

RESEARCH ARTICLE

Preparing Candidates for edTPA Task 3: The Experience of One Educator Preparation Program

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Analyzing classroom assessment data is a common practice for teachers; making it vital that teacher candidates learn this skill. Educator preparation programs (EPP), however, often lack formal opportunities for teacher candidates to become data and assessment literate (Mandinach & Gummer, 2016; Xu & Brown, 2016). This study examined how one EPP worked to close this skills gap for candidates by creating a culture around assessment literacy, requiring assessment coursework, and assigning projects aimed at preparing candidates for edTPA Task 3. Three distinct datasets were used to examine the research questions across time. Findings showed that the EPPs approach to closing this gap improved candidates' assessment literacy and increased pass rates for edTPA Task 3: Assessment.

Keywords: assessment, assessment literacy, EPP, edTPA

As national standards for teachers and EPPs alike focus on the ability of teachers to accurately evaluate and impact student learning (Council for the Accreditation of Educator Preparation, n.d.; Council of Chief State School Officers, 2013; Klinger et al., 2015), it has become crucial to introduce teacher candidates to these skills before they enter their own classrooms (Kissau et al., 2017). Further, the mandated requirement of edTPA (Stanford Center for Assessment, Learning, and Equity [SCALE], 2016) as the primary performance assessment determining candidate readiness to enter the classroom has heightened attention to preparing teachers for the creation, analysis and use of classroom assessments.

LITERATURE REVIEW

EdTPA

EdTPA, formerly known as the Teacher Performance Assessment, is a performance-based assessment that measures a teacher candidate's readiness for teaching (SCALE, 2013). Developed by the Stanford Center for Assessment, Learning, and Equity (SCALE), edTPA assesses subject-specific pedagogy based on skill sets for over 27 teaching fields and is embedded in authentic

clinical practice (Board of Trustees of the Leland Stanford Junior University, 2019). EdTPA consists of three tasks: Planning, Instruction, and Assessment. Task 1: Planning requires teacher candidates to plan instruction and assessment based on the learning context and needs of students. Evidence for this task includes lesson plans, instructional materials, assessments, and a commentary. Task 2: Instruction requires evidence of the candidate's ability to engage students in learning tasks while using instructional strategies and methods that are appropriate to the subject area. Evidence includes video clips and a commentary. Task 3: Assessment requires candidates to analyze student learning, provide quality feedback, and discuss how that feedback can be used to improve student performance. Evidence for Task 3 includes student work samples, feedback, evaluation criteria, and a commentary (SCALE, 2016).

EdTPA portfolios are scored using rubrics that were developed by SCALE for each content area. EdTPA Task 3, the focus of this study, requires teacher candidates (candidates) to select an assessment from their learning segment, describe how they will gather evidence related to student learning, and make sense of what students have learned. Candidates are to also provide a graphic or narrative to summarize student learning (SCALE, 2016). Task 3: Assessment (Task 3) consists of five rubrics; rubrics 11-15 (SCALE, 2016). Scorers consist of teacher education faculty, clinical supervisors, and P-12 educators who must undergo an extensive training process (edTPA, 2017).

Legislation requires North Carolina teachers to demonstrate proficiency on a pedagogical assessment in order to convert an Initial Professional Teaching License to a Continuing Professional Teaching License. There are two legislatively approved pedagogical assessments in North Carolina; edTPA is one of those assessments.

THEORETICAL FRAMEWORK

While Task 3 may appear straightforward, the reality is that for many candidates this is novel and difficult work. Standards for educational assessment published over the past three decades have set expectations for assessment literate teachers. In 1990, *The Standards for Teacher Competence in the Educational Assessment of Students* was published through a collaborative partnership between the American Federation of Teachers (AFT), the National Council on Measurement in Education (NCME), and the National Education Association (NEA) to ensure that students receive the benefits of sound classroom assessment (AFT, NCME, & NEA, 1990). They encouraged the development of state and national accreditation standards that include specific requirements focused on the integration of learning and assessment in teacher preparation programs. More recently, The Joint Committee on Standards in Educational Evaluation published its latest set of standards, *The Classroom Assessment Standards* (Klinger et al., 2015), highlighting specific skills teachers should have regarding classroom assessment. Standards for effective classroom assessment are also reflected in the standards of educational accrediting bodies at all levels from InTASC (Council of Chief State School Officers, 2013), to state standards governing the P-12 environment, to CAEP standards for the accreditation of teacher preparation programs (CAEP, n.d.).

Assessment Literacy

Assessment literacy has been studied for more than three decades (DeLuca et al., 2016; Popham, 2011; Stiggins, 1991; 1995). Stiggins (1991, 1995) was one of the first to use the term "assessment

literacy” as a way of identifying the skill set a teacher must possess to critically evaluate the quality of an assessment and the accuracy of the results. An assessment literate teacher engages in sound assessment with a clear vision of what academic success entails and has the ability to translate this understanding into high-quality assessments (Stiggins, 1995). Additionally, an assessment literate teacher inherently understands when an assessment misses a target, when procedural flaws and external factors influence the outcomes, and when results are not meaningful (Chappuis et al., 2012; Stiggins, 1991; 1995). More recently, there has been a shift in the way that assessment literacy is conceived and contemporary models include a stronger focus on assessment for learning and an awareness of the context in which teachers develop assessment literacy (Pastore & Andrade, 2019).

The standards highlighted above identify specific skills and dispositions that teachers should have regarding classroom assessment in order to engage in sound assessment practices. Candidates need to be assessment literate (DeLuca & Bellara, 2013; McGee & Colby, 2015) and have the ability to accurately interpret and represent data. Representation of data requires a combination of quantitative skills that include: statistical literacy, representational fluency, spatial visualization, and mathematical self-efficacy (Coburn & Turner, 2011; Van De Walle, Karp, & Bay-Williams, 2013; Yazici, 2014). These concepts have consistently been noted as a skill gap in educator preparation programs (EPPs) (Dossey, 2006; McGee & Colby, 2015; Scheurman & van Garderen, 2008; Van De Walle, Karp, & Bay-Williams, 2013; Volante, 2010). When examining specific aspects of assessment skill, Jacobbe and Horton (2010) found that elementary teachers’ ability to understand higher levels of graphical representations were somewhat limited and that they had difficulty discriminating between data display requirements for categorical and numerical data. Similarly, Koleza and Kontogianni (2016) found that teachers could not use the appropriate terminology or understand why a graph was misleading.

Measuring Assessment Literacy

There are some challenges with directly measuring assessment literacy as there are many interrelated skills that are required to become assessment literate. (DeLuca et al., 2016). Increasing assessment literacy and understanding how best to measure assessment literacy have been studied for more than two decades. This study employs two instruments as measures of assessment literacy: the Assessment Literacy Inventory (ALI) (Mertler & Campbell, 2005) and edTPA, specifically Task 3: Assessment (SCALE, 2013), with the ALI preceding edTPA in terms of a candidate’s trajectory through our EPP.

Assessment Literacy Inventory (ALI). The Assessment Literacy Inventory (ALI) (Mertler & Campbell, 2005) is an instrument that has been used to examine assessment literacy of both teachers and teacher candidates. The ALI consists of five scenarios, each with seven questions, and measures seven constructs aligned to the seven *The Standards for Teacher Competence in the Educational Assessment of Students* published in 1990 (AFT, NCME, & NEA, 1990). Those constructs are: choosing assessment methods, sound design of assessments, scoring assessments, using assessment results, grading assessments, communicating about assessment, and ethical assessment (McGee & Colby, 2015; Mertler & Campbell, 2005). Mertler and Campbell (2005) reported the reliability of the ALI as .75, with mean item difficulty equaling .64. McGee and Colby (2015) have also reported data using the ALI in prior research in this EPP.

Purpose of this Study

A teacher's assessment literacy is crucial to their ability to impact student learning (DeLuca & Bellara, 2013; McGee & Colby, 2015; Popham, 2011). There has been a consistent call for better assessment training for teacher candidates by DeLuca and Bellara (2013), McGee and Colby, (2015), Popham (2011) and many others. Regardless, practicing teachers still report feeling inadequately prepared to fully assess student learning (Chelsea & Jordan, 2012; Franklin & Mewborn, 2006; Volante & Fazio, 2007) and EPPs have not significantly altered the way they prepare candidates for the profession (Xu & Brown, 2016). This lack of preparation results in teachers evaluating their students in a manner similar to how they were assessed as students themselves regardless of best practice (Graham, 2005; Siegel & Wissehr, 2011). Wayman and Stringfield (2006) summarized this issue by stating that "most educators lack efficient, flexible access to these mountains of new data and have been afforded little preparation for productive organization and analysis of these data" (p. 464).

Preparing candidates for edTPA and specifically Task 3 takes a strategic approach. The EPP that is the setting for this study has incorporated candidate training in assessment literacy since 2009 and continues to bolster candidate development in this area. The researchers sought to evaluate that approach during the first year that edTPA became a requirement for students in the EPP. As faculty in the EPP, this study was conducted internally after obtaining IRB approval. Student perceptions of their preservice training were analyzed in concert with edTPA performance and assessment literacy as measured by the Assessment Literacy Instrument (ALI). The following research questions guided this study:

1. What were teacher candidates' perceptions of the assessment course after completing edTPA?
2. How have teacher candidates in the EPP performed on edTPA and specifically edTPA Task 3?
3. What is the general assessment literacy of teacher candidates as measured by the ALI?

Context for this Study

The EPP where this study took place is located at Appalachian State University, one of the largest public universities in North Carolina where the enrollment just topped 20,000 students in 2020 (Appalachian State University, 2020). Consistently ranked as one of the nations "Best Colleges" for the last 15 years, Appalachian is home to the Reich College of Education which graduates approximately 500 teacher candidates each year. Alumni from our EPP account for one-fifth (18%) of National Board-Certified Teachers (NBCT), with our EPP ranking first in the U.S. for number of NBCT for the last five years (Reich College of Education, 2021).

Required Coursework

Since 2009, the EPP has required all candidates to pass an assessment course with a minimum grade of "C" prior to student teaching. Most candidates take this course during their junior year, with some majors requiring it earlier or later. Housed within the required assessment course are

two common summative assessments aimed at increasing the assessment literacy of teacher candidates: the Analysis of Student Learning (ASL) project and the Curriculum Based Assessment (CBA) project. These projects are assessed using a mastery learning framework whereby the course instructor works with each student to guide them through a series of revisions before the end of the course. The ASL project mirrors edTPA Task 3 and when our state adopted edTPA, few revisions were required as it had been in place since 2009. For the ASL project, candidates must analyze a classroom set of student work, graphically show learning in aggregate for the data, analyze the learning of three focus students, provide written feedback to the targeted students, and write a narrative about how those students should use assessment feedback along with next instructional steps. The CBA project requires candidates to write a standards-based evaluation plan and create an assessment using fundamentals of sound assessment design as outlined by Chappuis et al. (2012). In concert, both projects encompass the seven standards from *The Standards for Teacher Competence in the Educational Assessment of Students* (AFT, NCME, & NEA, 1990) and a majority of the *Classroom Assessment Standards* (Klinger et al., 2015).

To provide appropriate scaffolding for edTPA, which is a comprehensive summative assessment that candidates must complete without aid of the instructor, teacher candidates complete a full practice edTPA portfolio within their teaching methods course. The teaching methods course has an attached field experience making it an appropriate place for this type of project. This course is generally taken in the final semester prior to student teaching and the practice edTPA is referred to as “edTPA Lite” by candidates and faculty. Faculty score the project using the edTPA rubrics (SCALE, 2017).

METHOD

This study employed an exploratory sequential mixed methods design whereby qualitative data were collected first, followed by quantitative data (Creswell & Plano-Clark, 2018). The two datasets were then analyzed in concert to triangulate findings. In this study, analyzing qualitative data on student perceptions led us to study candidate performance and assessment literacy quantitatively.

Sample and Data Collection

Due to the size of the EPP we are unable to accurately track groups of candidates together over time. Therefore, in order to get the most representative sample of different majors, there are multiple sampling techniques used in this study. First, an anonymous survey was sent to all 175 graduating candidates in November 2018 after they had completed edTPA and before they received their scores on edTPA. We obtained permission to add four questions to this routine survey collected by the Office of Field Experiences after receiving IRB approval for our study (see Appendix B). While the survey was anonymous, there was a 100% response rate due to the manner in which the survey was included in Tk20 along with other required materials for student teachers. This sample is represented in Table 1.

TABLE 1
EPP Candidate Licensure Programs Represented in edTPA Scores

Licensure Level	edTPA Handbook	Spring 2018	Fall 2018
		(<i>n</i> = 238)	(<i>n</i> = 175)
		<i>f</i>	<i>f</i>
Birth through K	Early Childhood Development	19	3
K-6	Elementary Mathematics	85	71
K-8	Middle Childhood: English Language Arts	4	7
	Middle Childhood: Math	4	2
	Middle Childhood: Science	7	1
	Middle Childhood: Social Studies	3	4
9-12	CTE: Business Education	3	3
	CTE: Family & Consumer Sciences	3	3
	CTE: Technology and Engineering Education	0	1
	Secondary English	15	2
	Secondary History/Social Studies	25	13
	Secondary Mathematics	9	2
	Secondary Science	6	4
K-12	Performing Arts: General	0	1
	Performing Arts: Instrumental Music	6	6
	Performing Arts: Theater	2	1
	Performing Arts: Vocal Music	0	3
	Physical Education	14	15
	Special Education: Autism and Developmental Disorders	4	2
	Special Education: Learning Disabilities	7	3
	Special Education: Mild/Moderate	6	1
	Special Education: Moderate/Severe	5	1
	Visual Art	8	3
	World Language	3	3

Next, de-identified edTPA spring 2018 (*n* = 238) and fall 2018 (*n* = 175) portfolio scores from teacher candidates were obtained with permission from the Dean of the College of Education and the Director of Clinical Experiences. For the purpose of this study, we examined mean total

scores in aggregate and Task 3 scores in aggregate (including rubric scores for Rubrics 11-15 which comprise Task 3). See Table 1 for an overview of this sample which includes information about licensure level in our state and the edTPA handbook that was used.

The final data source used in this study contained ALI pre and posttest scores ($n = 62$) collected from the first author's two sections of the assessment course across three semesters (spring 2017, fall 2017, spring 2018). This data was collected as an optional pretest the first day of the course and a post test on the last day, as such, less than 100% response rate was obtained in each section. The first author has been the course coordinator for this course since 2012 and is tasked with ensuring consistency of instruction and assessment across all sections by providing a course shell to all instructors. There are, on average, eight sections of this course offered each semester during the normal academic year. This data was used because it was a convenience sample but also would potentially contain some of the same participants as the edTPA sample due to timing. Data were therefore analyzed only as an aggregate and were combined to create one dataset from the three semesters. Two sample ALI questions can be found in Appendix A.

Data Analysis

Candidate perception data from the survey were first analyzed by each researcher separately using open-coding. Each researcher independently examined the responses to each of the three open-ended questions, creating their own open-codes. After completion, we convened to discuss findings and to create axial codes. We then independently re-coded our initial open-codes by the axial codes we created and met to discuss agreement a second time (Glaser & Strauss, 1967). Upon completion of this process overall themes were identified for the study.

Descriptive statistics were used to analyze edTPA scores earned by our graduating candidates in spring and fall 2018. In order to examine our edTPA scores in context we used guidelines set by our state coupled with national guidelines. Our state has set passing scores for each edTPA handbook and also established passing scores for candidates to be considered "highly qualified" (Current Operations Appropriations Act of 2017). Passing scores are a 32 or 38 depending on the handbook (13 rubrics versus 15 rubrics respectively) and are in alignment with edTPA policies in other states, although there is variation from state to state (edTPA, 2019). Our state's "highly qualified" passing scores, as indicated in Senate Bill 257 (Current Operations Appropriations Act of 2017), are 42 or 48 (13 rubrics versus 15 rubrics respectively). In addition, we also descriptively examined our Task 3 scores against scores reported by edTPA in 2017.

For the ALI, pre and post test data were matched using student names and then student names were replaced with identifying numbers to maintain confidentiality. Sixty-two matched pairs across three semesters (spring 2017, fall 2017, spring 2018) were included in the final data set. While these data were collected across three semesters, all data were collected from one instructor and the teaching materials and methods used in all semesters were consistent. These data are consistent with ALI results examined by Authors (2015) adding to validity of the ALI as a measure of assessment literacy for this particular course. To draw comparisons to Task 3, only total ALI scores and scores for *Using Assessment Results* (items 4, 11, 18, 25, 32) and scores for *Communicating Assessment Results* (items 6, 13, 20, 27, 34) were computed. Paired sample *t*-tests were then used to examine differences between pre and posttest total scores after screening data for assumptions of normality and to ensure there were no outliers. Pre and post test scores for *Using Assessment Results*, and pre and post test scores for *Communicating Assessment Results*,

two constructs measured by the ALI, were used as they relate directly to the performance required in Task 3.

RESULTS

When examining perceptions across the candidate survey data, we found that candidates had a varied recollection of the required assessment course and the ASL project that mirrors edTPA Task 3. Twelve students (9.67%) responded that they did not recall the course or the assignment. However, 65 of the 104 (62.5%) students who responded to the question about the ASL project either agreed or strongly agreed that it adequately prepared them for Task 3 of edTPA. After examining the qualitative codes, three themes emerged with regard to perceptions of the assessment training that is required of candidates before graduation: *Need for Scaffolding*, *Need for Direct Instruction*, and *Need for Personal Connections*. These themes will be discussed in detail below, followed by the results of quantitative data.

Need for Scaffolding

It was abundantly clear through the data that candidates appreciated explicit, direct, and purposeful scaffolding of assessment skills in order to help them feel prepared for edTPA, and specifically Task 3. When asked what aspects of the ASL project in the required assessment course were most helpful in preparing candidates for edTPA, 25 candidates responded that seeing the connection to edTPA early through this project was important. One student responded, “I referenced the work completed in the class to complete task 3. I was very appreciative of the work I completed in this class.” Another expanded on this by stating, “The most helpful thing about the ASL in terms of preparing me for edTPA task 3 would probably be learning how to create a chart for my student work and how to know what to analyze on students work.” Seven students responded that having an exact imitation of edTPA Task 3 in the assessment course would be preferable. One such response was, “Changing it to be exactly what is required on edTPA using the same format and everything.” Being reminded of the project in the assessment course is also important for students. One candidate responded that, “Upon completion of this survey I went and found this assignment. This task would have been helpful with the completion of Task 3, but it would have been beneficial if we had been reminded of this assignment.”

EdTPA Lite was also mentioned repeatedly in the candidate responses. When asked specifically about the assessment course, candidates would often reference edTPA Lite as the single best practice assessment they completed prior to edTPA. This was not surprising given that edTPA Lite most often occurs in the semester before edTPA portfolios are completed. One student commented, “I felt that edTPA Lite in Block II was really the only thing that prepared me for edTPA.”

Need for Direct Instruction

Candidate responses within this theme confirmed the value of learning about assessment fundamentals and also practicing with creating and using assessments through the required

assessment course. Thirty-three responses detailed some aspect of content from the course that was beneficial to completing edTPA Task 3. Candidates described how becoming familiar with assessment vocabulary, such as the difference between formative and summative assessment, was important. One student noted, “Learning the lexicon surrounding assessments” as the most helpful part of the required assessment course in preparing them for edTPA Task 3.

In addition to vocabulary, learning how to give students feedback and practicing providing feedback to students was a prevalent code for this theme. Four candidates explicitly noted the lessons on feedback from the assessment course as the most important thing helping them prepare for edTPA Task 3. One candidate shared that one of the most helpful aspects of the required assessment course was “The discussions in class about what is good feedback versus poor feedback and how to tailor your feedback to the grade level and subject area you are teaching.” Another candidate shared a similar comment that; “learning how to properly write feedback” was the most helpful part of the course.

Another equally prevalent code for this theme was the usefulness of practicing with data displays. Several students mentioned that the creation of charts, as required in the project was helpful. One such comment was, “The most helpful thing about the ASL in terms of preparing me for edTPA Task 3 would probably be learning how to create a chart for my student work and how to know what to analyze on students work.”

Most candidates responded that the entire course was beneficial in their preparation for edTPA Task 3. One commented, “I used powerpoint[s] that were provided in that class, to review and apply to my work inside the classroom. Such as how to give proper feedback, and some rubric making.” Another student exclaimed, “Everything in CI3400 [the required assessment course] was beneficial in one way or another this semester, whether it was in edTPA or in the classroom.”

Need for Personal Connections

Codes within this theme highlighted the role that faculty members play in the experience of teacher candidates through interactions, shared expectations, and modeling. Many candidate responses suggested that connections to faculty were crucial to their perceived success on edTPA. One candidate shared, “I wish the same professor could teach everyone about edTPA because different people in my regional group had different information and ideas of how things were supposed to be done.” Thirty students responded that either their program faculty or a specific instructor helped them directly. Many of these comments referenced course assignments within programs or other ways faculty in programs were preparing them. Three professors were directly named multiple times for aiding students in understanding edTPA Task 3 or in helping them prepare for it. When asked about what helped them prepare for the assessment task one candidate shared that:

Content classes from Dr. Smith’s [pseudonym] ELA class. I used the Learning Intensive project from that class to prepare learning stations. I also used picture books for a topic introduction as used in Dr. Smith’s class, and I implemented workshop times that she modeled and taught on.

Sometimes comments about faculty roles indicated a need for improvement. One student stated, “Meeting with the professor for feedback rather than just a score or minimal comments would help for internalizing the process.” Other students provided comments like, “All of my education

classes prepared me for edTPA, I wish there were more required instead of the literature courses I took.”

EdTPA Scores

EdTPA scores from spring ($n = 238$) and fall 2018, ($n = 175$) were then analyzed using descriptive statistics in order to respond to research question two. Of the 238 students who completed an edTPA portfolio in spring 2018, 10 obtained scores of “incomplete” and were therefore not included in further analyses. For spring 2018, the mean total score on edTPA was 42.45 ($SD = 6.33$) and the mean rubric score for spring 2018 was 2.84 ($SD = .42$). For only Task 3, the mean total score was 14.11 ($SD = 2.90$) and the mean rubric score was 2.83 ($SD = .57$, min = 1.00, max = 4.20) (see Table 2).

Of the 175 students who completed an edTPA portfolio in fall 2018, 11 obtained scores of “incomplete” and were therefore not included in our analysis. The mean total score for fall 2018 was 43.34 ($SD = 5.62$) and the mean rubric score was 2.90 ($SD = .37$, min = 1.93, max = 3.87). For Task 3 only, the mean total score was 14.47 ($SD = 2.62$) and the mean rubric score for Task 3 was 2.90 ($SD = .52$). These scores can be compared against the edTPA (2017) report where the mean for Task 3 was 14.7 ($SD = 3$). See Table 2 for these comparisons.

Using the passing cut score as a measure of our overall candidate performance, 71.05% ($n = 162$) of teacher candidates passed edTPA for licensure in spring 2018 and 80.49% ($n = 132$) of teacher candidates passed in fall 2018. In addition, 22.37% ($n = 51$) of teacher candidates had a “highly qualified” score in spring 2018 and 18.90% ($n = 31$) had a “highly qualified” score in fall 2018.

Assessment Literacy Scores

In order to address research question three, total scores were first computed for the ALI by summing correct answers. A maximum score of 35 is possible and scores for each construct range between one and five. When compared in aggregate, the mean score on the pretest was 17.76 ($SD = 4.34$) and the mean score on the posttest was 23.47 ($SD = 7.37$). These means are low considering a maximum score of 35 is possible. Mertler (2009) also found scores for preservice teachers to be low, attributing this to a lack of teaching experience. In our sample of 62, however, seven participants (11.29%) received a max score of 35 on the post test. When examining the difference between the pre and post test scores using a paired-samples t -test, the difference was found to be statistically significant at the $\alpha = .01$ level ($p < .001$). Scores for the subscale, *Using Assessment Results* were computed by summing the points for correct items within that construct (items 4, 11, 18, 25, 32). On the pretest, the mean score for *Using Assessment Results* was 2.61 ($SD = 1.14$) and on the posttest, the mean score was 3.26 ($SD = 1.29$). The difference in these two means was examined using a paired-samples t -test and this was found to be statistically significant at the $\alpha = .01$ level ($p < .001$). Scores for *Communicating Assessment Results* were computed by summing the points for correct items within that construct (items 6, 13, 20, 27, 34). On the pretest the mean score for *Communicating Assessment Results* was 2.45 ($SD = 1.02$) and on the posttest the mean was 3.27 ($SD = 1.28$). The difference in these two-means was examined using a paired-samples t -test and was found to be statistically significant at the $\alpha = .01$ level ($p = .001$).

TABLE 2
Scores for edTPA in Spring and Fall 2018

	Spring 2018 (<i>n</i> = 228)		Fall 2018 (<i>n</i> = 164)		EdTPA 2016 Scores (<i>n</i> = 34,786)	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
edTPA Mean Total Score	42.45	6.33	43.34	5.62	45.0	6.9
edTPA Mean Rubric Score	2.84	.42	2.90	.52	n/a	n/a
Rubric 11	2.84	.69	2.94	.73	3.0	.8
Rubric 12	3.17	.92	3.35	.74	3.2	.9
Rubric 13	2.58	.77	2.76	.65	2.7	.8
Rubric 14	2.76	.73	2.64	.72	2.9	.7
Rubric 15	2.82	.69	2.82	.72	3.0	.8
Task 3 Total Score	14.11	2.91	14.47	2.62	14.70	3.0

Note. The edTPA 2016 scores are found in EdTPA (2017). Rubrics 11-15 comprise Task 3.

DISCUSSION

When the data from all data sources are triangulated, we were able to conclude that the assessment training that the EPP requires of candidates seems to provide support for the candidate achievement that is evident in edTPA scores and an increase in assessment literacy from pre to post during the required assessment course. The themes that emerged from the qualitative data detailed several important ideas that will be discussed here.

First, candidates do seem to recognize that some effort has been made to scaffold the components of edTPA in advance. Some could see that there were common elements between the projects in the assessment course, edTPA Task 3, and edTPA lite. As a very large and cumulative assessment, edTPA encompasses many disparate components of teaching that may lack connection to novice teacher candidates. It's likely that a veteran teacher could recognize how all of the rubrics on edTPA assess elements of good practice, but this is not as evident to a novice. Teacher candidates are notably academically successful and have to pass the required assessment course with a "C" or better to student teach, however, they still desire and need scaffolding in more overt ways in order to continue to connect concepts from one class to the next and into the classroom.

Candidates also seemed to understand that direct instruction in assessment was a key to enhancing their knowledge and skill as teachers. In particular, candidates noted how the required assessment course, and the projects within that course, supported and enhanced their ability to successfully complete edTPA and specifically assessment Task 3. In addition, candidates seemed to value the assessment content taught in the course. Candidates shared that having an assessment

course provides them with knowledge about assessment fundamentals and practice with assessment skills that often is not found in other places in their program. There is also a language component to assessment that candidates don't naturally embody. In teacher education we often talk about the shift candidates must make from "student" to "teacher." Teacher candidates, as students still themselves, are often not privy to assessment language or "teacher-talk" about assessment until they enter the required assessment course. Giving them a sustained direct instruction experience with regard to assessment knowledge and skill seems to aid in continuing to demystify assessment practice, although in many cases suggestions were made for improvement.

Personal connections to faculty and instructors was a final theme that emerged in our data. It appears in the candidate perception data that teacher candidates who had the most positive experience through the assessment training provided by the EPP and through the edTPA experience had stronger connections to faculty and instructors throughout their program. Candidates shared that it was helpful when faculty were consistently involved in their training and that there was a disconnect when there was inconsistency.

When comparing our overall edTPA scores and Task 3 scores to those reported from edTPA (2017), we found that teacher candidates performed on par with candidates around the country. One-to-one comparisons, however, are inappropriate given the gross difference in sample sizes from the edTPA (2017) report and this study. We do find it substantial, however, that our mean scores on Task 3: Assessment are similar to our scores on Task 1: Planning ($M = 14.27$, $SD = 2.30$) and Task 2: Instruction ($M = 14.28$, $SD = 1.98$). As such, teacher candidates seemed to perform equally as well on Task 3, which is noted to be a difficult task (edTPA, 2017), as they did on Tasks 1 and 2.

This evidence of teacher candidates' ability to perform well on Task 3, and thus succeed in showing evidence of proficiency in skills related to assessing and responding to student learning, is supported by the statistically significant increase in their assessment literacy as a result of the required assessment course. In particular, candidates showed a statistically significant increase in their literacy for *Using Assessment Results* and *Communicating Assessment Results* through their performance on the ALI before and after the required assessment course.

Limitations

As with any research study there are limitations present in this study. First, direct correlations and thus direct impact is difficult to prove between candidate scores on the ALI as a measure of their learning in the assessment course and their scores on edTPA Task 3. The EPP was only in its second year of edTPA as a state-mandated requirement during the time of this study and therefore more time and more strategic data collection efforts are needed to prove causation. Furthermore, our sample of candidates and faculty may not represent the views and perceptions of all candidates and faculty that are exposed to the assessment course and edTPA and in the future we hope to learn from a more representative sample of all candidates and faculty across time.

Recommendations for Teacher Educators

Candidate responses to the survey attest to the importance of scaffolding assessment knowledge and skills; direct instruction, and connections to faculty. Not surprisingly, these are some of the

same pedagogical practices that ensure student achievement in the K-12 classroom. It's easy to forget when the pupils are adults instead of children that the practices we train teacher candidates to embody in the K-12 classroom are the same practices that we should be using with our adult students. As such, our first recommendation is that programs examine their curriculum mapping, their course content, and their staffing policies to ensure that the most optimal conditions are in place for candidates to be successful on edTPA.

One important skill that teacher educators can help develop in their candidates is how to understand various purposes for representing data and how crucial it is to choose the correct representation for the information (Ennis & Witeck, 2008). We found when teaching data analysis, it is important that students are involved in deciding how they can best represent a set of data. The value of having students construct their own graphs is less about learning specific techniques as it is about learning how a graph or other visual representation conveys information (Van De Walle et al., 2013).

Recommendations for EPPs

One truth emerged from our data that caused us to look more critically at ourselves as teacher educators; faculty do not always have the range of skill and expertise needed to fully prepare candidates for edTPA Task 3. Many teacher educators are not adequately prepared themselves to teach all the skills necessary for accurately assessing student learning and developing data literacy in their candidates (Mandinach & Gummer, 2016). For this reason, we recommend faculty teach not only methods courses for their respective majors, but also an assessment course in the EPP. There is value in teaching courses like an assessment course in an EPP in that faculty have a greater grasp on ways to teach students complex assessment concepts and skills, and how those skills are developed over time. Teacher candidates discussed the benefits of interacting with faculty at several points throughout their coursework. Having faculty who teach the methods course also teach the assessment course can build a level of consistency into the student experience that is sometimes lacking.

As teacher educators we are aware that it is impossible to give candidates everything they will need to know when they enter the classroom. There are challenges inherent in teaching candidates how to assess student learning in the classroom and it can be significantly more challenging to teach data analysis, interpretation, and representation skills. Data related competencies include sophisticated skills such as asking the right questions, analyzing and interpreting data, and linking data to classroom practice (Wayman & Jimerson, 2014). These skills take time to acquire and EPPs must develop the foundation for data literacy that will be utilized throughout a teacher's career (Mandinach & Gummer, 2013). EPPs must also integrate data literacy into the curricula and courses (Mandinach & Gummer, 2016). Having a required assessment course for all teacher education candidates has been of great advantage to the EPP. Xu & Brown (2016), in an analysis of 100 studies over three decades on teacher assessment literacy, also found that an assessment course is a highly recommended pathway for developing assessment literacy. Quality assessment courses include carefully selected content aligned with professional standards, well-trained instructors with the ability to make connections between theory and practice, and pedagogies that engage students in critical reflection on assessment (Xu & Brown, 2016).

During our years teaching the assessment course, we found that consistency in assessment language and processes throughout required coursework has helped teacher candidates to feel more prepared and comfortable with completing edTPA Task 3. The core mission of the required assessment course is to increase assessment literacy and the content within the course keeps the focus of classroom assessment on student learning. This is perhaps an obvious distinction for seasoned educators, but for candidates who are transitioning from student to teacher, focusing on what students are learning is remarkably different than focusing on what students got right or wrong on an assessment.

A final recommendation for EPPs is to have an explicit curriculum map identifying where skills are taught and developed related to edTPA Task 3. We know that simply adopting standards for sound assessment practice does not ensure that in practice candidates increase their assessment literacy (Xu & Brown, 2016). Relying on assumptions about where skill development is taking place can be detrimental to the overall candidate experience in an EPP. Our recommendations for a required assessment course as well as intentionally mapping assessment skill development throughout a program are confirmed by DeLuca and Bellara (2013) in their work on aligning standards and accreditation to curriculum in teacher education. We have found that methods courses tend to focus mostly on lesson planning, not analyzing student learning and developing sound assessment practices. This can lead to major gaps in student knowledge if assessment language and practice is not reinforced after students complete the assessment course. Assessment literacy training needs to be approached as a long-term endeavor with opportunities to practice assessment decision making in multiple contexts (Xu & Brown, 2016).

Educators are inundated with student test score data and classroom assessment data that they must make sense of and use for data-driven decisions, many of these high-stakes. Further, teacher candidates will need to find appropriate ways of communicating student performance to a variety of stakeholders. We acknowledge that teaching complex assessment skills will require a substantial amount of time and instructor expertise. Perhaps this is why many teachers have not had the opportunity in their EPPs to develop a foundation in the principles and practices of data analysis that they must now use and/or teach (Franklin & Mewborn, 2006; Mandinach & Gummer, 2016). As teacher educators and researchers, we will continue to consider how to improve candidate mastery of assessment skills and increase assessment and quantitative literacy as part of the bigger picture of producing successful teachers for K-12 classrooms who are advocates for their students and can use data to effectively and efficiently improve student learning.

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APPENDIX A

Sample Questions from the Assessment Literacy Inventory (Mertler & Campbell, 2005)

Subscale: Using Assessment Results

4. Which of the following is an inappropriate use of the results from this standardized math test?
- A. planning instruction
 - B. assigning student grades (Correct Answer)
 - C. determining students' strengths and weaknesses
 - D. developing curriculum

Subscale: Communicating Assessment Results

6. During a parent teacher conference, one of the parents of a student in Ms. O'Connor's class wants to know what it means that his daughter scored in the 80th percentile in mathematics. Which of the following provides the best explanation of this student's score?
- A. She got 80% of the items on the math test correct.
 - B. She is likely to earn a grade of 'B' in her math class.
 - C. She is demonstrating above grade level performance in math.
 - D. She scored the same or better than 80% of the norm group. (Correct Answer)

APPENDIX B

Candidate Survey Questions

- The Analysis of Student Learning (ASL) project in my CI 3400 course adequately prepared me to complete Task 3 of edTPA. (Strongly Agree, Agree, Disagree, Strongly Disagree)
- What was most helpful about the ASL? (Open-Ended)
- What recommendations do you have for improving the ASL? (Open-Ended)
- Were there other things you used to prepare for edTPA Task 3? (Open-Ended)