore, & Smith, 2010). To date, sources of information that have been found to expand pre-service teachers’ knowledge base include “...influential texts, pivotal class discussions, mentor teachers, department colleagues, professors, students, and cohort members...” (Graham, 2005, p. 614).

Although they are found to have greater assessment literacy than pre-service teachers (Mertler, 2003; 2004), in-service teachers "often believe that they have not received sufficient training in their undergraduate preparation program in order to feel comfortable with their skills in making assessment decisions" (Mertler, 2003, p. 22). A possible consequence of their lack of preparation is that many practicing teachers do not have a clear sense of how to properly use assessment data to improve instruction. In fact, teachers' instructional planning may be based more on classroom management considerations than concern for fine-grained individualized assessment and instruction (Conca, Schechter, & Castle, 2004).

Addressing these concerns with in-service assessment education has been problematic for a number of reasons. Popham (2004) identified two common barriers to practicing teachers developing their assessment literacy. These are lack of prior assessment training during their pre-service education and the common misconception that assessment literacy entails an exclusive focus on learning technical measurement and statistical concepts. He argues that acquiring the knowledge to evaluate standardized tests and use classroom assessments is less challenging than many teachers think. He also contends that sufficient assessment literacy is fundamental for teachers to participate competently in the selection of appropriate tests that allow them to demonstrate their teaching effectiveness.

Individualized Tutoring

One-on-one tutoring is a second area of research that is relevant to the present investigation. When compared to traditional pre-service classroom learning, individualized tutoring was found to be beneficial for the tutor (Schwartz et al., 2009) and learner (Bloom, 1984). Other studies have also reported that tutoring experiences helped candidates understand the process of tutee development through the lens of their education course content (Hedrick, McGee, & Mittag, 2000) as well as begin to connect theory and practice (Haverback & Parault, 2008; Hedrick et al., 2000). Robbins (2008) found that tutoring experiences also developed candidates' proficiency with specific assessment skills such as "...miscue analysis, fluency analysis, data analysis, inquiry orientation, and intelligent action" (p. 128).

Notwithstanding the substantial growth in the research literature documenting the benefits of one-on-one tutoring significant work still remains. Productive investigations have begun into how individualized tutoring might improve instructional skill, but considerably less

discussion exists of how tutoring might develop pre-service teachers' assessment literacy. However, given the growing importance of assessment literacy acknowledged above, these conversations must be initiated.

Peer Debriefing

Teacher educators must create classroom experiences that push candidates to become more self-reflective for their continued professional growth (Linek, Sampson, Raine, Klakamp, & Smith, 2006). Reflection can take wide variety of forms but deciding how to encourage reflective practice is still being hotly debated (Bean & Stevens, 2002). Nevertheless, one method suggested for facilitating the process has been through peer debriefing sessions.

Schwandt (2007) defines peer debriefing as an event where a teacher “confides in trusted and knowledgeable colleagues and uses them as a sounding board” (p. 222). Its value lies in the collaboration it fosters because teachers often struggle with problems alone and feel like the issue is unique to them (Heider, 2005). Spillett (2003) states there is no wrong way to conduct peer debriefing but some potentially helpful qualities of a debriefing partner include trustworthiness and impartiality (Spall, 1998) as well as being someone that the teacher can relate to. Hail, Hurst, & Camp (2011) add that

...peer debriefing offers a way to help overcome isolation, sustain collaborative environments, increase retention and make dynamic improvements in classroom. Reflecting on one's teaching practices allows the teacher to make adjustments in both instructional style and techniques. When peer debriefing is added, the level of reflection increases (p. 76).

Peck (2009) conducted a tutoring study where she explored questions related to the impact of course tasks on pre-service candidates' instructional skill rather than assessment literacy development. She observed that peer debriefing was a vital element of the program that pushed candidates' thinking about instruction in productive ways. Another survey study of pre-service reading teachers reported that they often engage in peer debriefing and most believe that reflecting with colleagues is an important aspect of their professional growth. Their respondents appreciated having colleagues to use as a sounding board to discuss teaching issues. Authors of the study also identified graduate classes as places where peer debriefing can take place that allow students to share ideas and discuss issues in their practicum. They contend that the class

could even serve as “a type of weekly support group for teachers” (Hail, Hurst, & Camp, 2011, p. 80). They also recommend that preservice teacher education programs provide training in the process peer debriefing to encourage professional development.

Areas in Need of Additional Research

The current research literature reveals important information that has been learned about assessment literacy and teacher assessment education. For instance, we know that assessment literacy impacts student performance. Researchers have also delineated the major components of assessment literacy that include theoretical knowledge, formative assessment ability and instructional adaptation. They have also identified the primary uses of assessment literacy including making data-based decisions, use of assessment to guide instruction and self-defense against misuse of assessments. Additionally, scholars have learned about other issues such as pre-service teachers’ need to work with a variety of assessments and assessment education that is integrated into ongoing classroom practice for in-service teachers.

Despite these recent research discoveries, important questions remain. For instance, while we have identified the impact that teacher assessment literacy has on student performance, we do not yet know a lot about the process of effectively and efficiently developing assessment literacy in teachers (DeLuca, 2012). Questions also linger regarding the value of teacher candidates experimenting with assessment tools through tutoring experiences that might help them scaffold their understandings of the tools. Hill, Cowie, Gilmore, and Smith (2010) add that understanding pre-service teachers’ conceptions around classroom assessment is a crucial prerequisite to actually preparing them to be competent assessors. This study will seek to provide some insight into teachers’ views of classroom assessment to begin to consider potentially beneficial pedagogical approaches for teacher assessment education.

Statement of the Problem

The purpose of this study is to describe pre-service teachers’ perceptions of assessment literacy and the process of their assessment literacy development during a literacy assessment class containing an individualized tutoring component.

Research Questions

Based upon a review of the research literature, the following questions were developed for the present study: (1) What sources of information do pre-service teachers draw upon to develop their literacy assessment? What do they learn from each source? (2) How do pre-service teachers' beliefs about literacy assessment develop during participation in a literacy assessment course with literacy tutoring and peer debriefing components?

Methods

Context and Participants

This research occurred in an urban literacy clinic within a major research university dedicated to addressing the literacy needs of k-9 children in the downtown area of a major Southeastern city in the US. The literacy clinic supports and enhances the literacy development of diverse inner-city students primarily through after-school literacy tutoring experiences. The clinic also serves to prepare teacher candidates to learn how to design and implement research-based literacy assessments and instructional techniques for diverse learners.

This class where the study took place was implemented an “individualized assessment for reading instruction” course I, the author, taught in the literacy center. This is a required graduate level course that candidates take as a part of either a reading endorsement or a master’s degree in reading education. Based on competencies drawn from the International Reading Association standards for the Reading Professional (IRA & NCATE revised, 2010), course participants are expected to: understand types of assessments and their purposes, strengths, and limitations; select, develop, administer, and interpret assessments, for specific purposes; and use assessment information to plan and evaluate instruction.

The participants in the study were five teacher candidates from the class described above. Their relevant background information is presented in table 1 below. They were chosen for the study because they represented a cross-section of the broad diversity of the linguistic and experience-level of the students in the class. Participant language background was important to consider because of potential cultural or language related issues that might arise as participants engaged with the course content or the tutoring process. For instance, varied cultural expectations regarding the validity of alternative forms of assessment might impact teacher candidates' willingness to use the types of assessments presented in the course or see the results

of such assessments as valid. As well, the potential influence of culture has not received significant attention in previous assessment literacy research. Experience level was also necessary to receive attention because participants with classroom experience might have differing notions about the role of assessment in the instructional process based upon their previous practice and experiences.

Table 1: Participant Background Information

	Age	Gender	Ethnicity	Native Language	Experience
Edward*	40's	M	African	Native French speaker	Pre-service
Michael	30's	M	Caucasian	Native English speaker	In-service
Mary	30's	F	Iranian	Native Persian speaker	Pre-service
Leanne	30's	F	African American	Native English speaker	In-service
Lucy	40's	F	Albanian	Native Albanian speaker	In-service

* All names are pseudonyms

Data Collection

Data was collected data from two main sources. The primary data sources included three separate reflection essays assigned throughout the course to each participant (15 in total). In these essays, participants were asked to reflect on their tutorial interactions, observations and course reading. The reflection papers were designed to allow them to engage with and reflect on theories and methods they were learning in the course and how they were applying them in their tutoring. They were encouraged to share how they were using the principles and tools they were learning about and any useful insights or struggles they were getting from the experience.

These reflection essays were followed by 5 individual interviews (1 interview with each participant). After the conclusion of the course and grades were submitted, those who volunteered to participate in the study were contacted for a follow up semi-structured interview. Each follow up interview was conducted via skype and took approximately 40-45 minutes. During the interview they were asked several questions about their prior assessment coursework, teaching experience, perceptions of the value of classroom formative assessment, what they felt they learned about literacy assessment during the class and how they used their knowledge in the tutoring sessions. They were also asked about what sources of information they accessed to

develop their literacy assessment. After the interviews, all of the data was compiled, the contents of the interviews were transcribed and data analysis began.

One consideration of this study was that it involved the author of the study researching his own students. Given the potential for coercion represented by the power differential between the instructor and participants, special precautions were taken to ensure voluntary student participation and anonymity of those who agreed to participate. Anonymity was ensured by enlisting a colleague to introduce the study to the students and request volunteers. The researcher was not present during the request for participants. Additionally, to ensure that there was no bias toward those who did not agree to participate, the list of participants withheld from the researcher until after final course grades were submitted.

Data Analysis

The data analysis for this project was achieved using a thematic analysis and a constant comparative analysis (Strauss & Corbin, 1998). The steps followed in the data analysis process included an initial read through of the transcripts and written reflections several times to “get a sense of the whole database” (Cresswell, 2007, p. 150). This part of the process also included writing memos in the margins to keep track of ideas and concepts that occurred to me as I read as well as to develop propositions about these concepts interrelate to each other (Miles & Huberman, 1994). The coding procedures began with “a provisional ‘start-list’ of codes” (Miles & Huberman, 1994, p. 58). Preliminary “open” coding was accomplished by reading through data, identifying and labeling pieces of text that addressed the research questions (Lichtman, 2009; Merriam, 2009). Next, all of the data was reread and initial codes were revisited to develop a list of analytical codes. The coding process was aided by the use of the RQDA software. Following this, codes were organized into categories and subcategories by incorporating similar codes into unified categories that also include related subcategories (Merriam, 2009; Lichtman, 2009). The shift from working with categories to concepts development was achieved through deciding which categories made the best sense given the research literature and the overall conceptual scheme. Consideration was also given to how those concepts fit together and into the overall conceptual framework of the study (Creswell, 2007; Lichtman, 2009; Miles & Huberman, 1994).

Findings

Several findings emerged from the data that addressed the research questions. Sources of information that participants identified for improving their assessment literacy included the instructor, peers, the course text, and other outside sources not mentioned in class such as mentors and unassigned reading. Participants also reported that the individualized tutoring allowed them to apply the assessment techniques they were learning about in class to determine their suitability with the diverse urban learners. They stated that the peer debriefing sessions enabled them to share knowledge and ideas, offer mutual support and engage in collaborative problem solving to improve their tutoring. Assessment literacy also appeared to develop through a process of struggle including ostensive misunderstandings of assessment concepts, misidentification of an assessment's purpose or challenges with maintaining their student's engagement during tutoring sessions. This phenomenon was termed as the "struggle for growth." Participants mentioned a number of specific areas where tutoring and peer reflection expanded their assessment literacy which included realization of the wide variety of assessments available, matured understanding of the necessity of choosing appropriate assessments, and the realization of the value of affective assessment.

Sources of Information Identified

Research Question 1: What sources of information do pre-service teachers draw upon to develop their literacy assessment? What do they learn from each source?

Course Instructor

Participants identified four main sources of information that influenced their changing understanding of assessment during the class. These were the course instructor, their peers, the course text and information gleaned from outside sources. Lucy observed that having access to the instructor during tutoring sessions was helpful in guiding her next steps when she was unsure about some of the instructional decisions she made during the tutoring sessions. That is, the instructor was able to offer relevant feedback to her right at the moment that she needed it. She stated that "...when you're a student and you have a teacher that you can go and ask questions and give feedback from or answers from your questions and the teacher will guide your next steps you feel more confident in what you're doing" (Follow up interview). As she

points out, the course instructor as a knowledge source right at the moment of need may also offer the advantage of being a helpful guide to the candidate's next steps in their tutoring. This may be preferable to a more traditional assessment class where candidates would learn about various assessment tools without necessarily having the opportunity to experiment with them.

Edward and Le Ann agreed that the course instructor served as a source of feedback on which literacy components to assess. Edward mentioned receiving helpful feedback on assessing word recognition and fluency. After completing an Informal Reading Inventory (IRI) on a student, LeAnn reported, “This was definitely a successful assessment that the professor helped develop my understanding of it” (Written reflections). This comment shows a belief that the instructor's guidance facilitated her learning to use the IRI. Similarly, Lucy felt the instructor's input was helpful in allowing her to practice using the assessment tools before she actually used them with her students. Lucy noted that

“...because everything was not just in the book but the fact that we practiced it in the class. Even with the IRI, you know, we had a sample, we worked on it in the class, we review it. Sometimes even two or three times so by the time I left the class I was confident that I gained some information in the class and I would be able to work with that assessment in the future” (Follow up interview).

Thus, unlike many traditional assessment classes that are based on lectures on content from the textbook, Lucy appreciated having the opportunity to practice using the various assessment tools to be able to use the tool in the future rather than just read about and discuss them in class. This point gets at the potential usefulness of the instructor as a guide to practice using assessments.

Peers

Class peers were a second commonly-identified source of knowledge and information. Knowledge that was shared among peers included teaching ideas, alternative perspectives and insights regarding the value of observation in the classroom. Le Ann mentioned getting a novel graphic organizer idea to help better manage her reader's comprehension while reading. Michael also expressed his appreciation for his peer's incorporation of comics into her lessons. He discussed how he began to incorporate her ideas into his lessons at the school where he teaches and remarked,

“...it’s amazing how the kids that I work with really take to graphic novels and when they incorporate comics and their able to sort of create their own ...it’s a full level of engagement so it’s their engaging literacy and a couple of different levels so there able to be tactile with it so that kinesthetic learning and then the obvious is the visual so they're able to infuse different learning styles so that’s one of the biggest things” (Follow up interview).

Michael also talked about how he enjoyed having the opportunity to share ideas with his peer openly and without pretense. He said, “...we were always looking to find ways to reach the kids so if it was via a traditional methods or a more unorthodox method we would share those ideas we wouldn’t say well that’s not in the book or that’s not how you do it and so ideas were always encouraged” (Follow up interview). This comment demonstrates his appreciation for this space where he and his peer could problem-solve their difficulties in the tutoring sessions in sometimes less-than-conventional ways.

Mary shared some of the specific ideas that she was able to learn from peers noting that she appreciated “...using different cultures in reading texts, using visual materials for teaching sequencing and summarizing techniques, and utilizing students' interest areas to motivate their literacy activities” (Written reflections). These comments reveal the range of ideas and suggestions that she was able to receive from her peers to facilitate her tutoring sessions.

Participants also mentioned that having the opportunity to discuss and debrief with peers gave them access to another perspective on their concerns with the course material or the tutoring sessions. Michael discussed how peers have valuable insight to offer because they are at “...different points on our own professional continuum” (Follow up interview). This indicates his realization that students in the class consisted of a mix of pre-service and in-service teachers enhanced the discussions, which he likened to “professional development.”

Lucy stated she was grateful that peers were able to answer open questions and give immediate feedback. She mentioned that she was not embarrassed to ask her peers questions which points to a sense that a collaborative spirit allowed group members to share information to fill in the gaps in each other's knowledge. This process also seems to have provided her with the just-in-time feedback she needed to make the best of her tutoring sessions.

In terms of assessment literacy, Edward acknowledged peer input into his developing understanding of the connections between assessment and instruction remarking how in class

discussions peers “discussed that effective reading teachers observe and analyze their students’ performance data on a regular basis. This instructional skill allows them to monitor their students’ progress or lack thereof and to design instruction accordingly” (Written reflections). This comment reveals his realization that his peers were contributing to his developing understanding of the connections between assessment and instruction. Mary similarly expressed her appreciation for peer input developing her assessment literacy noting “...each week, I am learning new information about assessments in reading from my peers and my professor. Sharing their experiences from school and family helps me improve my understanding in literacy assessment” (Written reflections). Her remark directly praises her peers’ experiences as valuable resources for improving her understanding of assessment.

Textbook

Two participants identified the course text as a source of helpful information for clarifying concepts presented and discussed in the class. For instance, Lucy used one of the course texts to help her better understand graphic organizers. Le Ann referenced the coursebook frequently as she discussed new ideas and insights that she was having in the class. Skills and concepts that she mentioned reading about in the text ranged from word recognition, vocabulary, spelling, fluency, comprehension strategies and story retelling to reading attitudes and mentoring independent reading. In one reflection, she claimed that the coursebook helped to spur her instructional creativity stating, “with this knowledge I learned from the course readings, I decided to be more creative in [assisting her student's] recalling key details and sequencing strategies.” (Written reflections)

The course text was identified by Edward as being a source of useful information. He wrote about learning teaching techniques for word recognition, vocabulary, and spelling that would help increase reading fluency and comprehension. He also mentioned getting helpful guidance on how to mentor independent reading, focus on strategies for increasing positive reading attitudes, and discovering his learner’s reading interests. He discussed finding guidance on reading comprehension strategies, retelling, and the usage of writing to recall key details in the text. Later in his reflections, Edward stated that “[with] this knowledge I learned from the course readings, I decided to be more creative in our recalling key details and sequencing

strategies” (Written reflections). This comment indicates that, like Le Ann, the information from the course text encouraged him to be more creative in his instructional practice.

Outside Information Source

Various other outside information sources were also identified by several participants. Edward in particular drew on a variety of sources to support his reflections. For instance, he cited the work of literacy education scholars to discuss issues such as differentiated literacy instruction, teacher instructional improvisation (Darling-Hammond & Bransford, 2005), student text selection and using graphic organizers (Gunning 1996), fluency and comprehension instruction (Allington, 2008), student self-assessment (Brown, 2007), and explicit reading instruction (McLaughlin, 2010) (Written reflections).

Michael named two outside sources that had an impact on his thinking in the class. He stated that his mentor teacher was a valuable resource for him to learn about how to integrate “the old school style” with modern approaches that incorporate technology and differentiate instruction. He also drew on his previous corporate work experience as he cited training that taught him to “‘Know the Customer’ before making recommendations and determining what they need” (Written reflections) as he chided himself for his self-perceived failure to do that at the outset of his tutoring sessions.

Development of Beliefs

Research Question 2: How do pre-service teachers’ beliefs about literacy assessment develop during participation in a literacy assessment course with literacy tutoring and peer debriefing components?

Perceptions of Individualized Tutoring Sessions

All participants commented positively on the value of the tutoring sessions for giving them the chance to apply the concepts and skills they learned in class. Mary noted, “In my opinion, tutoring sessions are very helpful for us. Just after we learned new assessment techniques and methods, we were able to apply them for our students and we could see the efficiency of the assessment techniques” (Follow up Interview). Likewise, Lucy discussed how the tutoring combined with the feedback on the process that she received from peers and the

professor was helpful because it enabled her to determine her next steps in her work with the learner. She stated,

I really appreciate the fact that we had students at the clinic to work with so that was something that you know we only had for your class and not for some other class and the fact that again I had my student I did what I thought that I have to do with the student especially in the first and second class first and second week but I gained some information from the student and I shared that with the teacher and the classmates and I received some feedback on where do I need to go from there. How do I need to work? Where do I need to look? What type of assessments do I have to use in the future? Uh, how do I need to teach something? What type of lesson will be helpful versus another one?" (Follow up interview)

Leanne shared her favorable impressions of the tutoring experience stating, "...I love the idea of working with a student right, you know, in the classroom as I came in because it was like we're all learning together. I'm learning, she's learning because I'm teaching her..." Later in the interview, she mentioned that, for her, the tutoring sessions "definitely influenced everything" which included "[everything] we learned from being able to learn a new concept and then teach the student..." (Follow up interview). This comment illustrates her perception that the tutoring helped connect the concepts theories from the class with her practice.

Michael agreed adding that, "...the [tutoring] sessions were the most impactful component of your entire course." He explained that the tutoring sessions were the space where "...you have what you're learning in the class, you have the kid then you have to apply in the session you find out what works for the kid and what doesn't" (Follow up Interview). This comment highlights his observation that the tutoring often served as the crucible whereby assessment and instructional ideas that were read about or discussed in class were tested for their viability with the kinds of learners participants could expect to work with in their own classrooms.

Michael also noted a lack of resources available that specifically target the kinds of learners like the one he was tutoring. Specifically, he lamented the scarcity of high-interest reading materials written for older readers who were still struggling with decoding and sight word recognition. He recognized this problem as he tried to find materials that would engage his

learner. Working with a somewhat reluctant reader during the class forced him to be more creative in his instruction in order to maintain his student's engagement. He explained that, ...you're forced to have to come up with ideas and really think out of the box and that's what the tutoring sessions do. Because if you're just going to play it straight-laced as the author [of typical teaching texts] says you're going to lose the kid immediately. So, what it is is you have a working knowledge of what the books and the authors and the readings and what [the author is] talking about, but then you have to get to know the kid. Then you brew up a gumbo of lesson plans that are going to work for whichever kid. And I think that's the most important component because if you're going to teach, you have to find ways to meet the kids. And working with the kids is the only way you figure that out (Follow up Interview).

Both of these comments indicate that the tutoring helped Michael realize the importance of hands-on experience to enable him to test the skills and concepts that he was learning about in class. His remarks also reveal that he felt the tutoring helped him develop his ability to adapt his lessons and differentiate instruction to meet the unique needs of his learner.

Perceptions of the Peer Debriefing Sessions

The individualized tutoring sessions described above had a considerable impact on the development of participants' assessment literacy. Participants described how the opportunities they had to debrief with their peers about the class tutoring sessions shaped their assessment literacy development. Due to scheduling issues, these peer debriefing conferences were held immediately before each tutoring session and were initially conceived of to serve as spaces where candidates could discuss and reflect on the tutoring sessions. These sessions were structured so that candidates were initially prompted to share successes and challenges from their previous tutoring session as well as to elicit thoughts and suggestions from their peers regarding any issues that arose. Candidates were also asked to share their plans for the current day's lesson and offer each other and input they felt might improve their peer's lesson. These peer debriefing sessions proved to be quite influential in terms of how the interplay between the debriefing and the tutoring shaped and refined the participants' understanding of assessment throughout the course.

In their written reflections and interviews, most of the participants commented on the value of these debriefing sessions for sharing ideas and offering mutual support. One beneficial aspect of the peer group debriefings mentioned was the opportunity for collaborative problem solving that they afforded. Michael, for instance, appreciated that his group consisted of people with varied amounts of teaching experience that offered a greater variety of perspectives on the issues at hand. This diversity of perspectives helped to push each other's thinking in new directions and, in his words, “[that’s] just to me that’s kind of an informal way of extending your professional development” (Follow up Interview).

Leanne and Mary likewise commented that they were able to get some new ideas from their peers in the peer debriefing sessions. Leanne mentioned that she was able to learn new things from her classmates including ideas for high-interest texts for middle school students and novel graphic organizer ideas. She said, “...and so I’m taking ideas from so many people and yeah just adding mine on to it so that was definitely beneficial just to have that” (Follow up Interview). Mary said that she liked her classmates' ideas about using reading texts from different cultures, using visual materials for teaching sequencing and summarizing, and paying closer to students' interests to motivate their literacy activities.

Michael and Lucy both commented that they found the peer debriefing sessions to be an inviting space where they could share their ideas freely without having to feel as though they were going to be evaluated or judged by their peers. Michael also pointed out that he and his colleague were able to be more creative in their solutions to challenges they faced in their tutoring because they were able to brainstorm and share their ideas in such a non-threatening atmosphere. He states,

...the one thing that I really enjoyed about our conversations [was that] they weren’t pretentious we were always looking to find ways to reach the kids so if it was via a traditional methods or a more unorthodox method we would share those ideas we wouldn’t say well that’s not in the book or that’s not how you do it and so ideas were always encouraged (Follow up Interview).

Lucy, a speaker of English as a second language, also noted this atmosphere of trust and respect in the debriefing sessions adding,

I think that we learned a lot from [each other] I think the fact that we were able to answer open questions and give the right feedback immediately and I never felt

from any of my classmates or from my teacher that they look at me like ‘oh, you do not know that?’ So, we builded (sic) a relationship, a very very good relationship between classmates as a group and the teacher that was my feeling. Yeah, anytime I had a question, I was never ashamed or afraid to ask it and especially when we worked in small groups with the other teacher [classmates], you know, I felt that we completed each other. Somebody has an idea and somebody has another idea or we were really good together (Follow up Interview).

Lucy also mentions that she felt she and her classmates built upon each other’s ideas and insights to learn from one another and this same feeling is expressed by her colleague as well. Another speaker of English as a second language, Mary, mentioned “Each week, I am learning new information about assessments in reading from my peers and my professor. Sharing their experiences from school and family helps me improve my understanding in literacy assessment” (Written Reflections).

Mary identified the opportunity to share and reflect on tutoring experiences with peers as the most important feature of the peer debriefing conferences and claimed that these peer-lead discussions helped her improve her understanding of literacy assessment. My own observations during the class concur with those of Lucy, Mary and others that the peer debriefings often helped the candidates fill in knowledge gaps for each other and scaffold one another's understanding of concepts through discussion of what these concepts looked like in practice. This occasionally resulted in participants deciding to work together during the tutoring sessions so that they could observe each other in action. Thus, based upon participants’ comments, they found the discussions about their tutoring sessions with their peers to be beneficial. In particular, they seemed to benefit from the non-critical atmosphere, diverse perspectives, mutual filling of knowledge gaps, and space to think outside the box that these sessions enabled.

Struggle for Growth

Participants' struggle for growth emerged as a core concept from their reflections and interviews. This struggle for growth related to their difficulties during the tutoring and as they participated in some of the course activities. One area where some participants revealed challenges was in their apparent misunderstanding of particular concepts presented in the course.

For example, Edward's learner indicated a preference for adventure stories in a questionnaire administered at the beginning of their tutoring sessions. However, when the student showed boredom with the selection Edward expressed frustration instead of recognizing the opportunity to learn more about the students' interests and offer him input into the choice of text. This brief account demonstrates Edward's confusion regarding the inherent flexibility of reading selection choice.

Another type of a misunderstanding occurred when participants wrongly identified the purpose of an activity or assessment. For example, Leanne said she used cloze to assess her learner's ability to recall details as well as help her recognition of subject-verb agreement. In actuality, cloze is not typically used for either of these purposes and although we did discuss some of the uses of cloze in class, we did not identify these as being valid purposes for its use. Leanne also made other comments in her reflections that indicated some confusion about some concepts presented in the course. For instance, she identified phonemic awareness as a reading technique. She described her learner as having "...a great understanding of phonemic awareness. If she doesn't know a word she uses the technique "chunk it." She also misidentified a bottom-up theoretical view of the reading process as being a phonics method that would let her "...to see as the teacher how well the student understands the relationship of letters to words to paragraphs then to book readings" (Leanne reflections). These comments indicate her confusion regarding some concepts presented in the course.

A third area of struggle was with candidates engaging students during their tutoring sessions. Two of the male participants in particular floundered somewhat in their early tutoring sessions. Early in the semester, Edward experienced some trouble identifying materials that interested his learner and that matched the learner's reading ability. In several of his reflections, he mentioned his surprise at the learner's reaction to the tutoring activities that he had planned. These challenges eventually culminated in Edward addressing the learner's frustration during the tutoring. Edward reported, "I noticed that he was clearly struggling. As a matter of fact, he asked permission to use the restroom and when he returned, I saw tears in his eyes." At this point, Edward realized that there was a problem. "When asked what the problem was, he said that he did not know how to read and answer the questions. I was surprised". This comment indicates Edward's confusion and frustration with determining how to meet this learner's needs. Edward's

tutoring sessions improved as the semester progressed but those early difficulties demonstrated the struggles he faced.

Michael expressed some parallel frustrations regarding difficulties he was having with engaging his learner. Staff at the after-school program that brought the learners to the reading clinic mentioned that this learner could be “challenging” to work with. Michael had mentioned previously that he taught English to “at-risk high school boys” so it seemed that he would be the most well suited to tutor this learner. Despite being somewhat better prepared than many of his classmates to work with this learner, he struggled at times during the tutoring sessions and he reflected that,

This was the quandary that I was faced with when tutoring [my student]. Put simply: I felt like I could not reach him through conventional reading methods and I was floundering due to unrealistic lesson plans. I was in need of an answer and I needed it quickly. It was as if I was losing a grip on the situation and [my student], who admittedly has ADHD and takes medication as a result, was losing focus and becoming off-task.

Michael identified the source of his challenges to be finding effective teaching strategies and classroom activities that were appropriate for and engaging to his learner. As with Edward, after some consultation with me and his colleagues, his learner’s level of engagement did improve as the semester progressed. Nevertheless, both participants initially experienced significant challenges as they attempted to use the literacy instructional strategies presented in class to work with their learners.

Growth in Professional Insights from Early Struggles

Although these struggles were apparent for a number of the participants, several indicated that despite their discomfort these struggles pushed them to grow as educators. The professional growth participants experienced seemed to occur incrementally through various insights into the assessment and teaching process that they experienced through taking the class and engaging in the tutoring. Particularly compelling realizations shared by participants included their surprise at the variety of assessments available, recognition of the necessity of choosing the right assessment and the realization of the value of affective assessment.

One such insight was the developing understanding that assessment is much broader than traditional testing and that it does not have to be so threatening. Michael recalled that, as a child, for him assessment was “always was the 400 pound gorilla in the room” that took the form of “a standardized test in the form of a high stakes test in the form of a pop quiz” that he “detested taking.” However, he said he feels “now it’s done in a manner where you almost don’t even have to tell the student it’s an assessment or it’s a quiz or it’s a test It just it makes it more streamlined and seamless how you introduced assessing ...” (follow up interview). This statement indicates a perception shift that now has him believing that assessment does not have to always be formal nor does it always have to be intimidating to the learner.

Similarly, several participants reported that over the course of the semester their knowledge of the wide variety of classroom literacy assessment tools available had broadened considerably. Therefore, they now recognized a wider variety of assessments are available than they had previously assumed. For instance, Leanne talked about how she believed her knowledge of literacy assessment changed because she is “...more aware of some of the assessment tools that’s available now” (follow up interview). Other participants specifically mentioned learning about the different assessment tools available (e. g., interest inventories) that could pinpoint the specific components of reading (e. g., learner engagement) and provide rich and detailed assessment information to better refine future instruction. Participants' growing understanding also seemed to lead them to the realization that teachers are obligated to identify an assessment tool that specifies the particular needs of each student. As Leanne points out, “I understand more of meeting the student where they are at ...” (follow up interview). Michael agreed stating, “you can take [the student] at any point on [a] continuum and there is an assessment that can effectively assess where they are at and where they need to go” (follow up interview).

Finally, the tutoring sessions seemed to help participants realize the importance of gathering as much information as possible about both the cognitive and affective aspects of their learner to better inform their instruction. Mary remarked that she found informal reading inventories to be “...very effective to determine student's weakness and strength areas” (Follow up interview). Leanne agreed that working with a student during class helped her realize the importance of “...meeting the needs of the student...” by collecting assessment data from various sources “...to get background knowledge of the students interests, hobbies, likes, dislikes, books and it helps you with implementing instruction” (follow up interview). Likewise,

Michael discussed how before he ever met his student, he had a lesson plan ready. He points out that the flaw in this approach was that “I didn’t know him, so I constructed, in essence, a lesson plan based on a “fictional” character.” This “pre-fabricated lesson” approach to his learner appeared to cause Michael problems as he observed how he often struggled to engage his learner. One of his insights taken from the experience was that “In the future, I will spend more time getting to know my tutee as opposed to creating a lesson plan that only looks good on paper” (Written reflections). This statement also acknowledges his realization of the importance of a comprehensive understanding of the learner for the lesson planning process.

Edward stated that based on guidance he received from class readings and discussions with peers he was using a rubric to assess his learner’s fluency. He also engaged in modeling through assisted reading and having the learner reread the text to improve his fluency while providing corrective feedback (Written reflections). Leanne said her student told her in response to the Burke Inventory Survey that she wanted to improve her fluency. She used echo reading and repeated readings to practice her learner’s fluency. She also engaged her learner in recorded repeated reading where the learner read the same book on the first and last days of the tutoring sessions and recorded it both times. On the last day, as a type of self-assessment, she played both recordings to her student and asked her if she thought that she had improved in her reading fluency since the first lesson together (written reflections).

Summary of the Findings

According to the findings presented above, the process of assessment literacy conceptual development appears to be structured in a particular way. First, candidates are presented with new ideas about literacy assessment from four different sources. These include the course instructor, their peers, the course texts and other outside sources. They then attempt to implement these ideas in their tutoring. In many cases, unexpected obstacles impede the smooth implementation and they struggle to apply the ideas as planned. For instance, candidates have had difficulty identifying engaging materials for their tutees despite having had opportunities to read about and discuss choosing engaging materials in class. Therefore, peer debriefing opportunities were a crucial counterpart to the tutoring that enabled candidates to develop beyond their tutoring struggles. These debriefing sessions allowed them to process their tutoring experiences and seek feedback on some of the difficulties they were having. The interplay

between the tutoring and the debriefing sessions created a space that allowed candidates to scaffold each other's troubleshooting of their tutoring challenges and arrive at potential solutions to try in their next tutoring session. Even more importantly, engaging in the dialogues around their practice allowed them to emerge from the debriefing with a more refined and nuanced understanding of the concepts presented in the course.

An appropriate metaphor for this struggle for growth process could be a “collaborative scratch pad” where peers can share their developing understandings of relevant concepts as they apply their knowledge to addressing the various challenges they are experiencing in their tutoring. In this way, the tutoring and debriefing behaved much like agitators on both ends of the assessment literacy development process to push and extend candidates’ thinking as well as sift out any potential misconceptions. In this space, participants can both filter and recombine their prior knowledge with new information from resources and colleagues in novel and productive ways to gain insights into the literacy assessment and instruction process that enabled them to feel as though their practice had improved.

Of course, a number of limitations exist with this approach. First, there is the danger of students sharing their misconceptions with one another leading to increased confusion. However the mechanism of class discussion, written reflection to the instructor and ongoing practice through tutoring may mitigate the worst effects. A second pitfall is that when having students assemble to share their experience there is always the possibility that one or more may be having a particularly challenging time coping with the stresses of learning to work with their learner. Those who are continuing to struggle may introduce a defeatist attitude into the group, which may affect the other members. This hazard may best be dealt with by quickly identifying any students who seem to be struggling through private learning journals and careful instructor observation. The instructor must then intervene to support these struggling students as much as possible to give them what they need to succeed and then in turn make both their tutoring and debriefing sessions as positive and productive as possible.

Discussion and Conclusions

The primary sources of information for assessment literacy development identified here were the instructor, peers, the course text and information gleaned from outside sources. These findings corroborated the results of previous studies, which reported that information sources that

expanded pre-service teachers' knowledge included important texts, class discussions, mentors, professors, and fellow students (Graham, 2005).

The current study also found that pre-service teachers say they appreciate having the opportunity to engage in individualized tutoring to put into practice the assessment ideas, principles and techniques they learned about in class. Participants also reported they benefitted from being able to debrief about the results of experimenting with these new ideas and tools in their tutoring. Thus, the tutoring and debriefing dynamic may be a useful catalyst for helping to ensure that the concepts presented in an assessment class are assimilated by the pre-service teacher resulting in his/ her assessment literacy development.

The tutoring may also be valuable because, unlike a practicum that frequently lacks sufficient structure (Cooper, 1995), the tutoring sessions are on a much smaller scale. Therefore, candidates are able to eliminate many of the potential distractions that characterize a typical classroom. In this way, individualized tutoring may be likened to learning to ride a bike with training wheels. The experience serves as a scaled-down version of teaching that offers the new teacher the mental space to be more reflective about the teaching and learning process. As well, there are often recurrent complaints about the inability of the practicum to effectively integrate theory and practice (Allen & Peach, 2007). Since the tutoring happens during the class period, students have the opportunity to move immediately from learning about theories in the class to implementing classroom activities that are based on those theories and reflecting on the experience with their peers afterward.

A second finding was that Individualized tutoring sessions and peer group debriefing sessions caused participants to struggle for growth which they acknowledged contributed to their assessment literacy development. Specifically, they claimed that their growth occurred in terms of their conceptual knowledge, their specific skill knowledge and their increased understanding of the impact of assessment on instruction.

In terms of concept knowledge, participants indicated that their knowledge of assessment concepts expanded. In fact, several reported their surprise at the number of formative and summative assessments available and how specific tools can pinpoint each individual learner's unique cognitive and affective strengths and needs at any point in their literacy development. This expanded understanding also included their realization of their colleagues' value in helping them to understand and resolve their literacy assessment and instructional issues. These results

correspond with previous findings that pre-service on-campus assessment education programs can support candidates' assessment literacy development (Mertler & Campbell, 2005; DeLuca & Klinger, 2010) and stretch their understanding of assessment to see the value in alternative assessments (DeLuca, Chavez & Cao, 2013). These findings also confirm previous conclusions that teacher candidates' engagement in formative assessment helps them to see assessment as an ongoing process (Graham, 2005). Other findings unique to this research highlight the usefulness of teacher candidates having opportunities to debrief with colleagues about initial practice with classroom assessment tools in helping them to better understand how to use those tools. The present study also illustrates how giving candidates opportunities to engage in classroom assessment through individualized tutoring can emphasize to them the vital importance of formative assessment to the instructional process.

Participants also discussed how they expanded their knowledge of the skills related to literacy assessment. They reported that having opportunities to practice administering tools in class and then in their tutoring was helpful. While participants did feel that they lacked knowledge of assessments as was reported in other studies (DeLuca & Klinger, 2010; Mertler, 2003), they did not display the kind of overconfidence in their abilities found in previous research (DeLuca & Klinger, 2010). Participants in the current study stated how they believed their abilities to use a variety of assessment tools with actual students were improved through having the opportunity to engage in tutoring and reflect on the process with their peers. They commented that the dynamic created between the tutoring and peer debriefing enabled them to practice their assessment skills with scaffolding and feedback from their peers. Nevertheless, they did also express a similar desire mentioned in other research (Volante & Fazio, 2007) for greater practical knowledge about assessment such as tool development and administration.

Another vital aspect of assessment literacy is the teachers' ability to use their assessment results to provide effective instruction that addresses unique student needs while also building on their strengths (Shepard, Hammerness, Darling-Hammond, & Rust, 2005). Previous research identified how in-service teachers often struggle to translate assessment information into improved instruction and student performance (Conca, Schechter, & Castle, 2004). Likewise, in this study, participants did experience struggle at some points in their attempts to integrate the skills and concepts they were learning in the class into their teaching. However, they noted that having the opportunity to begin practicing their nascent skills through the individualized tutoring

and debrief about it with their colleagues helped them to work through some of these struggles and increase their knowledge of literacy assessment. In this respect, it appears that tutoring and peer debriefing are helpful activities for managing this struggle for growth and facilitating the assessment literacy development process.

Participants commented that the individualized tutoring helped them to be able to apply new assessment techniques and methods to test their effectiveness. They also reported that the tutoring enabled them to find out how to tailor instruction to meet the needs of the individual learner. These findings are in accord with others who noted that tutoring experiences helped candidates observe their student's development with the guidance of their course materials (Hedrick, McGee, & Mittag, 2000) which enables them to better connect theory to instructional practice (Jones, Stallings, & Malone, 2004).

The peer debriefing gave participants the opportunity to share assessment and instructional ideas with each other as well as offer mutual support during the tutoring. These findings agree with previous research that graduate classes can serve as an important venue for the development of skills in peer debriefing that help preservice teachers to continue their professional development (Hail, Hurst, & Camp, 2011). These same researchers and others also noted that teachers believe that reflecting with colleagues is an important aspect of their professional growth because it allows them to increase their level of reflection on their teaching practice and make adjustments in both instructional style and techniques (Hail et al., 2011; Peck, 2009).

Current investigations clearly demonstrate the value of incorporating peer-debriefing into teacher professional development. However, while they mention its potential for preservice teachers (e.g., Hail et al., 2011), extant investigations focus more upon in-service teachers and the phenomenon has not been as thoroughly explored during pre-service training. Although there appears to be an important role for these kinds of peer-lead discussions in pre-service contexts, we still need to learn more about how they function to clearly establish exactly what that role is.

Acknowledgement of the "struggle for growth" process discussed above is also beneficial because previous research has overlooked this process as part of pre-service teacher assessment literacy development. Increased awareness of this phenomenon provides researchers and teacher educators with an as-yet undiscovered aspect of assessment literacy development that allows for a more nuanced understanding of the process. This deeper understanding then enables us to more

carefully consider and investigate the role of pedagogical innovations such as tutoring and peer debriefing in managing this struggle and promoting assessment literacy development.

Additionally, by eliciting the pre-service teacher's perspective, the current study has discovered some valuable aspects of using tutoring and peer feedback as catalysts to push learners to grow in their understanding of assessment concepts, skills and ways of applying the information they gained from the tools they administered.

One potential limitation of this study was that this research took place in an urban university literacy clinic setting that may not be representative of many other graduate school contexts. A possible consequence is that the sources of information as well as reactions to content of the class and procedures for tutoring and debriefing may have been idiosyncratic and not representative of many pre-service teachers in other contexts. Therefore readers teaching in other contexts should exercise some caution when considering the applicability of the results to their own circumstances. Another prospective constraint was the fact that the research was conducted with the author's students. Typical teacher and student power dynamics may have had an undetected yet undue influence on the participants' statements and behavior. For instance, they may have been reticent to share information with me that they believe could offend me or contradict what they believe I wanted hear. Finally, no data were included that could offer additional insight into participants' performance on more standardized measures of improvement in their knowledge throughout the course. The data is based on participants' own perspective on their growth but future research should incorporate other measures of candidate improvement such as end-of-course formal summative assessment results in possibly a pre-course/ post-course design to provide another perspective on participants' subjective experience.

Some commenters might question the true effectiveness of incorporating individualized tutoring and peer debriefing into pre-service assessment courses. However, given the research support for the benefits of these pedagogical activities for developing instructional skill and the positive reactions of participants from the current study, it at the very least warrants cautious optimism and a willingness to engage in additional investigation.

Skeptics might also cast doubt on the importance of the struggle for growth in participants' assessment literacy development process. They might also wonder about the necessity of learners experiencing the inevitable discomfort that is entailed in the process. They may even ask about whether the struggle for growth could just be an artifact of ineffective

instructor planning and whether better preparation could have ensured a smoother development process.

It may in fact be possible with careful preparation to minimize candidates' experience of angst and struggle through the tutoring and debriefing process. However, one needs to question whether such a comfortable experience will actually prepare them for the inevitable struggles they will face as novice teachers. One could argue for the benefit of introducing new teachers to the teaching process in this scaffolded way and giving them some resources to help reduce the unavoidable stress of transition before they find themselves facing a room full of students while under the scrutiny of administrators and parents.

Three main implications follow from the findings of this study. First, teacher educators need to recognize the vital role that assessment literacy plays in today's classrooms. Because of its growing importance, we need to make assessment literacy a higher priority in teacher education programs. This means including more time for classes that focus on measurement concepts as well as both formal testing and formative classroom assessments whose results can be used to inform classroom instruction.

Additionally, we need to recognize that current notions of assessment literacy are somewhat circumscribed. Much of the extant literature only explores teachers' awareness of traditional testing and measurement concepts. However, since the central purpose of assessment literacy is to enable teachers to help students improve their reading and writing ability, teachers also need to know about informal classroom assessment tools. Unlike traditional tests, informal tools like anecdotal records or reading inventories enable teachers to collect rich data about the learner, which can more readily inform instruction and thus focus on actually improving learners' literacy rather than just measuring its current state.

A second implication of these findings is that teacher educators should consider incorporating individualized tutoring and peer debriefing into their assessment classes. Establishing some class time for candidates to engage in tutoring can let them put into practice the concepts and skills supplied in the course. Tutoring enables them to work with these ideas and skills without much of the stress and pressure they would experience in many typical practice teaching contexts. Follow up debriefing allows candidates to engage in reflective practice as they contemplate the tutoring experience with their classmates. These sessions can be

quite productive as candidates develop their ability to articulate and analyze their practice collaboratively.

Lastly, as teacher educators, we might allow ourselves to expect that teacher candidates may struggle a bit as they attempt to understand some of the ideas presented in a typical assessment class. We may be tempted to think that knowledge acquisition should be as smooth and trouble-free as possible but these findings demonstrate that assessment literacy development can be accompanied by some struggle though teacher candidates do not necessarily experience it as a negative aspect of the learning process. Therefore, we should be prepared for some challenges when using tutoring and peer debriefing to develop assessment literacy but realize that ultimately candidates may appreciate the experience despite any difficulties they experienced along the way.

Future research should more closely compare the kinds of assessment concepts and techniques presented in the class and those that students said they learned in the class. This research could include a standardized measure of important aspects of assessment literacy to ascertain whether participants' subjective feeling of growth is corroborated by other formal assessments. Future research may also explore whether particular aspects of assessment literacy are best developed through the methods studied here while others might still be best handled through traditional approaches like lecture. As well, investigations should be conducted into other methods to support assessment literacy development through tutoring and debriefing such as video recording sessions or reconfiguring tutoring dyads into triads so that candidates can observe each other's teaching. Incorporation of an asynchronous online component to the debriefing may also encourage deeper thinking and discussion around some of the issues raised in the tutoring. All of, this research could inform us about how to increase the effectiveness of the process.

References

- Allen, J. M., & Peach, D. (2007). Exploring connections between the in-field and on-campus components of a preservice teacher education program: A student perspective. *Asia-Pacific Journal of Cooperative Education, 8(1)*, 23-36.
- Brookhart, S. M. (1999). Teaching about communicating assessment results and grading. *Educational Measurement: Issues and Practice, 18(1)*, 5-14.
- Cooper, J.M. (1995). Supervision in teacher education. In L.W. Anderson (Ed.), *International encyclopedia of teaching and teacher education* (2nd ed.). London: Pergamon.
- Cresswell, J. W. (2007)(2nd Ed.). *Qualitative inquiry and research design*. Sage: Thousand Oaks, CA.
- Conca, L. M., Schechter, C. P., & Castle, S. (2004). Challenges teachers face as they work to connect assessment and instruction. *Teachers and teaching, 10(1)*, 59-75.
- DeLuca, C., & Klinger, D. A. (2010). Assessment literacy development: Identifying gaps in teacher candidates' learning. *Assessment in Education: Principles, Policy & Practice, 17(4)*, 419-438.
- DeLuca, C. (2012). Preparing Teachers for the Age of Accountability: Toward a Framework for Assessment Education. *Action in Teacher Education, 34(5-6)*, 576-591.
- DeLuca, C., Chavez, T., Bellara, A., & Cao, C. (2013). Pedagogies for Preservice Assessment Education: Supporting Teacher Candidates' Assessment Literacy Development. *The Teacher Educator, 48(2)*, 128-142.
- DeLuca, C., Chavez, T., & Cao, C. (2013). Establishing a foundation for valid teacher judgement on student learning: The role of pre-service assessment education. *Assessment in Education: Principles, Policy & Practice, 20(1)*, 107-126.
- Graham, P. (2005). Classroom-based assessment: Changing knowledge and practice through preservice teacher education. *Teaching and Teacher Education, 21*, 607-612.
- Hail, C., Hurst, B., & Camp, D. (2011). Peer debriefing: Teachers' reflective practices for professional growth. *Critical Questions in Education, 2(2)*, 74-84.
- Hedrick, W. B., McGee, P., & Mittag, K. (2000). Pre-service teacher learning through one-on-one tutoring: Reporting perceptions through e-mail. *Teaching and Teacher Education, 16(1)*, 47-63.
- Heider, K. L. (2005, June 23). Teacher isolation: How mentoring programs can help. *Current Issues in Education* [Online], 8(14). Available from <http://cie.ed.asu.edu/volume8/number14/>
- Hill, M., Cowie, B., Gilmore, A., & Smith, L. F. (2010). Preparing assessment-capable teachers: What should preservice teachers know and be able to do?. *Assessment Matters, 2*, 43.
- Jones, B. D., Stallings, D. T., & Malone, D. (2004). Prospective Teachers as Tutors: Measuring the Impact. *Teacher Education Quarterly*. Retrieved from http://teqjournal.org/backvols/2004/31_3/jonesetal.pmd.pdf
- MacLellan, E. (2004). Initial knowledge states about assessment: Novice teachers' conceptualizations. *Teaching and Teacher Education, 20*, 523-535.
- Mertler, C. A. (2003, October). Preservice versus inservice teachers' assessment literacy: Does classroom experience make a difference. In *Annual Meeting of the Mid-Western Educational Research Association*, Columbus, OH.
- Mertler, C. A. (2004). Secondary teachers' assessment literacy: Does classroom experience make a difference?. *American Secondary Education, 49-64*.

- Mertler, C. A., & Campbell, C. S. (2005). Measuring teachers' knowledge and application of classroom assessment concepts: Development of the Assessment Literacy Inventory. Paper presented at the annual meeting of the American Educational Research Association, Montreal, QC.
- National Institute of Child Health and Human Development. (2000). Report of the National Reading Panel. Teaching children to read: an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction. Retrieved June 29, 2015, from <http://www.nichd.nih.gov/publications/pubs/nrp/documents/report.pdf>
- Peck, S. M. (2009). Endless possibilities for learning and reflection: Lessons from two after-school urban literacy clinics. In J. C. Richards & C. A. Lassonde (Eds.), *Literacy Tutoring That Works: A Look at Successful In-School, After-School, and Summer Programs* (pp. 119–131). Retrieved from <http://www.reading.org/Library/Retrieve.cfm?bk694-10-peck.pdf&D=10.1598/9780872076945.10&F=bk694-10-Peck.pdf>
- Pedder, D. & James, M. (2006). Professional learning as a condition for assessment for learning. In J. Gardner (Ed.), *Assessment and Learning* (pp. 27–44). London, UK: Sage.
- Popham, W. J. (2011). Assessment literacy overlooked: A teacher educator's confession. *The Teacher Educator*, 46(4), 265–273.
- Popham, W. J. (2004). Why assessment illiteracy is professional suicide. *Educational Leadership*, 62(1), 82–83.
- Quilter, S. M., & Gallini, J. K. (2000). Teachers' assessment literacy and attitudes. *The Teacher Educator*, 36(2), 115–131.
- Schwandt, T.A. (2007). *The Sage dictionary of qualitative inquiry* (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Sleeter, C. E. (2001). Preparing teachers for culturally diverse schools: Research and the overwhelming presence of whiteness. *Journal of Teacher Education*, 52(2), 94-106.
- Spall, S. (1998). Peer debriefing in qualitative research: Emerging operational models. *Qualitative Inquiry*, 4(2), 280-292.
- Spillett, M.A. (2003). Peer debriefing: Who, what, when, why, how. *Academic Exchange Quarterly*, 7(3), 36-41.
- Strauss, A.L., & Corbin, J. M. (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory* (2nd ed.). Thousand Oaks, CA: Sage Publications.
- Volante, L., & Fazio, X. (2007). Exploring teacher candidates' assessment literacy: Implications for teacher education reform and professional development. *Canadian Journal of Education*, 30(3), 749–770.