

TEACHER EDUCATORS' APPROACHES TO ASSESSMENT

by

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Abstract

Teacher educators have the potential to wield tremendous influence in shaping educational reform through the education of teacher candidates. Susan Brookhart, a leading assessment researcher, argues that a primary influence on teacher candidates' assessment capability involves teacher educators' approaches to assessment: "teacher candidates' repertoire of effective teaching practices depends on the beliefs about learning and the approach to assessment espoused by the respective teacher educator" (2016, p. 17). This study examines Canadian teacher educators' approaches to assessment, with particular attention to the relationship between instructional focus (e.g., assessment, curriculum, professional studies) or assessment education model on teacher educators' approaches to assessment.

A quantitative design was used to examine teacher educators' approaches to classroom assessment. Through completion of the Approaches to Classroom Assessment Inventory, teacher educators from nine provinces shared their approaches to assessment in relation to five classroom assessment scenarios. They also reported the degree to which assessment content was integrated into the teacher education courses they instructed.

Results of this study showed that teacher educators' approaches to assessment within discrete themes (i.e., Assessment Purpose, Assessment Process, Assessment Fairness, Measurement Theory), were highly consistent. However, when considering teacher educators' approaches to assessment across Assessment Themes, there was a high degree of variability. Differences in how assessment and curriculum/professional studies educators integrated assessment content into the teacher education courses they instructed were also noted.

Findings from this research serves to inform the development and delivery of teacher assessment education. As this study provides the first examination of Canadian teacher educators' assessment literacy, teacher educators are provided the opportunity to compare their assessment literacy to that of K-12 classroom teachers and teacher candidates. Findings from this study begin to lay the foundation for future studies into the impact of Canadian teacher educators' assessment literacy on teacher education.

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List of Abbreviations

ACAI	Approach to Classroom Assessment Inventory
CATE	Canadian Association for Teacher Education
CERA	Canadian Educational Researchers' Association

Chapter 1

Introduction

Classroom assessment practices are a fundamental component of the standards-based, accountability system of education evident across Canada (Earl, 2012). Due to the pivotal role of assessment practices within this system, there have been increasing demands to further develop teachers' assessment literacy (DeLuca, 2012; Stiggins, 2002; Wyatt-Smith, Klenowski, & Gunn, 2010). Assessment literacy can be conceptualized as teachers' understandings of foundational assessment concepts (i.e., assessment purposes, assessment processes, communication of assessment results, assessment fairness, assessment ethics, measurement theory, assessment for learning, education support for teachers) and how these concepts are implemented during educational decisions (DeLuca, LaPointe-McEwan, & Luhanga, 2015; Popham, 2011). Willis, Adie, and Klenowski (2013) further argued that assessment literacy is a sociocultural construct in which teachers must negotiate their approach to assessment in relation to their teaching context.

Willis et al. state:

assessment literacy is a dynamic context dependent social practice that involves teachers articulating and negotiating classroom and cultural knowledge with one another and with learners, in the initiation, development and practice of assessment to achieve learning goals of students. (2013, p. 2).

In Canada, teachers have been called to develop their assessment literacy through professional standards (e.g. British Columbia Ministry of Education, 2012; Ontario College of Teachers, 2017) and provincial policies (e.g., Manitoba Education, Citizenship & Youth, 2006; Ministry of Education, 2010). Within Ontario, *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools* (Ministry of Education, 2010) places the student at the center of classroom assessment through formative assessment practices (assessment *for* learning,

assessment *as* learning) and in the development of assessments that relate “as much as possible to the interests, learning styles and preferences, needs and experiences of all students” (Ministry of Education, 2010, p. 6). Alberta’s Commission on Learning states “each part of the teaching and learning process should be a positive experience for students and promote personal growth,” Manitoba’s “ultimate goal of assessment is to help develop independent, life-long learners who regularly monitor and assess their own progress,” and the Yukon Department of Education works with “parents and community, strives to develop the whole child... and provide an education appropriate to the individual learner” (Manitoba Education, Citizenship and Youth, 2006, p. viii). While individual provinces have supported the development of teachers’ assessment literacy, the ministers responsible for education in Alberta, British Columbia, Northwest Territories, Nunavut, Saskatchewan, and the Yukon Territory created the pan-provincial The Western and Northern Canadian Protocol (WNCP). In 2006, the WNCP released a classroom assessment policy guide, *Rethinking Classroom Assessment with Purpose in Mind*, (Manitoba Education, Citizenship & Youth, 2006). This policy document seeks to develop teachers’ assessment literacy by presenting a “framework for thinking” (p. viii) that teachers would use to reflect, deliberate, and discuss the intended purpose, the design, and the use of classroom assessments to support effective, efficient, and fair assessment practices.

Research into teachers’ assessment literacy has been heavily influenced by American perspectives, specifically the conceptions and measures of teachers’ assessment literacy. The *Standards for Teacher Competence in Educational Assessment of Students* (AFT, NCME, & NEA, 1990) has provided a longstanding framework for teachers’ classroom assessment practices during a “maelstrom of political, public, and internal pressures” (Cole, 2000, p. 139). The Standards also served as a foundation for research on teachers’ assessment literacy. The *Standards* (AFT, NCME, & NEA, 1990) were built upon seven standards that classroom teachers were expected to be skilled in. There were: (a) choosing assessment methods appropriate for instructional decisions; (b) developing assessment methods appropriate for instructional

decisions; (c) administering, scoring, and interpreting the results of both externally produced and teacher-produced assessment methods; (d) using assessment results when making decisions about individual students, planning teaching, developing curriculum, and school improvement; (e) developing valid pupil grading procedures which use pupil assessments; (f) communicating assessment results to students, parents, other lay audiences, and other educators; and (g) recognizing unethical, illegal, and otherwise inappropriate assessment methods and uses of assessment information.

The *Standards* (AFT, NCME, & NEA, 1990) outlined a set of knowledges and behaviours common to all classroom teachers. Consequently, many instruments were created based upon the *Standards* (AFT, NCME, & NEA, 1990) to measure the assessment literacy of classroom teachers (e.g., Campbell, Murphy, & Holt, 2002; Mertler, 2003; Mertler & Campbell, 2005; Plake, 1993). These instruments conceptualized assessment literacy as a set of “static matching and fixed descriptive frameworks” (Bredo, 1994, p. 24) that were built upon the assumption that assessment is “something that is being done *to* students” (Klenowski, 2009, p. 89).

In 2011, Brookhart noted that the *Standards* (AFT, NCME, & NEA, 1990) failed to address two key areas: the widespread use of formative assessment practices in the contemporary classroom and the diverse assessment contexts faced by classroom teachers within a standards-based educational system. *The Classroom Assessment Standards for PreK-12 Teachers* (Klinger, McDivitt, Howard, Munoz, Rogers, & Wylie, 2015) addresses the changes in assessment landscape since the publication of the *Standards* (AFT, NCME, & NEA, 1990) with six foundational assessment standards: (a) purposeful classroom assessment practices; (b) alignment of assessment practices with learning expectations; (c) designing assessment to clearly allow students to demonstrate learning; (d) engagement of students in assessment process; (e) allocation of appropriate resources for classroom assessment practices; (f) communication of purposes and uses of classroom assessment to students and parents/guardians. While many of these standards

appear to address similar concerns as the *Standards* (AFT, NCME, & NEA, 1990), their overall alignment with contemporary classroom assessment culture in Canada is far more robust. For example, the communication with students and parents/guardians in 1990's *Standards* (AFT, NCME, & NEA) was limited to assessment results while the *Classroom Assessment Standards* (Klinger et al., 2015) communication with students and parents/guardians is expanded to include conveying the purposes, use, and results of classroom assessments. The increased involvement of students and parents/guardians reflects the evolving expectations of what it means for a teacher to be assessment literate in contemporary classrooms.

Despite calls for teacher assessment literacy within assessment standards and provincial policies, several recent studies have highlighted the lack of assessment literacy among teachers, particularly beginning teachers (Klinger, Volante, & DeLuca, 2012; Mertler, 2009; Popham, 2011; Volante & Fazio, 2007). Specifically, research has found that high variability in assessment knowledge of teacher candidates (MacIellan, 2004), and low levels of confidence in assessment responsibilities (DeLuca et al., 2016b; Volante & Fazio, 2007). Researchers have argued that teachers' limited assessment literacy is a result of low levels of assessment education and inconsistent treatment of assessment topics within teacher education programs (Graham, 2005; Volante & Fazio, 2007). Despite the prevalence of assessment education within teacher candidates' education programs (Greenburg & Walsh, 2012), their assessment literacy is constrained by program and institutional factors, as well as teacher educators' limited or inconsistent assessment knowledge (DeLuca & Volante, 2016; Taras, 2008).

Teacher education programs play a central role in teachers' development of assessment literacy. During a teacher education program, teacher candidates are exposed explicitly and implicitly to different conceptions of assessment through coursework, instructor pedagogy, and practicum experiences. As a result of different assessment education models, teacher candidates may be exposed to different conceptions of assessment. Poth (2013) surveyed 23 teacher-education institutions across four Canadian provinces and identified 19 explicit/required

assessment courses, two explicit/optional assessment courses, and two with no explicit assessment course. Within Ontario, DeLuca and McEwen (2007) identified four models of assessment education within teacher education programs: (a) required, explicit assessment courses; (b) required professional studies or curriculum courses with embedded assessment education; (c) elective, explicit assessment courses; (d) elective professional studies or curriculum courses with embedded assessment education. As such, depending on a teacher candidates' exposure to assessment topics and learning opportunities, they may hold vary different understandings about assessment upon completion of their prospective teacher education programs. In addition, even within the same assessment education model, individual teacher educators may hold different conceptions of assessment because how a teacher educator conceptualizes assessment literacy may shape course content and learning opportunities of teacher candidates (Allen & Flippo, 2002).

As all Canadian teacher candidates must graduate from a teacher education program prior to securing a position in the public education system, it is critical to understand the development of teacher candidate assessment literacy during teacher education (DeLuca, Chavez, Bellara, & Cao, 2013). Without an understanding of how teachers develop assessment literacy in teacher education programs, leveraging teacher education programs to more purposefully prepare assessment literate teachers in an efficient and effect manner is a formidable challenge.

To date, the majority of assessment literacy research has focused on teachers, both classroom teachers (Harris & Brown, 2009; Mertler, 2003; Plake 1993) and teacher candidates (Brown, 2004; Siegel & Wissehr, 2011; Volante & Fazio, 2007). In contrast, there has been little research on teacher educators' conceptions of assessment and their influence on teacher candidates' learning (Goodwin & Kosnik, 2013; Placier, 1995). Brookhart (2016), a leading assessment researcher, argues that a primary influence on teacher candidates' assessment capability involves teacher educators' approaches to assessment: "teacher candidates' repertoire of effective teaching practices depends on the beliefs about learning and the approach to

assessment espoused by the respective teacher educator” (p. 17). Despite this potential influence, few studies have empirically examined the impact of teacher educators’ approaches to assessment on teacher candidates’ assessment capability (Brookhart, 2016; Popham, 2013). Therefore, researchers call for systematic studies into effective models of assessment education (Poth, 2013) with a focus on understanding the influence of teacher educators’ approaches to assessment (Brookhart, 2016).

In this study, I will use the *Approaches to Classroom Assessment Inventory (ACAI)*, a new instrument based on contemporary assessment standards, to examine the approaches to assessment held by teacher educators across Canada. This study will address the following two research questions:

1. How do teacher educators’ approaches to assessment vary between teacher education programs with different assessment education models?
2. How do teacher educators’ approaches to assessment vary between those that teach explicit assessment courses and those that teach curriculum or professional studies courses?

Significance of Study

Teacher educators have the potential to wield tremendous influence in shaping educational reform through the education of teacher candidates (Brookhart, 2016; Cochran-Smith, 2003; Goodwin & Kosnik, 2013). Despite the focus upon quality of teacher preparation within the educational discourse, “teacher educators are in general an under-researched and poorly understood occupational group” (Murray, 2005, p. 68). Understanding how teachers develop assessment skills and knowledge will allow teacher education programs to more effectively and efficiently prepare assessment capable teachers (Popham, 2009, 2013). This research will be one of the first systematic studies to contribute empirical evidence on Canadian teacher educators’ approaches to assessment and will provide a theoretical foundation for further examination of the development of teacher candidates’ assessment literacy. The overall aim of this area of research is

to enhance the quality of assessment in Canadian schools and classrooms, ultimately supporting student learning and achievement.

Overview of Thesis

This thesis is divided into five chapters. Chapter one introduces the research context for this thesis, the purpose of this study, and the guiding research questions. Chapter two is a review of relevant literature to provide a theoretical foundation for this study. Chapter three outlines the methods used to address the research questions. Chapter four describes the results of this study. Chapter five provides a discussion of key findings, discusses the limitations of this study, and outlines possible directions for future research.

Chapter 2

Literature Review

This literature review is divided into four sections. The first section explores the multiple ways in which assessment literacy has been conceptualized over time including the traditional, extended, and sociocultural conceptions of assessment literacy. The second section of research examines existing measures of assessment literacy, most often aligned with the traditional or extended conceptions of assessment literacy. The third section of this literature review focuses on the development of assessment literacy in teacher education programs, with emphasis placed upon the different models of teacher education and the influences on the development of teacher candidates' assessment literacy. The final section provides an overview of teacher education program accreditation policies of selected Canadian provinces' in order to situate teacher educators' approaches to assessment within the larger aims of provincial education systems. Integrating these four areas of research will provide an overview of teacher assessment literacy measures while situating this study within the current Canadian teacher education context.

Conceptualizing Assessment Literacy

Conceptions of *assessment literacy* have shifted over time and in relation to theoretical and practical developments in the field of educational assessment. Through this examination of assessment literacy concepts, implications for contemporary classroom assessment practices can be examined within a broader educational context. Three conceptions of assessment literacy considered in this study are: traditional assessment literacy, an expanded conception of assessment literacy, and a sociocultural conception of assessment literacy.

The first conception of assessment literacy, which in this study will be called traditional assessment literacy, is conceptualized as a collection of static skills and knowledge related to assessment that all classroom teachers need to possess (Bredo, 1994; Stiggins, 1991). This

traditional conception of assessment literacy can be seen in the 1990 *Standards* (AFT, NCME, & NEA, 1990) and the subsequent studies that built upon these standards (Campbell et al., 2002; Mertler, 2003; Mertler & Campbell, 2005; Plake, 1993).

This traditional conception of assessment literacy is built upon understanding test creation and use, understanding of statistics and one's knowledge and technical skills in assessment creation (Popham, 2011). A traditional conception frames assessment literacy as a set of "static matching and fixed descriptive frameworks" (Bredo, 1994, p. 24) and is built upon the assumption that assessment is "something that is being done *to* students" (Klenowski, 2009, p. 89). The *Standards* (AFM, NCME, & NEA, 1990) provided a seminal basis for defining the skills and knowledge related to assessment, demarcating a traditional conception of assessment literacy. As previously discussed, the *Standards* (AFM, NCME, & NEA, 1990) were designed on seven principles that classroom teachers were expected to be skilled in. Assessment literacy, conceptualized by the *Standards*, became a set of knowledges and behaviours common to all classroom teachers. The Teacher Assessment Literacy Questionnaire (TALQ; Plake, 1993) is an example of an instrument designed to measure this traditional conception of assessment literacy. The aim of the TALQ was to "measure teacher competency levels in the educational assessment dimensions specified in the *Standards*" (AFT, NCME, & NEA, 1990; Plake, 1993). While the *Standards* (AFT, NCME, & NEA, 1990) described broad areas of assessment activities for classroom teachers, the TALQ does not account for the appropriateness of these activities across a range of educational contexts.

As previously discussed, Brookhart (2011) lobbied two important critiques of the *Standards* (AFT, NCME, & NEA, 1990) in that they lacked current conceptions of formative assessment practices and the diverse assessment contexts faced by classroom teachers within a standards-based educational system. In addition, the traditional conception of assessment literacy does not align strongly with the current assessment culture in Canadian classrooms that promotes teachers and students working together to improve learning through assessment (i.e., assessment

for learning, assessment as learning; Klinger et al., 2015). As a consequence of these critiques, a second conception of assessment literacy was established.

The second concept of assessment literacy, in this study called the expanded conception of assessment literacy, includes notions of formative assessment (i.e., assessment for learning, assessment as learning) and focuses upon a student-centered approach to classroom assessment practices and less on a prevailing set of skills and knowledge. The *Classroom Assessment Standards* (Klinger et al., 2015), Brookhart (2011), Popham (2011) and numerous other educational researchers advocate for this conception of assessment literacy.

The *Classroom Assessment Standards* (Klinger et al., 2015) addressed changes in the assessment landscape since the publication of the *Standards* (AFT, NCME, & NEA, 1990). The shift away from the traditional conception of assessment literacy toward an expanded conception of assessment literacy can be seen in the six Foundation standards, five Use standards, and five Quality standards of the *Classroom Assessment Standards*.

The Foundation standards are primarily focused upon assessment purpose, fairness, and student and parent/guardian engagement in the assessment process. Within the Foundation standards, formative assessment is used to “inform teachers and students about progress on learning intentions and to inform and direct subsequent learning and teaching” (Klinger et al., 2015, p. 2) while the *Standards* (AFT, NCME, & NEA, 1990) places a heavier focus on “monitoring pupil progress... [and] identifying gains and difficulties pupils are experiencing” (AFT, NCME, NEA, 1990, p. 3). During assessment practices “consideration should be given to the consequences of the decisions made” (Klinger et al., 2015, p. 2) while in the *Standards* (AFT, NCME, & NEA, 1990) frames the consequences of assessment practice in a teacher-centric manner by having teachers become “well-versed in their own ethical and legal responsibilities in assessment” (AFT, NCME, & NEA, 1990, p. 6).

The Use standards pertain to the process of classroom assessment, in particular feedback, reporting, and using formative and summative assessments. Unlike the *Standards* (AFT, NCME,

& NEA, 1990), formative assessment practices are an integral component of classroom assessment practices. However, the inclusion of formative assessment within the *Standards* (AFT, NCME, & NEA, 1990) is not due to the exclusion of summative assessment practices. Five of the six Use standards specifically address both formative and summative practices with the remaining standard concerned with only formative assessment practices. In particular, *U4 Grades and Summary Comments* minimizes the dichotomy of formative and summative assessment practices by indicating that final grades, a prominent component of summative assessments, can be used to help “guide teachers in preparing subsequent instruction” (Klinger et al., 2015, p. 19), an important concept in formative assessment.

The Quality standards encompass notions of assessment fairness and measurement theory. Many of the concepts addressed within these standards (i.e., reducing or eliminating assessment bias, considerations for assessing students with exceptionalities, valid assessment decisions, reliable assessment practices) are also found with the *Standards* (AFT, NCME, & NEA, 1990). However, the inclusion of teacher reflection on the impact of his/her assessment practices in the classroom is a key distinction between the two sets of standards and highlights the shift towards a student-centered classroom practices within the *Classroom Assessment Standards* (Klinger et al., 2015).

While the *Classroom Assessment Standards* (Klinger et al., 2015) have addressed changes in contemporary classroom assessment (i.e., formative assessment, student-centered assessment), the importance of a specific classroom context in which these assessment standards are utilized has been overlooked. The assumption of the *Classroom Assessment Standards* (Klinger et al., 2015) is that the standards form a “consensus on what constitutes sound principles that guide the fair assessment of students and foster learning in the PK-12 classrooms” (pg. 3). Consequently, there is very little guidance on adapting the standards to a teachers’ specific educational context (i.e., grade, subject, student population) with the only explicit mention in relation to reporting student grades according to local policies. Additionally, while many

standards discuss adapting assessment based upon student' experience and knowledge, there is no mention of how a teacher's assessment knowledge or teaching experience could influence the assessment practices within their classroom.

The third phase of conceptualizing assessment literacy, in this study called a sociocultural conception of assessment literacy, addresses the shortcomings of the expanded conception by focusing more heavily upon relationship between teacher, student, and educational context. Researchers who support a sociocultural conception of assessment include DeLuca et al (2016b), Klenowski (2009), and Willis et al (2013).

A sociocultural conception of assessment literacy views assessment as something that is “done *with* and *for* students” (Klenowski, 2009, p. 89). Willis et al (2013) used a sociocultural perspective to further expand this definition by framing assessment literacy as “a capability that is situated, and needs to be understood, within the assessment culture and policy context of the community” (Willis et al., 2013, p. 9). Classroom teachers' assessment literacy is dependent upon the relationships between the teacher, student, and the policy context, not a set of pre-defined abilities that needs to be mastered. As a possible consequence of the focus upon educational context, there is no set of standards that have been developed to align with a sociocultural conception of assessment literacy.

The development and adoption of the three conceptions of assessment literacy represent a shift in understanding of classroom assessment practices by teachers, students, policy-makers, and educational researchers. A traditional conception of assessment literacy that values test use, question creation, technical knowledge and viewed assessment as a teacher-centric activity has been slowly supplanted by the expanded conception of assessment literacy due to a growing body of research that demonstrated the value of formative assessment practices on student learning. As a consequence of the prevalence of formative assessment practices within the classroom, assessment has become primarily a student-centered activity. The sociocultural conception of assessment literacy, while supporting formative assessment practices and student-centered

assessment, represents a more rounded understanding of classroom assessment by placing an increased importance on the teacher-student learning dynamic by situating assessment practices in the context of both the classroom and the wider educational context.

Measuring Assessment Literacy

Teachers' assessment literacy has been predominantly studied using quantitative measures predicated on the 1990 *Standards* (AFT, NCME, NEA, 1990) and thus reflect a traditional view of assessment literacy (DeLuca et al., 2015; Gotch & French, 2014). A series of related traditional assessment literacy studies (e.g., Campbell et al., 2002; Mertler, 2003; Mertler & Campbell, 2005; Plake, 1993) were created to measure and score teacher knowledge according to the *Standards* (AFT, NCME, & NEA, 1990). As a consequence of focusing upon traditional assessment literacy, many of these studies were created to compare and contrast differences between the traditional assessment literacy of classroom teachers and teacher candidates.

Plake et al. (1993) developed and administered the Teacher Assessment Literacy Questionnaire (TALQ) to 555 classroom teachers from 98 school districts in the United States completed the instrument. Classroom teachers performed best on items related to the administering, scoring, and interpreting assessment results and selecting appropriate assessment methods and poorly on communicating assessment results and using valid grading procedures. Overall, classroom teachers answered on average 23 out of 35 items correctly, suggesting that participants lacked traditional assessment literacy. Campbell et al (2002) used the Assessment Literacy Inventory (ALI) (an identical instrument to the TALQ) to examine assessment literacy of 220 preservice teachers. Preservice teachers scored similarly across the entire instrument than the in-service teachers in the previous study (21 out of 35 compared to 23 out of 35, respectively). Mertler (2003) used a slightly modified version of the TALQ to make a limited comparison between teacher candidates (n=7) and classroom teachers (n=155) with a similar trend appearing with classroom teachers scoring higher than teacher candidates across the entire instrument.

Mertler and Campbell (2004) examined assessment literacy of both classroom teachers and teacher candidates using the Classroom Assessment Literacy Inventory (CALI). The CALI differed from previously described instruments as questions were based upon described assessment scenarios, although still with correct and incorrect responses. Despite the contextualized nature of the instrument, similar patterns of responses were detected between the 67 teacher candidates and 197 classroom teachers surveyed with classroom teachers scoring slightly higher across the entire instrument (19 out of 35 compared to 22 out of 35).

In the studies by Plake (1993), Campbell et al., (2002), Mertler (2003), Mertler & Campbell (2004) the assessment literacy of teacher candidates and classroom teacher assessment appeared quite similar. While these instruments measured assessment knowledge, their validity has been questioned given the evolving accountability context across educational systems, namely the emergence of standards-based, assessment driven teaching and learning. Nor do they heed contemporary conceptions of assessment literacy predicated on sociocultural understandings and participatory approaches to assessment (Brookhart, 2011; Willis, Adele, & Klenowski, 2013). Also, there is little evidence that a higher score on these instruments equates to more effective classroom assessment practices. As shown in previous research, classroom teachers have a tendency to revert back to assessment practices that they experienced as students, not to practices driven by assessment knowledge they have gained as educators (Pajares, 1992).

More recent measures of assessment literacy have incorporated the expanded view of assessment literacy. These studies have tried to address some of the limitations of traditional assessment literacy instruments by focusing more upon the conceptions of assessments instead of assessment knowledge and skills thus allowing for teachers' variable understandings towards assessment as legitimate stances.

The work of Brown and colleagues has examined conceptions of assessment in a variety of contexts through the use of Teachers' Conceptions of Assessment (COA; Brown, 2004). The COA was originally centered on four conceptions of assessment: (a) improvement of teaching

and learning, (b) school accountability, (c) student accountability, and (d) treating assessment as irrelevant. The COA and its subsequent iterations have been used in a wide-variety of contexts to explore conceptions of assessment of classroom teacher and teacher candidates.

In a study by Brown (2004), 525 primary teachers from across New Zealand completed the COA-III. This 50-item questionnaire was designed to identify teachers' agreement or disagreement with the four conceptions of assessment. In this population, teachers agreed with assessment as a tool for the improvement of teaching and learning and school accountability and disagreed that it was for student accountability or was irrelevant. In a similar finding to many of the measures of traditional assessment literacy, there were no statistical differences by teacher demographics, including level assessment training or reported assessment practices of teachers.

Harris and Brown (2009) re-examined teachers' conceptions of assessment in New Zealand after several years of government initiatives designed to support teachers' use of assessment for learning had passed since a previous study (Brown, 2004). Using the COA-III, classroom teachers identified the purpose of assessment as primarily for school accountability and the improvement of teaching and learning. Possibly due to small sample size (n=161), all the four conceptions of assessment were more equally supported than in the Brown's 2004 study.

Hirschfeld & Brown (2009) focused on the conceptions of assessment held not by teachers as in the Brown (2004) or Harris & Brown (2009) studies, but by secondary students. In this study, students' (n=3469) conceptions of assessment purpose were that assessment (a) improves student achievement and learning, (b) holds students accountable, (c) is irrelevant, and (d) is enjoyable. As these four conceptions were different than those used in studies directed towards teachers, a modified version of the COA, the Student Conceptions of Assessment (SCOA), was developed. These studies (Brown, 2004; Harris & Brown, 2009; Hirschfeld & Brown, 2009) represent one of the first attempts to compare conceptions of assessment between students and teachers within the same educational jurisdiction. A possible reason for the alignment in beliefs of over 5000 students and almost 700 teachers that assessment is for the

improvement of student learning may be the influence of educational policies, particularly those relating to classroom assessment.

Teacher candidates' conceptions of assessment purpose were also examined through a version of the Teachers' Conceptions of Assessment (TCOA; Brown & Remesal, 2012). In this study, the conceptions of teacher candidates from New Zealand (n=324) and Spain (n=672) did not match the original four conceptions determined by examining the classroom teacher population in New Zealand (Brown, 2004). Teacher candidates from New Zealand and Spain primarily supported conceptions of assessment as a means to improve student learning and teaching as well as assessment as a means to grade students.

Interestingly, when a version of the COA was administered to teachers in China, a markedly different culture and accountability system, assessment as a means to hold students accountable was not a supported conception of assessment (Brown, Hui, Yu, & Kennedy, 2011). A possible reason provided by the authors of this study was that in the Chinese educational context, accountability is primarily concerned with "controlling schools, teachers, and students; not simply determining how good they are" (Brown et al., 2011, p. 314).

Taken together, the results of Brown (2004), Brown & Remesal (2012), and Brown et al (2011) indicate widespread differences between teachers' conceptions of assessment purposes across educational systems while students' and teachers' conceptions of assessment purposes within similar educational cultures (e.g., Daniels, Poth, Papile, & Hutchinson, 2014; Brown, 2004; Harris & Brown, 2009) were similar. The findings from these studies appears to suggest that the students' and teachers' conceptions of assessment purpose may have more to do with the educational context than individual knowledge and experience.

Perhaps due to the recent development of a sociocultural conception of assessment literacy (Klenowski, 2009) or the difficulty in creating an instrument to measure the sociocultural conception of assessment literacy, there is limited empirical research in this area. A prominent instrument predicated upon a sociocultural conception of assessment literacy is the Approach to

Classroom Assessment Inventory (ACAI) (Coombs, DeLuca, & LaPointe-McEwan, 2017; DeLuca, Coombs, & LaPointe-McEwan, 2017; DeLuca et al., 2015; DeLuca et al., 2016a; DeLuca et al., 2016b).

The ACAI was based on *The Classroom Assessment Standards for PreK-12 Teachers* (Klinger et al., 2015) and an analysis of 15 contemporary assessment standards (i.e., 1990-present) from six countries/regions (Australia, Canada, Europe, New Zealand, United Kingdom, & United States) and eight measures of assessment literacy (DeLuca et al., 2015). From this analysis, four themes of assessment literacy were identified: (a) Assessment Purposes, (b) Assessment Processes, (c) Assessment Fairness, and (d) Measurement Theory (DeLuca et al., 2016a). Each theme is associated with three approaches. For example, approaches to Assessment Purpose are assessment *of* learning (i.e., summative assessment), assessment *for* learning (i.e., teacher and student guided formative assessment), and assessment *as* learning (i.e., fostering student metacognition).

Using the ACAI, DeLuca et al (2016b) examined the assessment literacy of classroom teachers and teacher candidates (n=404) from across Canada and the United States. A key finding from this study was the influence of classroom experience on approaches to assessment, particularly in regards to Assessment Fairness with more experienced teachers prioritizing a differentiated approach than less experienced teachers.

Based upon this finding, DeLuca et al (2017) conducted a detailed examination of 727 teachers' approaches to assessment across four career stages: (a) initial teacher candidates (i.e., at the start of a teacher education program), (b) beginning in-service teachers (i.e., post-teacher education program), (c) novice in-service teacher (in-service teacher with five years or less years' experience), and (d) established in-service teacher (in-service teacher with greater than 5 years' experience). While a high degree of consistency of teachers' approaches to assessment was noted (e.g., 44.8% of teachers prioritized an assessment *for* learning approach to Assessment Purpose, 48.7% of teachers prioritized a differentiated approach to Assessment Fairness), the influence of

two career stages, initial teacher education and initial classroom experiences, were of particular importance. The influence of teacher education programs was primarily upon teachers' approach to Assessment Fairness (increasing teachers' support for an equitable approach) and Measurement Theory (increasing teachers' support for the validity of classroom assessments). The influence of initial classroom teaching experience was primarily upon teachers' approach to Assessment Purpose (increasing support for assessment *for* learning) and Assessment Fairness (increasing support for teachers to simultaneously prioritize a *standard* and *differentiated* approach).

The relationship between teachers' approaches to assessment and their beliefs about learning and intelligence has also been explored using the ACAI (DeLuca et al., 2017). In 2006, Dweck summarized years of psychological research (Blackwell, Trzesniewski, & Dweck, 2007; Dweck, 2006; Dweck & Leggett, 1988; Sternberg, Conway, Ketron, & Bernstein, 1981) describing the impact of mindset on performance and learning. Based on that research, she defined mindset as the implicit belief of the malleability of ability, intelligence, and talent. She further characterized mindset by situating individuals' beliefs on a continuum from a growth mindset (i.e., intelligence is entirely malleable) to a fixed mindset (i.e., intelligence is entirely fixed). DeLuca et al (2017) combined the ACAI and Dweck's Theory of Intelligence Inventory into a single instrument to examine the relationship between mindset and the approaches to assessment of pre-service teachers (n=396). Important findings from this study were that pre-service teachers with a growth mindset prioritized an assessment *as* learning approach to Assessment Purpose and a *differentiated* approach to Assessment Fairness while teachers with a mixed mindset (residing on the mindset continuum between growth and fixed) prioritized an assessment *for* learning approach to Assessment Purpose and an *equitable* approach to Assessment Fairness.

Studies using the ACAI have focused on the conceptions of assessment of pre-service/in-service teachers. As the ACAI is not designed for K-12 student use, examining the conceptions of

assessment of Canadian students is extremely difficult. However, the assessment scenarios within the ACAI are purposefully designed to align with a socio-cultural conception of assessment literacy, making them ideally suited to teachers from a variety of K-12 contexts in addition to teacher educators from within teacher education programs.

Measures of traditional, extended, or sociocultural conceptions of assessment literacy have been principally used to examine differences between teachers based upon career stage (e.g., pre-service vs. in-service, experienced vs. novice). While instruments predicated upon contrasting conceptions of assessment have necessarily drawn different conclusions regarding the assessment literacy of teachers, these studies have continued to illuminate key differences between pre-service and in-service teachers. While the importance of teacher education programs on the development assessment literacy of pre-service teachers is widely studied (Bachor & Baer, 2001; DeLuca et al., 2013; Graham, 2005; Volante & Fazio, 2007), how these programs specifically shape pre-service teachers' assessment literacy has not been clearly characterized.

Developing Assessment Literacy During Teacher Education

Research indicates that teachers develop conceptions of assessment throughout their experiences as students (Lortie, 1975; Pajares, 1992; Volante & Fazio, 2007), as teacher candidates (Bachor & Baer, 2001; DeLuca et al., 2013; Graham, 2005; Volante & Fazio, 2007), and as classroom teachers (Klinger et al., 2012; Newmann, Secada, & Wehlage, 1995). Initially, through an “apprenticeship of observation” (Lortie, 1975), future teachers develop conceptions of assessment purpose (i.e., assessment for learning, assessment as learning), assessment processes (i.e., design, scoring), and assessment fairness (i.e., standard treatment, differentiated treatment) as they experience assessments throughout their own K-12 education. These experiences with classroom assessment form the foundation of teachers' conceptions of assessment (Daniels et al., 2014). Understanding how teachers' conceptions of assessment shift from those held as a student to those held as a classroom teacher is critical to understanding the needs of assessment education in a teacher education program (DeLuca et al., 2013; Graham, 2005).

Teacher candidate assessment education can be divided into four models (DeLuca & Bellara, 2013). The first model involves explicit assessment education in the form of a full year course, half-year course, or module. Programs that use this model all have a dedicated course on classroom assessment, either optional or required, that covers content that stretches across grades and curriculum. The second model of assessment education does not have an explicit course in classroom assessment. Instead, the primary source of assessment education is embedded within curriculum, educational foundation, or professional studies courses. These courses, either optional or required, are intended to embed assessment practices within the subject or context where teacher candidates will use them.

In Canada, teacher education programs with explicit assessment education are more numerous than the embedded assessment model. As previously discussed, Poth (2013) surveyed 23 teacher-education institutions across four Canadian provinces and identified 19 explicit/required assessment courses, two explicit/optional assessment courses, and two with no explicit assessment course. In a previous study, DeLuca and McEwen (2007) identified only three of ten teacher-education programs in Ontario had explicit/required assessment courses. Research into how teacher candidates' conceptions of assessment develop within different models of assessment education is limited. While many studies have compared teacher candidates across programs, these studies tend to rely upon a traditional definition of assessment literacy (Campbell et al., 2002; Mertler, 2003; Mertler & Campbell, 2005; Plake, 1993) and/or have focused on individual teacher training programs or courses (DeLuca & Klinger, 2010; Volante & Fazio, 2007).

Poth's (2013) study identified variations between assessment education models of teacher education programs and in learner outcomes of assessment education courses. For example, 12 intended learner outcomes (i.e., develop communication skills for reporting achievement, discuss innovative/authentic assessment approaches) were identified, none of which were present in all programs. In total, 25 instructional topics (i.e., measuring achievement, report cards) were also

identified with only two (identifying assessment purpose and measuring achievement) common to all programs. This study appears to indicate a high degree of variability in assessment education learning opportunities across teacher education programs.

While there is general consensus among teacher educators and educational researchers that K-12 teaching is a complex endeavor requiring specialized skills and knowledge, this notion does not seem to have been widely extended to instructing within teacher education programs (Goodwin & Kosnik, 2013). While contemporary discussions on improving classroom teacher quality have rightly focused on teacher preparation, there is a “notable silence” (Goodwin & Kosnik, 2013, p. 334) on the preparation of teacher educators (Martinez, 2008). A possible reason suggested by Koster, Brekelmans, Korthagen, & Wubbels (2005) for a lack of research on teacher educators “could be that researchers tend to study other groups more than themselves, so teacher educators as researchers tend to study teachers more than teacher educators” (p. 160).

Research on teacher educators, which is often either self-study (Bullock & Christou, 2009; Grant & Gillette, 2006; Zeichner, 2005) or is drawn upon the experiences of small numbers of teacher educators (Cochran-Smith, 2003; Korthagen, Loughran & Lunenberg, 2008), has been primarily used to examine teacher educators’ articulation of teaching philosophy, pedagogical content knowledge, and other key domains of knowledge (Goodwin, 2010; Goodwin & Kosnik, 2013; Grant & Gillette, 2006). While this research has highlighted teacher educators’ variable knowledge, pedagogy, and beliefs about learning, its influence on pre-service teachers’ is not fully understood (Donche & Petegem, 2011). Furthermore, the variability of the learning environment for pre-service teachers is further exacerbated by a lack of a unified assessment education policy across provinces. While pan-provincial organizations (i.e., The Western and Northern Canadian Protocol for Collaboration in Education) have been created, they have focused primarily upon classroom assessment practices, not teacher education programs (Poth, 2013). Consequently, how teacher educators’ approaches to assessment have shaped the learning

experiences, knowledge, and beliefs of pre-service teachers must be examined in light of the accreditation policies of teacher education programs within provinces.

Canadian Assessment Education Policy

The variability of pre-service teachers' learning opportunities due to teacher educators' variable content knowledge and pedagogy and the different models of assessment education is tempered by the need for teacher education programs to adhere to accreditation standards for teacher certification. In Canada, the accreditation of teacher education programs falls under the jurisdiction of provinces. In this section, I have summarized the teacher education accreditation requirements for three provinces in order contextualize teacher educators' approaches to assessment within the larger aims of provincial education systems. An analysis of publically available accreditation policies for teacher education programs within the three most-populous provinces (British Columbia, Ontario, and Quebec) indicated a variable assessment education standards and guidelines. The approaches to assessment prioritized by each governing body were examined in light of foundational assessment concepts (assessment purpose, process, fairness, and measurement theory). As evident from this summary, the emphasis on assessment varies between provinces but most commonly focusing upon formative assessment, fair assessment practices, and high levels of communication between teachers, students, and parents.

British Columbia

The British Columbia Teachers' Council (BCTC), the organization responsible for the accreditation of teacher education programs, uses the *Standards for the Education, Competence & Professional Conduct of Educators in British Columbia (Standards; Ministry of Education, 2012)* to accredit teacher education programs. The *Standards* (Ministry of Education, 2012) outline eight "standards of practice and conduct that guide teacher education... and the certification of applicants" (p. 3) that emphasized the individuality of students, effective teaching practices, knowledgeable and ethical teachers, and a commitment to the teaching profession. The approaches to assessment outlined in the *Standards* are general guidelines that do not explicitly

discuss assessment practices. What is clear is that newly certified teachers should prioritize “communicating effectively and in a timely manner with parents and consider their advice on matters pertaining to their children” (p. 3). Approaches to assessment purpose, fairness, or measurement theory were not addressed.

Ontario

The Ontario College of Teachers (OCT) outlines the accreditation criteria for teacher education programs in the *Accreditation Resource Guide* (Ontario College of Teachers, 2013). This document is a companion to the *Ontario Regulation 347/02 Accreditation of Teacher Education Programs* (Ontario College of Teachers, 1996), but includes examples and further details of the accreditation process. According to the *Accreditation Resource Guide*, teacher education programs must be built upon foundational knowledge that is “evidence based and practice informed,” (p. 3), expects teachers to “work from an asset-based approach for their students,” (pg. 3), and that programs will develop an explicit and strong links between theory and practice.

In regards to assessment education in particular, teacher education programs should enable pre-service teacher to understand “the importance of teachers taking an assessment *for* learning and *as* learning approach to their own professional learning” (p. 9), to refine classroom assessments based upon data “in pursuit of greater precision and personalization for learners” (p. 8), and ensure “the success for all students” (p. 4). The emphasis of the OCT policy is for pre-service teachers to focus on formative assessment practices (i.e., assessment *for/as* learning) while emphasizing a differentiated approach to assessment.

Quebec

Comité d’agrément des programmes de formation à l’enseignement (Accreditation Committee for Teacher Education Programs; CAPFE) outlines the guiding principles of teacher education in *Teacher Training* (Government of Quebec, 2001). The CAPEE describes how teacher education programs should support the professionalization of teaching, teaching from a

cultural perspective, and the development of specific professional competencies. Profiles of newly certified teachers based upon these competencies are also detailed by subject and grade level so that “universities will be required to offer a teacher training program that provides future teachers with professional competencies specific to the teaching profession” (p. 160).

Assessment practices or knowledge are not explicitly addressed in *Teacher Training*. However, the approaches to assessment supported by CAPFE are evident through the selection of core professional competencies and the generation of competency profiles of newly certified teachers. The CAPFE policy appears to promote assessment *for* learning and assessment *of* learning approaches to Assessment Purpose with teachers expected to shape future teaching practices based upon feedback from students (p. 74) and to “evaluate student progress in learning the subject content” (Core Competency #5; p. 83). Although the designing and scoring of assessment is discussed, communication is emphasised with two core professional competencies explicitly addressing the need to prioritize communication with students (Competency #2) or with school staff, parents, community members, and students (Competency #9). An equitable approach to assessment practises is well supported by CAPFE, with teachers expected to “adapt his or her teaching [practice] to the needs and characteristics of students with learning disabilities, social maladjustments or handicaps” (Core Competency #7, p. 93).

Accreditation standards provide a unifying framework for teacher education, but only within provinces. Despite the need to adhere to these policies to ensure accreditation, approaches to assessment supported by these documents are vaguely described and fail to encompass the multiple dimensions of assessment literacy. Consequently, teacher educators are provided with a large degree of freedom to espouse their personal approaches to assessment, further contributing to the variability of pre-service teacher assessment education.

Literature Summary

Shifts in conceptions of assessment literacy represent changes in how assessment practices have been integrated within Canadian classrooms. The increasing prominence of

student-centered formative assessment practices, coupled with a growing body of research that strongly supports the influence of the teacher-student-classroom context dynamic on student learning and achievement, has contributed to the development of a sociocultural conception of assessment literacy. Measures of sociocultural assessment literacy have used contextualized assessment decisions (i.e., assessment scenarios) to examine not the assessment knowledge of teachers but their approaches to assessment. While research has strongly linked the influence of teacher education programs on the development of teachers' approaches to assessment, the influence of teacher educators on pre-service teachers' assessment literacy has been overlooked. As DeLuca et al (2013) noted, "what remains absent from the literature on assessment education is an understanding of the pedagogy conditions that support teacher candidates' assessment literacy development" (p. 129), particularly the influence of teacher educators' approaches to assessment (Brookhart, 2016). This study aims to beginning filling in that gap by examining the approaches to classroom assessment held by teacher educators

Chapter 3

Method

A survey method was used in this study to analyze Canadian teacher educators' approaches to classroom assessment. The following research questions were addressed:

1. How do teacher educators' approaches to assessment vary between institutions with different assessment education models?
2. How do teacher educators' approaches to assessment vary between those that teach explicit assessment courses and those that teach curriculum or professional studies courses?

Sample & Recruitment

A criterion sampling design was used to identify and select teacher educator participants for this study. The criteria for participation included:

- (a) teacher educators were associated with a Canadian teacher education program and
- (b) he/she instructed teacher education course(s) during the 2016-2017 academic year.

Teacher educators were contacted either through emails sent to administrators of teacher education programs, which were then forwarded onto teacher educators at their institutions or directly through publically available emails accounts linked to the approximately 670 members of Canadian Association for Teacher Education (CATE) and 310 members of the Canadian Educational Researchers' Association (CERA) LISTSERVs (Appendix A for recruitment scripts). Of the 55 teacher education programs in Canada (Gambhir, Broad, Evans, & Gaskell, 2008), the administrators of 38 programs were contacted via their publically available emails (contact information for administrators of 17 programs were not publically available). Due to this recruitment approach, it was impossible to track the number of teacher educators who received the invitation to complete the survey and hence an accurate response rate cannot be calculated.

The initial sample consisted of 171 participants with 108 teacher educators completing the ACAI. Of the 108 responses analyzed, 46 participants were directed to the study via emails from administrators while 62 participants were directed to the study either through their administrator or through the CERA and CATE LISTSERVs. Completion of the ACAI was optional and all participants provided consent prior to completing the ACAI. Ethical clearance for this study was provided by the General Research Ethics Board of Queen's University (Appendix B).

The final sample consisted of teacher educators from 28 institutions across nine provinces in Canada (Appendix C). Institutions represented in this study by province were: Ontario (n=7), Alberta (n=5), British Columbia (n=4), Quebec (n=3), Manitoba (n=3), Saskatchewan (n=2), New Brunswick (n=2), Prince Edward Island (n=1), and Nova Scotia (n=1). For the teacher education programs in which data were publically available, the number of teacher candidates ranged from 64 – 2496 across institutions, with a median of 481 teacher candidates. The number of active teacher educators within institutions ranged from 13 – 148. However, data concerning active teacher educators was not publically available for seven teacher education programs or the number of active teacher educators was only available for the current academic term (2016-2017). Assessment education models within teacher education programs overwhelmingly consisted of an explicit, standalone course in educational assessment that was mandatory for pre-service teachers.

As seen in Table 1, teacher educators in the final sample included 26 males, 62 females, and 20 individuals choosing not to identify their gender. Participants were fairly evenly distributed across the number of teacher candidates instructed with 23 participants instructing less than 40 candidates, 31 participants instructing between 40 – 100 candidates, and 29 instructing more than 100 candidates. Teacher educators indicated a greater amount of K-12 teaching experience than a university context with the majority of participants reporting more than six years K-12 teaching and less than five years of university teaching. No teacher educator reported zero years of K-12 teaching experience. Eight of the 13 assessment educators in this study had less than two years teaching experience within a university context. Of the 13 assessment

educators, seven were associated with teacher education programs that had faculties larger than 75 members.

Table 1

Frequencies of Participant Demographics (n=108)

Demographic		Frequency
Gender	Male	26
	Female	62
	Did Not Respond	20
Teacher Candidates Instructed	Small (<40)	23
	Medium (40-100)	31
	Large (>100)	29
	Did Not Respond	25
University Teaching Experience	Less than 2 years	26
	Between 2 and 5	27
	More than 5 years	33
	Did Not Respond	22
K-12 Teaching Experience	Less than 5 Years	22
	Between 6-15 Years	30
	More than 15 Years	28
	Did Not Respond	28
Field of Instruction	Assessment Educator	13
	Curriculum Educator	57
	Did Not Specify	37
Assessment Education Model at Institution	Mandatory Assessment	55
	Elective/Embedded Assessment	17
	Not Identified	35
Number of Teacher Candidates at Institution	Less than 200	10
	Between 200-600	42
	More than 600	16
Active Teacher Educators at Institution	Less than 40	13
	Between 50-74	32
	More than 75	22

Data Collection & Instrument

The majority of previous research on teacher assessment literacy has aimed to develop and administer measures to quantify assessment knowledge and skills (i.e., a traditional view of assessment literacy) (e.g., Campbell et al., 2002; Mertler, 2003; Mertler & Campbell, 2005; Plake, 1993). As noted in their systematic study of assessment literacy measures, measuring assessment literacy is difficult as many proposed instruments lack “the psychometric evidence to support assessment literacy measures” (Gotch & French, 2014, p. 16). In addition, recent instruments have focused primarily on teachers’ conceptualization of assessment purposes (e.g., Brown & Remesal, 2012; Brown, 2004; Harris & Brown). Hence these measures underrepresent the assessment literacy construct as they do not fully account for aspects of assessment processes, assessment fairness, and measurement theory, or the sociocultural dimensions of assessment literacy (DeLuca et al., 2015). As argued by Gotch and French (2014), the majority of current assessment literacy measures do not comprehensively account for shifts in classroom assessment policies, specifically towards formative assessment practices and new professional standards (e.g. Klinger et al., 2015).

The Approaches to Classroom Assessment Inventory (ACAI; DeLuca et al., 2015) examines approaches to assessment through four themes: Assessment Purpose, Assessment Process, Assessment Fairness, and Measurement Theory. This multi-dimensional approach to assessment literacy circumvents many of the issues inherent in previous assessment literacy measures and aligns more strongly with current assessment policy in Canada and the United States (i.e., *Growing Success: Assessment, Evaluation, and Reporting in Ontario Schools*; Ministry of Education, 2010). In order to contextualize teachers’ assessment understandings, the ACAI is based on five assessment scenarios that are used to create assessment profiles for individual teachers (DeLuca et al., 2015). To date, the ACAI has been used to understand the approaches to classroom assessment of teacher candidates and classroom teachers throughout Canada and the United States (Coombs et al., 2017; DeLuca et al., 2016b).

An adapted version of the ACAI was used in this study. Two sections of the ACAI were not included in this study (i.e., *Confidence in Classroom Assessment Practices* and *Professional Learning Interests in Assessment*) as the items were designed for K-12 classroom teachers rather than teacher educators. Part A of the ACAI consists of five scenarios, each with four closed-ended questions. Each question aligned a specific assessment theme (i.e., Assessment Purpose, Assessment Process, Assessment Fairness, Measurement Theory) based upon an analysis of 15 contemporary assessment standards from five geographic regions (i.e., Australia, US, Canada, mainland Europe, New Zealand, and UK). Each theme was associated with three approaches. For example, the theme of Assessment Purpose was associated with three approaches: *assessment of learning*, *assessment for learning*, and *assessment as learning* (see Table 2 for complete list of assessment themes and approaches). Teacher educators prioritized approaches to an assessment theme a total of five times, once per scenario.

Table 2*Assessment Literacy Themes and Associated Priority Descriptions*

Theme	Approach	Description of Priority
Assessment Purposes	<i>Assessment of Learning</i>	Teachers use of evidence to summate student learning and assign a grade in relation to student's achievement of learning objectives.
	<i>Assessment for Learning</i>	Teachers' and students' use of evidence to provide feedback on progress towards learning objectives (i.e., inform next steps for learning and instruction). Involves both teacher-directed and student-centered approaches to formative assessment.
	<i>Assessment as Learning</i>	Focuses on how the student is learning by providing feedback or experiences that foster students' metacognitive abilities and learning skills (e.g., self-assessment, goal-setting, learning plans). Involves teachers but is primarily student-centered.
Assessment Processes	<i>Design</i>	Focuses on the development of reliable assessments and items that measure student learning in relation to learning objectives.
	<i>Scoring</i>	Focuses on the adjustment and use of scoring protocols and grading schemes to respond to assessment scenarios.
	<i>Communication</i>	Focuses on the interpretation of assessment results and feedback through communication to students and parents.
Fairness	<i>Standard</i>	Maintains the equal assessment protocols for all students.
	<i>Equitable</i>	Differentiates assessment protocols for formally identified students (i.e., special education or English language learners)
	<i>Personalized</i>	Individualizes learning opportunities and assessments that address each student's unique learning needs and goals.
Measurement Theory	<i>Reliability</i>	Works to ensure consistency in results within assessments, across time periods, and between teachers.
	<i>Validity</i>	Works to ensure assessment or evaluation measures what it claims to measure and promote valid interpretations of results.
	<i>Balanced</i>	Works to ensure consistency in measuring what an assessment or evaluation intends to measure, and degree to which an assessment or evaluation measures what it claims to measure.

Part B of the ACAI asks teacher educators to report on level of attention (i.e., instructional time and effort) given to 12 assessment topics within pre-service teacher courses they instruct on a five-point scale (1=very low, 2=low, 3=moderate, 4=high, 5=very high). Examples of assessment topics addressed include *constructing assessments in alignment with current assessment theory, principles, and practices* and *understanding current reporting and grading policies and theories*. Part C of the ACAI contains demographic questions to collect information on the name of the institution the teacher educator is currently associated with, how many per-service teacher he/she instructs, years of teaching experience within teacher education programs and a K-12 context, pre-service course load in the current academic year, gender, and a short description of how he/she addressing assessment topics within pre-service courses (see Appendix D for full instrument).

Data Analyses

For each scenario within Part A of the ACAI, teacher educators were asked to prioritize approaches to assessment (1st, 2nd, and/or 3rd) across four assessment literacy themes (Assessment Purpose, Assessment Process, Assessment Fairness, and Measurement Theory). Teacher educators' support for discrete approaches to assessment within each theme was determined by averaging the ranking of each approach. For example, across the five assessment scenarios a participant could prioritize an *assessment of learning* approach '1-1-1-2-2,' an *assessment for learning* approach '2-3-2-3-1,' and an *assessment as learning* approach '3-2-3-1-3' (with the lowest number [1] representing the highest priority in ranking [first]). Consequently, this teacher educator would be assigned *assessment of learning* as their first priority (average ranking=1.4), *assessment for learning* as their second priority (average ranking=2.2), and *assessment as learning* as their third priority (average ranking=2.4).

If two approaches within the same assessment theme were prioritized equally across all five scenarios, teacher educators were assigned both approaches (referred to as hybrid approaches). The presence of hybrid variables suggests that teacher educators' approaches to

assessment were partially influenced by the specific context described within the assessment scenarios. Due to a combination of three approaches and three additional hybrid approaches, a total of six possible approaches could be assigned with each theme. Only approaches to assessment that were prioritized first by teacher educators were used to generate assessment profiles.

The relationship between demographic groupings (i.e., gender, teacher candidates instructed, university teaching experience, K-12 teaching experience, field of instruction, recruitment method, assessment education model at institution, number of active teacher educators at institution) and ranking of approaches within each Assessment Theme was examined. The null hypothesis for these analyses was that demographic groupings would not influence approaches to assessment. For demographic variables with two groups, an independent t-test ($\alpha=0.05$) was used. For demographic variables with three or more groupings with equal variance an analysis of variance (ANOVA) with Bonferonni correction ($\alpha=0.05$) was employed. The Bonferonni correction was used to reduce the chance of a type 1 error (i.e., rejecting the null hypothesis when it is true) (MacDonald and Gardner, 2000). For demographic variables with three or more groupings with unequal variance an ANOVA ($\alpha=0.05$) with a Games-Howell post hoc test was used. Where significant differences were identified, Cohen's *d* was calculated as a measure of effect size: 0.2-0.5 (small), 0.5-0.8 (medium), and 0.8-1.0 (large) (Cohen, 1988). All data analysis was completing using Statistical Program for the Social Studies version 22 (SPSS v. 22).

An exploratory factor analysis was conducted on Part B of the ACAI (Questions About Your Assessment Instruction). Unweighted least squares factor extraction with varimax rotation was used to identify underlying factors (Gaskin & Happell, 2014). In order to determine the number of factors to retain, a scree test was used. The Kaiser-Meyer-Olkin (KMO) measure verified sampling adequacy for the analysis, and all KMO values were greater than .81, which is above the acceptable limit of .50 (Field, 2013). Factor loadings below .4 were suppressed because

they did not represent significant values (DeLuca, et al. 2016; Field, 2013). Both factors had an internal consistency (i.e., Cronbach's alpha) greater than .82, indicating good reliability (Field, 2013). Question 11 (In your teaching of pre-service courses, how much attention do you give to the following topic: *Integrating formative assessment [including assessment for and as learning] during instruction to guide next steps in teaching*) was removed to ensure simple structure of factors.

Factors were named to reflect the dominant themes of the items within each factor. Scores for each factor were calculated by averaging responses of items within each factor. Factor scores were then statistically compared within demographic groupings (i.e., gender, teacher candidates instructed, university teaching experience, K-12 teaching experience, field of instruction, recruitment method, assessment education model at institution, number of active teacher educators at institution) as previously described. The null hypothesis for these analyses were that means based on demographic groupings would not be significantly different. Factor loadings can be found in Table 3.

Table 3*Factor Loadings for Exploratory Factor Analysis of Part B of the ACAI*

Assessment Professional Learning Priorities	<i>M(SD)</i>	<i>Current Assessment Topics</i>	<i>Transparent and Fair Assessment Practices</i>
1. Choosing the appropriate purpose of assessment (e.g., diagnostic, formative, summative) based on instructional goals and assessment	3.91(.94)	.572	
2. Constructing assessments in alignment with current assessment theory, principles, and practices.	3.87(.80)	.866	
3. Administering assessments in alignment with current assessment theory, principles, and practices.	3.72(.90)	.905	
4. Scoring assessments in alignment with current assessment theory, principles, and practices.	3.61(.87)	.837	
5. Interpreting and using assessment information in alignment with current assessment theory, principles, and practices.	3.74(.86)	.742	
6. Understanding current reporting and grading policies and theories	3.36(.97)		.555
7. Communicating assessment purposes, processes, and results to students, parents/guardians, and other stakeholders.	3.83(1.04)		.700
8. Cultivating fair assessment conditions for all learners, with sensitivity to student diversity and exceptional learners.	4.37(.83)		.747
9. Disclosing accurate information about assessments. Protecting the rights and privacy of students that are assessed.	3.62(1.18)		.768
10. Understanding psychometric (i.e., technical) properties of assessments (e.g. reliability and validity).	2.92(1.18)		.526
12. Analyzing and using assessment information to guide instructional decisions and support student learning.	4.27(.80)		.472
Variance Explained		45.16%	12.27%
Internal Consistency		.907	.821

Note: Factor Loadings < .40 were suppressed. Scale: 1 = very low, 2 = low, 3 = moderate, 4 =high, 5 = very high.

Chapter 4

Results

This study examined teacher educators' approaches to assessment and was guided by the following research questions:

1. How do teacher educators' approaches to assessment vary between teacher education programs with different assessment education models?
2. How do teacher educators' approaches to assessment vary between those that teach explicit assessment courses and those that teach curriculum or professional studies courses?

This chapter is divided into four sections. The first section provides the descriptive statistics that were calculated to describe teacher educators' approaches to assessment (Part A of the ACAI). The second section examined teacher educators' approaches to assessment within assessment literacy themes across demographic groupings. The third section describes the assessment profiles of teacher educators that were created by the examining the approaches to assessment across assessment literacy themes. The fourth section of this chapter presents the teacher educators' integration of assessment content within pre-service teacher education courses through both descriptive statistics and factor analysis of Part B of the ACAI. Results from all four sections were synthesized to address the research questions.

Descriptive Statistics

Table 4 provides the frequency counts for the first, second, and third priorities for teacher educators' approaches to assessment. Teacher educators' approaches to assessment appeared to quite similar within each Assessment Theme. Within the assessment literacy theme of Assessment Purpose, teacher educators highly prioritized an *assessment for learning* (1st=43, 2nd=37) and *assessment as learning* approach (1st=37, 2nd=32) while an *assessment of learning* was less well supported (1st=9, 2nd=26). Following a similar pattern, within the theme of

Assessment Processes two approaches, *design* (1st=36, 2nd=49) and *communication* (1st=53, 2nd=30), were highly prioritized while a single approach, *use/scoring* (1st=3, 2nd=16), was not well supported by teacher educators. Within the theme of Assessment Fairness, support for the three approaches varied with a *differentiated* approach (1st=62, 2nd=25) prioritized highly, followed by an *equitable* approach (1st=27, 2nd=58), with a *standard* approach (1st=8, 2nd=14) prioritized much less. Within the theme of Measurement Theory, a *balanced* approach (1st=49, 2nd=29) and a *validity* approach (1st=35, 2nd=39) were highly prioritized with a *reliability* approach uncommonly prioritized by teacher educators (1st=10, 2nd=25). Due to the similarities in how approaches to assessment were prioritized, a statistical examination of the relationships of priorities between Assessment Themes (e.g., if participants prioritized *assessment for learning* 1st, how would that influence the approaches to Assessment Process) was not possible.

Table 4*Frequency Counts for Approaches to Assessment by 1st, 2nd, and 3rd Priority*

Theme	Approach	1st Priority	2nd Priority	3rd Priority
Assessment Purposes	<i>AoL</i>	9	26	54
	<i>AfL</i>	43	37	5
	<i>AaL</i>	37	32	15
	<i>AoL & AfL</i>	4	2	--
	<i>AoL & AaL</i>	1	8	--
	<i>AfL & AaL</i>	14	--	--
	No approach assigned	0	3	34
Assessment Processes	<i>design</i>	36	49	3
	<i>use/scoring</i>	3	16	67
	<i>communication</i>	53	30	4
	<i>design & use/scoring</i>	3	5	--
	<i>design & communication</i>	11	--	--
	<i>use/scoring & communication</i>	2	6	--
	No approach assigned	0	2	34
Assessment Fairness	<i>standard</i>	8	14	62
	<i>equitable</i>	27	58	8
	<i>differentiated</i>	62	25	7
	<i>standard & equitable</i>	2	3	--
	<i>standard & differentiated</i>	2	4	--
	<i>equitable & differentiated</i>	7	--	--
	No approach assigned	0	4	31
Measurement Theory	<i>reliability</i>	10	25	49
	<i>reliability & balanced</i>	5	1	--
	<i>reliability & validity</i>	2	5	--
	<i>balanced</i>	49	29	16
	<i>validity & balanced</i>	7	1	--
	<i>validity</i>	35	39	10
	No approach assigned	0	8	33

Note. AaL = Assessment as Learning, AfL = Assessment for Learning, AoL = Assessment of Learning.

Approaches to Assessment Within Assessment Themes

In order to examine teacher educators' approaches to assessment in relation to demographic groupings, teacher educators' average ranking (i.e., level of support) for each approach to assessment was determined. As described in the previous chapter, teacher educators' level of support for each approach to assessment was calculated by averaging the priority that he/she had assigned to that approach across the five assessment scenarios presented in Part A of the ACAI. The lower the average ranking assigned to an approach, the more highly it was supported by teacher educators. Differences between teacher educators' average ranking of an approach to assessment were examined in relation to gender, teacher candidates instructed, university teaching experience, K-12 teaching experience, field of instruction, assessment education model, number of teacher candidates at institution, and number of teacher educators at the institution.

Assessment Purpose

Within the assessment literacy theme of Assessment Purpose, statistical differences in teacher educators' support for approaches to assessment were detected for two demographic groupings: gender and assessment education model. See Table 5 for complete rankings of approaches to assessment within Assessment Purpose across all demographic groupings.

Within gender, male teacher educators ($M=2.08$, $SD=.51$) prioritized *assessment of learning* more highly than female teacher educators ($M=2.29$, $SD=.42$) ($t_{(85)}=2.04$, $p=.044$, $d=.45$). As the average level of support by females for an *assessment of learning* approach was very similar to that of the overall sample, the statistical difference within gender was the result of males more highly prioritizing an *assessment of learning*.

Within the demographic grouping of assessment education model, teacher educators at institutions with an no mandatory assessment course ($M=1.49$, $SD=.37$) prioritized *assessment for learning* more highly than those at institutions with mandatory assessment courses ($M=1.71$, $SD=.32$) ($t_{(70)}=2.37$, $p=.021$, $d=.64$). This statistical difference was due to teacher educators from

programs with no mandatory assessment course more highly supporting an *assessment for learning* approach while teacher educators from a program with a mandatory assessment courses did not differ from the sample average. Additionally, teacher educators from a mandatory assessment education model more evenly prioritized the three approaches to Assessment Purpose than those from a no mandatory assessment education model.

Table 5

Average Ranking (on a three-point scale) for Assessment Priorities within Assessment Purpose

		Frequency	M (SD)		
			AoL	AfL	AaL
All Participants		108	2.27(.51)	1.67(.37)	1.77(.42)
Gender	Male	26	2.08(.51)*	1.74(.39)	1.91(.40)
	Female	61	2.29(.42)*	1.67(.30)	1.75(.41)
Teacher Candidates Instructed	Small (<40)	23	2.14(.54)	1.52(.36)	1.91(.41)
	Medium (40-100)	30	2.36(.48)	1.65(.29)	1.71(.34)
	Large (>100)	28	2.26(.47)	1.74(.31)	1.77(.46)
University Teaching Experience	Less than 2 years	26	2.34(.43)	1.75(.29)	1.77(.36)
	Between 2-5 years	26	2.29(.54)	1.63(.42)	1.89(.40)
	More than 5 years	32	2.26(.50)	1.60(.31)	1.75(.44)
K-12 Teaching Experience	5 years or less	22	2.21(.52)	1.75(.35)	1.72(.35)
	Between 6-15 Years	29	2.35(.40)	1.69(.33)	1.78(.39)
	More than 15 Years	28	2.18(.45)	1.64(.34)	1.83(.46)
Field of Instruction	Assessment Educator	13	2.18(.44)	1.83(.26)	1.82(.13)
	Curriculum Educator	56	2.25(.46)	1.67(.33)	1.76(.45)
Assessment Education Model	Mandatory	55	2.25 (.50)	1.71(.32)*	1.75(.42)
	Elective/Embedded	17	2.41 (.53)	1.49(.37)*	1.84(.35)
Number of Teacher Candidates at institution	Less than 200	10	2.47 (.37)	1.63 (.26)	1.91 (.41)
	Between 200-600	42	2.19 (.54)	1.68 (.35)	1.78 (.41)
	More than 600	16	2.50 (.36)	1.58 (.41)	1.76 (.39)
Number of Active Teacher Educators	Less than 49	13	2.24 (.46)	1.56 (.28)	1.92 (.44)
	Between 50-74	31	2.21 (.57)	1.69 (.42)	1.78 (.44)
	More than 75	22	2.39 (.46)	1.63 (.29)	1.75 (.30)

Note: * denotes significance at alpha=0.05; Scale: 1 = 1st Priority, 2 = 2nd Priority, 3 = 3rd Priority.

Assessment Process

Within the theme of Assessment Process, statistical differences in teacher educators' support for approaches to Assessment Process were detected for two demographic groupings: gender and number of teacher candidates within institution. See Table 6 for complete rankings of approaches to assessment within Assessment Process across all demographic groupings.

With respect to gender, male teacher educators ($M=1.82$, $SD=.38$) prioritized *design* less highly than female teacher educators ($M=1.63$, $SD=.29$) ($t_{(86)}=2.54$, $p=.013$, $d=.56$). In a similar finding to the relationship between gender and Assessment Purpose, female teacher educators' support for design was similar to that of the overall sample. The statistical difference between the two genders was the result of males prioritizing *design* to a lesser degree.

Teacher educators associated with institutions with more than 600 teacher candidates ($M=1.58$, $SD=.30$) prioritized *design* more highly than their counterparts associated with institutions with less than 200 students ($M=1.94$, $SD=.30$) ($F_{(2,65)}=4.32$, $p<.001$, $d=1.2$). While instructing large numbers of teacher candidates may influence teacher educators' approaches to Assessment Process, a more likely explanation is that the statistical difference observed in regards to *design* is the result of an interaction between demographic groupings. While an examination of these interaction effects could not be included due to study constraints, a closer examination of the eleven teacher educators that highly ranked a *design* approach to Assessment Process (i.e., 1.00) identified likely demographic influences. In particular, university teaching experience (more than half had greater than eight years experience), K-12 teaching experience (half had more than 20 years experience), and instructional focus (six curriculum educators compared to only one assessment educator).

Table 6*Average Ranking (on a three-point scale) for Assessment Priorities within Assessment Process*

		Frequency	M (SD)		
			Design	Use/Scor.	Design
All Participants		108	1.68(.36)	2.42(.44)	1.62(.37)
Gender	Male	26	1.82(.38)*	2.43(.41)	1.60(.35)
	Female	61	1.63(.29)*	2.41(.43)	1.69(.33)
Teacher Candidates Instructed	Small (<40)	23	1.73(.36)	2.46(.44)	1.59(.42)
	Medium (40-100)	30	1.64(.36)	2.34(.58)	1.59(.32)
	Large (>100)	28	1.62(.30)	2.47(.32)	1.69(.38)
University Teaching Experience	Less than 2 years	26	1.69(.25)	2.53(.29)	1.72(.35)
	Between 2-5 years	26	1.66(.35)	2.43(.44)	1.67(.35)
	More than 5 years	32	1.66(.40)	2.31(.59)	1.53(.38)
K-12 Teaching Experience	5 years or less	22	1.77(.34)	2.46(.31)	1.60(.31)
	Between 6-15 Years	29	1.65(.34)	2.44(.48)	1.60(.28)
	More than 15 Years	28	1.69(.30)	2.32(.47)	1.69(.39)
Field of Instruction	Assessment Educator	13	1.78(.34)	2.43(.29)	1.73(.26)
	Curriculum Educator	56	1.68(.32)	2.40(.47)	1.63(.32)
Assessment Education Model	Mandatory	55	1.69(.31)	2.42 (.49)	1.59(.34)
	Elective/Embedded	17	1.67 (.39)	2.37 (.39)	1.64 (.31)
Number of Teacher Candidates at institution	Less than 200	10	1.94 (.30)*	2.58 (.33)	1.42 (.22)
	Between 200-600	42	1.68 (.32)*	2.37 (.50)	1.61 (.35)
	More than 600	16	1.58 (.30)*	2.43 (.50)	1.73 (.28)
Number of Active Teacher Educators	Less than 49	13	1.79 (.40)	2.43 (.52)	1.49 (.25)
	Between 50-74	31	1.65 (.31)	2.39 (.49)	1.62 (.35)
	More than 75	22	1.66 (.32)	2.41 (.47)	1.70 (.32)

Note: * denotes significance at alpha=0.05; Scale: 1 = 1st Priority, 2 = 2nd Priority, 3 = 3rd Priority.

Assessment Fairness

Within the theme of Assessment Fairness, statistical differences in teacher educators' support for approaches to assessment were detected for within gender. See Table 7 for complete ranking of approaches to assessment within Assessment Fairness across all demographic

groupings. A statistical difference within gender was detected with female teacher educators (M=1.67, SD=.42) prioritized an *equitable* approach more highly than male teacher educators (M=1.91, SD=.35) ($t_{(85)}=2.47$, $p=.015$, $d=.62$). Females prioritized an *equitable* approach more than the sample average while males prioritized it less than the sample average.

Table 7

Average Ranking (on a three-point scale) for Assessment Priorities within Assessment Fairness

		Frequency		M (SD)		
				Standard	Equitable	Differ.
All Participants				2.39(.59)	1.78(.44)	1.52(.44)
Gender	Male	26		2.42(.53)	1.91(.35)*	1.57(.42)
	Female	55		2.41(.53)	1.67(.42)*	1.55(.42)
Teacher Candidates Instructed	Small (<40)	21		2.46(.66)	1.76(.45)	1.47(.51)
	Medium (40-100)	25		2.55(.48)	1.68(.43)	1.43(.30)
	Large (>100)	26		2.45(.45)	1.83(.35)	1.58(.50)
University Teaching Experience	Less than 2 years	25		2.60(.38)	1.71(.32)	1.57(.45)
	Between 2-5 years	23		2.37(.55)	1.89(.40)	1.57(.50)
	More than 5 years	27		2.42(.61)	1.67(.46)	1.43(.41)
K-12 Teaching Experience	5 years or less	22		2.34(.54)	1.90(.33)	1.50(.47)
	Between 6-15 Years	25		2.37(.55)	1.66(.40)	1.56(.37)
	More than 15 Years	25		2.54(.54)	1.70(.42)	1.54(.46)
Field of Instruction	Assessment Educator	13		2.53(.37)	1.66(.35)	1.62(.43)
	Curriculum Educator	51		2.43(.55)	1.72(.41)	1.51(.38)
Assessment Education Model	Mandatory	55		2.49(.47)	1.71(.41)	1.71(.41)
	Elective/Embedded	17		2.55(.55)	1.83(.28)	1.83(.28)
Number of Teacher Candidates at institution	Less than 200	10		2.69 (.27)	1.81 (.24)	1.46 (.19)
	Between 200-600	42		2.44 (.51)	1.71 (.43)	1.55 (.49)
	More than 600	16		2.55 (.56)	1.78 (.39)	1.47 (.54)
Number of Active Teacher Educators	Less than 49	11		2.65 (.25)	1.76 (.29)	1.47 (.19)
	Between 50-74	28		2.46 (.49)	1.77 (.41)	1.54 (.55)
	More than 75	20		2.46 (.60)	1.68 (.39)	1.52 (.49)

Note: * denotes significance at alpha=0.05; Scale: 1 = 1st Priority, 2 = 2nd Priority, 3 = 3rd Priority.

Measurement Theory

Within the theme of Measurement Process, statistical differences in teacher educators' support for approaches to assessment were detected for three demographic groupings: gender, university teaching experience, and field of instruction. See Table 8 for complete ranking of approaches to assessment within Measurement Theory across all demographic groupings.

Within gender, female teacher educators ($M=1.63$, $SD=.41$) prioritized a *validity* approach more highly than male teacher educators ($M=2.03$, $SD=.37$) ($t_{(85)}=4.21$, $p<.001$, $d=1.02$). Conversely, male teacher educators ($M=1.49$, $SD=1.68$) prioritized a *balanced* approach more highly than female teacher educators ($M=1.68$, $SD=.38$) ($t_{(86)}=2.21$, $p=.030$, $d=.54$).

Within university teaching experience, teacher educators with less than two years of experience ($M=2.48$, $SD=.45$) prioritized a *reliability* approach less highly than teacher educators with between two and five years of experience ($M=2.02$, $SD=.62$) and teacher educators with more than five years of experience ($M=1.96$, $SD=.62$) ($F_{(2, 78)}=6.98$, $p=.002$, $\eta^2=.15$). Furthermore, curriculum/professional studies educators ($M=2.13$, $SD=.60$) prioritized a *reliability* approach more highly than assessment educators ($M=2.48$, $SD=.35$) ($t_{(65)}=2.06$, $p=.043$, $d=.71$).

However, these findings cannot be addressed independently of one another due to the majority of assessment educators within this study having less than two years of university teaching experience. Consequently, teacher educators' support for a *reliability* approach could be the result of their university teaching experience, instructional area, or a combination of both factors. While this issue could not be robustly explored through statistical means due to the limited sample size, support for a *reliability* approach between assessment ($M=2.55$, $SD=.33$) and curriculum/professional studies ($M=2.42$, $SD=.38$) educators with less than two years of university teaching experience were very similar. With increasing university teaching experience, support for a *reliability* approach increased among curriculum/professional studies educators. While a corresponding population of assessment educators was not present in this study, this

trend does indicate the need to examine the support for a *reliability* approach among assessment educators with greater university teaching experience.

Table 8

Average Ranking (on a three-point scale) for Assessment Priorities within Measurement Theory

			Frequency		M (SD)		
					Reliability	Validity	Balanced
All Participants					2.10(.63)	1.76(.45)	1.62(.40)
Gender	Male	26	2.21(.55)	2.03(.37)*	1.49(.32)*		
	Female	59	2.09(.58)	1.63(.41)*	1.68(.38)*		
Teacher	Small (<40)	22	2.28(.58)	1.70(.52)	1.58(.40)		
Candidates	Medium (40-100)	28	2.11(.68)	1.71(.38)	1.59(.37)		
Instructed	Large (>100)	28	2.10(.56)	1.81(.41)	1.67(.42)		
University	Less than 2 years	26	2.48(.45)*	1.70(.35)	1.63(.32)		
Teaching	Between 2-5 years	25	2.02(.58)*	1.87(.40)	1.69(.49)		
Experience	More than 5 years	30	1.96(.62)*	1.69(.50)	1.58(.38)		
K-12 Teaching	5 years or less	21	2.20(.57)	1.74(.36)	1.66(.33)		
	Between 6-15 Years	27	2.15(.57)	1.61(.43)	1.63(.38)		
	More than 15 Years	28	2.10(.63)	1.81(.45)	1.57(.38)		
Field of	Assessment Educator	13	2.48(.35)*	1.83(.27)	1.55(.38)		
Instruction	Curriculum Educator	54	2.13(.60)*	1.71(.47)	1.59(.35)		
Assessment	Mandatory	55	2.12(.63)	1.73(.41)	1.64(.37)		
Education Model	Elective/Embedded	17	2.21(.64)	1.77(.46)	1.61(.54)		
Number of	Less than 200	10	2.38 (.16)	1.81 (.33)	1.72 (.33)		
Teacher	Between 200-600	42	2.11 (.63)	1.73 (.42)	1.56 (.40)		
Candidates	More than 600	16	2.21 (.68)	1.76 (.46)	1.74 (.45)		
Number of Active	Less than 49	13	2.11 (.55)	1.81 (.31)	1.85 (.31)		
	Between 50-74	30	2.15 (.64)	1.69 (.41)	1.60 (.40)		
	More than 75	19	2.21 (.62)	1.84 (.46)	1.53 (.47)		

Note: * denotes significance at alpha=0.05; Scale: 1 = 1st Priority, 2 = 2nd Priority, 3 = 3rd Priority.

Approaches to Assessment Across Assessment Themes

The approaches to assessment prioritized first by teacher educators within each of the four assessment themes were used to create assessment profiles. For example, all teacher educators that prioritized an *assessment for learning* approach to Assessment Purpose, a *design* approach to Assessment Processes, a *differentiated* approach to Assessment Fairness, and a *validity* approach to Measurement Theory first would be assigned the same assessment profile. If a teacher educator had the same approaches to assessment for Assessment Purpose, Processes, and Fairness but instead prioritized an approach more consistent with attention to reliability as described by measurement theory (i.e., *reliability*), he/she would be assigned to a different assessment profile. In total, 65 unique assessment profiles were identified within this study (Appendix E).

The two most prominent profiles in this study were equally frequent (n=8). Both profiles prioritized an *assessment of learning* approach to Assessment Purpose, a *communication* approach to Assessment Process, and a *differentiated* approach to Assessment Fairness while one profile prioritized a *validity* approach to Measurement Theory the other prioritized a *balanced* approach. Interestingly, the majority of assessment profiles (49 out of 65) had unique membership.

The assessment profiles of assessment educators differed from curriculum and professional studies educators in several important ways: (a) assessment educators supported *assessment of learning*, *assessment for learning*, and *assessment as learning* approaches more equally than curriculum educators; (b) only assessment educators prioritized the hybrid variable *use/scoring & communication*; (c) assessment educators did not prioritize a *standard* approach to Assessment Process; and (d) assessment educators did not prioritize a *reliability* approach to Measurement Theory (Table 9). Furthermore, all assessment educators had unique assessment profiles.

Table 9*Assessment and Curriculum/Professional Studies Educators' Approaches to Assessment*

Assessment Theme	Assessment Approach	Frequency (%)	
		Assessment Educator	Curriculum/ Professional Studies Educator
Assessment Purposes	<i>AoL</i>	15.4	5.3
	<i>AfL</i>	32.1	40.4
	<i>AaL</i>	38.5	40.4
	<i>AoL & AfL</i>	-	7.0
	<i>AoL & AaL</i>	-	-
	<i>AfL & AaL</i>	23.1	7.0
Assessment Processes	<i>design</i>	30.8	33.3
	<i>use/scoring</i>	-	5.3
	<i>communication</i>	53.8	47.4
	<i>design & use/scoring</i>	-	3.5
	<i>design & communication</i>	15.4	8.8
	<i>use/scoring & communication</i>	-	1.8
Assessment Fairness	<i>standard</i>	-	5.3
	<i>equitable</i>	53.8	22.8
	<i>differentiated</i>	46.2	57.9
	<i>standard & equitable</i>	-	3.5
	<i>standard & differentiated</i>	-	-
	<i>equitable & differentiated</i>	-	10.5
Measurement Theory	<i>reliability</i>	-	5.3
	<i>reliability & balanced</i>	-	5.3
	<i>reliability & validity</i>	-	3.5
	<i>balanced</i>	53.8	47.4
	<i>validity & balanced</i>	23.1	3.5
	<i>validity</i>	23.1	35.1

Note. AaL = Assessment as Learning, AfL = Assessment for Learning, AoL = Assessment of Learning.

Integration of Assessment Content in Pre-Service Teacher Education

Part B of the ACAI asked teacher educators to report on level of attention (i.e., instructional time and effort) they give to 12 assessment topics within pre-service teacher courses they instruct on a five-point scale (1=very low, 2=low, 3=moderate, 4=high, 5=very high). Highly endorsed items ($M > 4.00$) included ‘*Cultivating fair assessment conditions for all learners, with sensitivity to student diversity and exceptional learners*’ ($M=4.37$, $SD=.83$) and ‘*Analyzing and using assessment information to guide instructional decisions and support student learning*’ ($M=4.27$, $SD=.80$). While all other assessment topics included in this analysis were moderately endorsed ($M=3.0-3.9$), a notable exception was ‘*Understanding psychometric (i.e., technical) properties of assessment (e.g. reliability and validity)*’ ($M=2.92$, $SD=1.18$), which was the lowest endorsed item overall by all participants (Table 10).

Further examination revealed key differences in participants’ responses based upon how approaches to Measurement Theory were prioritized in Part A. While not statistically significant, teacher educators that prioritized a *reliability* approach reported integrating content related to psychometric properties into their courses to a much lower degree ($M=2.14$, $SD=1.07$) than those that prioritized a *validity* ($M=2.91$, $SD=1.10$) or *mixed* ($M=3.14$, $SD=1.25$) approach.

Table 10*Means and Standard Deviations for Part B: Assessment Professional Learning Priorities*

Assessment Professional Learning Priorities	M (SD)		
	<i>All Participants</i>	<i>Curriculum/ Professional Studies Educators</i>	<i>Assessment Educators</i>
1. Choosing the appropriate purpose of assessment (e.g., diagnostic, formative, summative) based on instructional goals and assessment	3.91(.94)	3.96(.94)	4.31(.75)
2. Constructing assessments in alignment with current assessment theory, principles, and practices.	3.87(.80)	3.95(.74)	4.24(.73)
3. Administering assessments in alignment with current assessment theory, principles, and practices.	3.72(.90)	3.74(.95)	4.08(.64)
4. Scoring assessments in alignment with current assessment theory, principles, and practices.	3.61(.87)	3.54(.91)	4.00(.82)
5. Interpreting and using assessment information in alignment with current assessment theory, principles, and practices.	3.74(.86)	3.74(.88)	4.23(.60)
6. Understanding current reporting and grading policies and theories	3.36(.97)	3.28(1.04)	4.00(.58)
7. Communicating assessment purposes, processes, and results to students, parents/guardians, and other stakeholders.	3.83(1.04)	3.77(1.10)	3.62(.77)
8. Cultivating fair assessment conditions for all learners, with sensitivity to student diversity and exceptional learners.	4.37(.83)	4.35(.90)	4.54(.52)
9. Disclosing accurate information about assessments. Protecting the rights and privacy of students that are assessed.	3.62(1.18)	3.50(1.28)	3.69(.85)
10. Understanding psychometric (i.e., technical) properties of assessments (e.g. reliability and validity).	2.92(1.18)	2.68(1.24)	3.54(.88)
11. Integrating formative assessment [including assessment for and as learning] during instruction to guide next steps in teaching	4.44 (.79)	4.47(.80)	4.69(.48)
12. Analyzing and using assessment information to guide instructional decisions and support student learning.	4.27(.80)	4.29(.87)	4.53(.52)

Note: * denotes significance at alpha=0.05; 1 = very low, 2 = low, 3 = moderate, 4 =high, 5 = very high.

A factor analysis was conducted on the 12 items in this section of the survey and statistical comparisons of the factor scores were conducted by demographic groupings (Table 11). Within field of instruction, assessment educators (M=3.77, SD=.58) reported significantly greater

integration of *Current Assessment Topics* in their pre-service education courses than curriculum/professional studies educators ($M=3.08$, $SD=1.62$) ($t_{(55)}=2.58$, $p=.013$, $d=.57$). Assessment educators ($M=3.79$, $SD=.42$) demonstrated significantly greater integration of *Transparent and Fair Assessment Practices* in their pre-service education courses than curriculum/professional studies educators ($M=3.02$, $SD=1.64$) ($t_{(67)}=3.16$, $p=.002$, $d=.64$).

Statistical differences between assessment and curriculum/professional studies educators' integration of assessment content would be expected given their respective content focus. What is interesting is that statistical differences within all other demographic groupings were not detected. This implies that factors that were previously shown to impact upon teacher educators' approaches to assessment (e.g., gender, assessment education model) do not influence the degree to which assessment content is integrated into teacher education courses.

Table 11*Means and Standard Deviations of Participants from Exploratory Factor Analysis*

Demographic Variable		Frequency	M (SD)	
			Current Assessment Topics	Transparent and Fair Assessment Practices
Gender	Male	26	3.43 (1.07)	3.44 (1.17)
	Female	62	3.23 (1.49)	3.19 (1.47)
Teacher Candidates Instructed	Small (<40)	23	4.03 (.83)	3.86 (.80)
	Medium (40-100)	31	3.63 (.64)	3.63 (.67)
	Large (>100)	29	3.91 (.69)	3.64 (.78)
University Teaching Experience	Less than 2 years	26	3.59 (.68)	3.46 (.76)
	Between 2-5 years	27	4.04 (.85)	3.78 (.77)
	More than 5 years	33	3.85 (.59)	3.83 (.66)
K-12 Teaching Experience	5 years or less	22	2.95 (1.52)	2.97 (1.57)
	Between 6-15 Years	30	3.23 (1.42)	3.12 (1.45)
	More than 15 Years	28	3.51 (1.37)	3.50 (1.30)
Field of Instruction	Assessment Educator	13	3.77 (.58)*	3.79 (.42)*
	Curriculum Educator	57	3.08 (1.62)*	3.02 (1.64)*
Assessment Education Model	Mandatory	55	3.78 (.76)	3.65 (.75)
	Elective/Embedded	17	4.07 (.66)	3.96 (.65)
Number of Teacher Candidates	Less than 200	10	4.18 (.65)	4.07 (.32)
	Between 200-600	42	3.78 (.75)	3.74 (.74)
	More than 600	16	3.86 (.82)	3.56 (.86)
Number of Active Teacher Educators	Less than 49	13	4.18 (.59)	4.09 (.41)
	Between 50-74	32	3.74 (.76)	3.60 (.87)
	More than 75	22	3.71 (.72)	3.73 (.63)

Note: Scale: 1 = very low, 2 = low, 3 = moderate, 4 =high, 5 = very high.

Summary of the Results

After reviewing the findings from this study, four general patterns have emerged:

1. When considering teacher educators' approaches within discrete Assessment Themes, there is a high degree of consistency
2. When considering teacher educators' approaches to assessment across all Assessment Themes, there is a high degree of variability.
3. Gender appears to have a significant influence on teacher educators' approaches to assessment.
4. Teacher educators' instructional areas significantly impacts how assessment content is integrated into teacher education courses.

In the final chapter of my thesis, the main findings of this study will be discussed in relation to the research questions and relevant literature. Furthermore, the significance of these findings, limitations of this study, and possible areas of future research will be presented.

Chapter 5

Discussion

Teacher educators have the potential to wield tremendous influence in shaping educational reform through the education of teacher candidates (Brookhart, 2016; Cochran-Smith, 2003; Goodwin & Kosnik 2013). Despite the focus upon quality of teacher preparation within the educational discourse, “teacher educators are in general an under-researched and poorly understood occupational group” (Murray, 2005, p. 68). Brookhart (2016), a leading assessment researcher, argues that a primary influence on teacher candidates’ assessment capability involves teacher educators’ approaches to assessment: “teacher candidates’ repertoire of effective teaching practices depends on the beliefs about learning and the approach to assessment espoused by the respective teacher educator” (p. 17). Despite this potential influence, few studies have empirically examined the impact of teacher educators’ approaches to assessment on teacher candidates’ assessment capability (Brookhart, 2016; Popham, 2013). This aim of this study was to provide empirical evidence of teacher educators’ assessment literacy. This research was guided by the following research questions:

1. How do teacher educators’ approaches to assessment vary between teacher education programs with different assessment education models?
2. How do teacher educators’ approaches to assessment vary between those that teach explicit assessment courses and those that teach curriculum or professional studies courses?

By completing the Approaches to Classroom Assessment Inventory (ACAI), teacher educators from nine provinces shared their approaches to assessment in relation to five classroom assessment scenarios. They also reported the degree to which assessment content was integrated into the teacher education course they instructed. In this final Chapter, I will discuss the implications of key findings from this research, specifically related to the homogeneity of teacher

educators' approaches to assessment, key differences between assessment and curriculum/professional studies educators' assessment literacy and the possible influence of assessment education models. I conclude by considering the significance and limitations of this study and suggest directions for future research.

Teacher educators' assessment literacy: Superficial homogeneity, hidden complexity

Teacher educators in this study were fairly consistent in their first assessment priorities within each Assessment Theme (Table 4). Specifically, the majority of teacher educators prioritized *assessment for learning* or *assessment as learning* approaches to Assessment Purpose, a *communication* approach to Assessment Process, a *differentiated* approach to Assessment Fairness, and *balanced* or *validity* approaches to Measurement Theory. Moreover, this pattern of responses was not significantly influenced by any of the demographic variables examined in this study (e.g., gender, university teaching experience).

This high degree of consistency in the dominant approaches selected has also been identified in previous studies that utilized the ACAI (Coombs et al., 2017; DeLuca et al., 2016b; DeLuca et al., 2017) identified approaches to assessment held by pre-service teachers (both at the beginning and end of their teacher education program) and in-service teachers (with various levels of classroom experience) that were very similar to the dominant approaches (e.g., *assessment for learning* or *assessment as learning* approaches to Assessment Purpose, a *design* or *communication* approach to Assessment Process) held by teacher educators in this study. This high degree of consistency of teachers' approaches to assessment within an educational context was also observed in the work of Brown (2004) and Harris & Brown (2009) in New Zealand. When examining teachers' conceptions of assessment across educational contexts (e.g., China, Spain, New Zealand; Brown, 2004; Brown et al., 2011; Brown & Remesal, 2012; Harris & Brown, 2009; Hirschfeld & Brown, 2009), there were substantial differences in conceptions of assessment. Accordingly, while educators across educational contexts, systems, and cultures may

hold inconsistent beliefs or approaches to assessment (in relation to singular assessment literacy dimensions), there does appear to be consistency within an educational system.

Across the 13 different educational systems within Canada, the priorities and approaches of each system are highly aligned. As noted previously, contemporary Canadian educational systems emphasize formative assessments, fair assessment practices, and high levels of communication between teachers, students, and parents. Despite this high degree of alignment, teacher educators' approaches to assessment differed considerably from those supported by educational policy, specifically in regards to Assessment Purpose. Specifically, only 14 teacher educators prioritized approaches that contained *assessment of learning* while 85 teacher educators prioritized formative approaches (i.e., *assessment for learning*, *assessment as learning*). While prioritizing one approach does not mean that educators are lack an understanding of other approaches, it does suggest pre-service teacher are experiencing a limited range of assessment experiences. As classroom teachers are expected to be knowledgeable and capable in all purposes of assessment (Government of Quebec, 2001; Manitoba Education, Citizenship and Youth, 2006; Ministry of Education, 2010), this unbalanced exposure becomes problematic if pre-service teachers limited exposure to approaches to assessment results in decreased classroom assessment proficiencies.

Further highlighting the unbalanced exposure to assessment content, within each assessment theme there were approaches that teacher educators did not widely endorse. These included an *assessment of learning* approach to Assessment Purpose, a *use/scoring* approach to Assessment Process, a *standard approach* to Assessment Fairness, and a *reliability* approach to Measurement Theory. A potential consequence of this finding could be a lack of emphasis or limited learning opportunities for pre-service teachers during a teacher education program with respect to these dimensions of assessment. An unbalanced understanding of the approaches to assessment may limit the options, tools, and processes a classroom teacher will need to draw upon at various points throughout their career. Without developing a broad foundational

knowledge in all forms of assessment during teacher education, it is not surprising that classroom teachers continue to prioritize similar approaches to their pre-service counterparts (Coombs et al., 2017).

Complicating the unbalanced approaches to assessment within each Assessment Theme is the high degree of variability of teacher educators' approaches across Assessment Themes. Of the 65 combinations of approaches (i.e., assessment profiles) held by teacher educators in this study, 49 profiles had unique membership (i.e., 49 teacher educators of the 108 included in this study had assessment profiles that were not shared with any other teacher educator). This high degree of variability implies that teacher educators, despite prioritizing similar approaches (within singular and discrete assessment literacy dimensions), may instruct, discuss, and model these approaches in contrasting ways. For example, the *assessment for learning* practices espoused by a teacher educator that prioritizes *design*, *standard*, and *reliability* approaches would appear very different than one that prioritizes *communication*, *differentiated*, and *validity* approaches.

Although determining robust statistical relationships between teacher educators' approaches to assessment and the degree to which assessment topics were integrated into teacher education courses was not possible due to study constraints, the degree of integration varied considerably by assessment topics. For example, teacher educators highly endorsed the use of assessment results to guide instructional decisions and in the design of fair assessments for diverse student but tended not to endorse understanding psychometric properties of assessments (e.g., reliability and validity).

To examine the relationship between demographic groupings and the integration of assessment content, an exploratory factor analysis was conducted with two factors identified: *current assessment topics* and *fair and transparent assessment practices*. Statistical differences in the degree to which teacher educators integrated assessment content (i.e., average factor scores) was detected only within field of instruction (i.e., assessment educator vs.

curriculum/professional studies educator). Differences between assessment and curriculum/professional studies educators are discussed in further detail in the following section.

Assessment and Curriculum/Professional Studies Educators' Approaches to Assessment

Before discussing possible causes and implications related to differences between assessment and curriculum/professional studies educators' approaches to assessment, it should be noted that the demographic characteristics of these groups differed in two important ways. The first demographic difference was that assessment educators were associated with larger faculties (more than half were associated with faculties with more than 75 members). The likely reason behind this relationship is that larger faculties might have additional resources to support educators with a specialized instructional focus such as classroom assessment.

The second difference was that assessment educators had less university teaching experience compared to curriculum/professional studies educators. Overall, 66.7% of assessment educators had less than two years of university teaching experience compared to 22.7% of curriculum/professional studies teachers. Interestingly, K-12 teaching experience of both assessment ($M=11.45$, $SD=11.04$) and curriculum/professional studies educators ($M=15.40$, $SD=10.17$) was statistically similar ($t_{(63)}=-1.156$, $p=.252$, $d=.54$). While K-12 teaching experience has been shown to profoundly shape teachers' assessment practices (Kauffman, Johnson, Kardos, Liu, & Peske, 2002; Liu, 2008; Mertler 2003; Remesal, 2011) corresponding research into the influence of university teaching experience on the assessment practices of teacher educators is somewhat lacking. It is possible that differences between assessment and curriculum/professional studies educators' approaches to assessment (addressed later in this chapter) may have been exacerbated by this difference in experience teaching at the university level instead of their respective instructional focus.

Setting aside the demographic differences, assessment and curriculum/professional studies educators' approaches to assessment differed in four notable ways: (a) assessment educators supported *assessment of learning*, *assessment for learning*, and *assessment as learning*

approaches more equally than curriculum/professional studies educators; (b) only assessment educators prioritized the hybrid variable *use/scoring & communication*; (c) assessment educators did not prioritize a *standard* approach to Assessment Fairness; and (d) assessment educators did not prioritize a *reliability* approach to Measurement Theory. A possible cause for these differences is assessment educators' generalized knowledge of contemporary classroom assessment literature, assessment standards, and K-12 assessment policies. Although curriculum/professional studies educators would also be expected to be knowledgeable in classroom assessment policies, their knowledge might be more domain-specific (Goodwin, 2010). Assessment educators, by the nature of their explicit course on classroom assessment, would aim to develop pre-service teachers' discrete teaching skills and knowledge that would be applicable in a range of classroom contexts. The notion that assessment educators diverge from curriculum educators due to their knowledge of classroom assessment is further supported by an examination of the alignment between assessment educators' approaches to assessment and assessment standards and provincial assessment policies.

Professional provincial standards (e.g. British Columbia Ministry of Education, 2012; Ontario College of Teachers, 2017) and provincial educational policies (e.g. Manitoba Education, Citizenship & Youth, 2006; Ministry of Education, 2010) all explicitly support the inclusion of both summative (assessment *of* learning) and formative (assessment *for* learning, assessment *as* learning) assessment within the classroom. By providing a more balanced approach to assessment education, assessment educators are more aligned with the standards and policy documents. The more unbalanced focus on formative assessment practices espoused by curriculum/professional studies educators may contribute to the promotion of a false dichotomy of classroom assessment practices within teacher education. In particular, teacher candidates (and consequently new classroom teachers) may understand formative and summative tasks as different kinds of assessment, each with unique methods for gathering evidence, instead of similar assessment tasks in which the information collected is used differently. Moreover, teacher candidates may seek to

replicate this unbalanced approach to assessment within their own K-12 classroom, which may contribute to a struggle within early career teachers to navigate tensions between formative assessment practices and the standards-based accountability system of Canadian education.

As mentioned previously, assessment educators did not show support for particular approaches to assessment. Amongst assessment educators there were no instances of support for a *standard* approach to Assessment Fairness or *reliability* approach to Measurement Theory. While these approaches were not dominantly held by curriculum/professional educators (8.9% supported approaches that included a *standard* approach; 14.1% supported approaches that included a *reliability* approach), the fact that they were held at all is noteworthy. Provincial policies examined within this study (e.g., Government of Quebec, 2001; Ministry of Education 2012; Ontario College of Teachers, 2013), do not support a *standard* approach to Assessment Fairness or strictly a *reliability* approach to Measurement Theory. This implies that pre-service teachers may be exposed to approaches to assessment in their curriculum/professional studies courses that are inconsistent with the assessment approaches outlined in provincial policy documents and implemented in their assessment courses. Compounding these differences, and discussed in further detail in the subsequent section, is the impact of the model of assessment education on teacher educators' approaches to assessment and integration classroom assessment content.

Assessment Education Models

The impact of two models of assessment education was explored through the analysis in this study: a mandatory model, in which all pre-service teachers completed an explicit assessment course or, an elective or embedded assessment model, in which institutions did not offer a mandatory assessment course. The influence of the assessment education model on the teacher educators' approaches to assessment was most pronounced in regards to approaches to Assessment Purpose. Teacher educators in programs with no mandatory assessment course had a more unbalanced approach to Assessment Purpose, specifically prioritizing an *assessment for*

learning approach. Evidence for the impact of this unbalanced approach to Assessment Purpose on the learning environment of pre-service teachers is further supported by the difference between the course descriptions of mandatory and elective assessment courses.

A concise analysis of the course descriptions of six assessment courses (three mandatory and three elective) was conducted. Mandatory assessment courses associated with the University Western Ontario (EDUC 5020S), Queen’s University (FOUN 101), and the University of Fraser Valley (EDUC 445) and elective assessment courses associated with Simon Fraser University (EDUC 325), University of Manitoba (EDUA 3508), and University of Saskatchewan (EPSE 348) were examined.

The first distinction that emerged was not which purposes of assessment (i.e., assessment of, for, and as learning) were addressed by explicit and elective assessment courses, but in the how these purposes were articulated. Mandatory assessment courses focused up “assessment for learning and assessment of learning” (FOUN 101), “assessment and evaluation” (EDUC 456), or “assessment for learning and assessment as learning” (EDUC 5020S). Conversely, elective assessment courses focused on assessing “student learning” (EDUC 3508), “assessing student achievement” (EPSE 348) or “student achievement and growth” (EDUC 325). While a document analysis of assessment course syllabi was beyond the scope of this study, this distinction in language within the course descriptions does suggest that mandatory and elective assessment courses may not be addressing assessment content in a similar manner.

There are also differences in the knowledge and skills mandatory and elective assessment courses aim to develop. Mandatory assessment courses explicitly included extending course content beyond the use of classroom assessment instruments: “Students will engage in examining assessment theory, policy, and practice in relation to the current context of contemporary schooling” (FOUN 101); “students develop a professional level of knowledge, skills, and aptitudes in relation to philosophy, theory, and pedagogical application...” (EDUC 456); “an integral part of the planning process is the assessment and evaluation of student academic, social,

and emotional development” (EDUC 445). Conversely, elective assessment courses focused upon the creation and application of assessment instruments, with courses providing “a survey of assessment methods that contribute to improving teaching and learning” (EDUC 325) and “provide training in the skills involved in assessing student achievement. Students will learn how to construct various measuring devices” (ESPE 348) and become knowledgeable “...in the preparation, use, and interpretation of various approaches to assessing student learning” (EDUA 3508).

A lack of agreement between assessment models in both the articulation of Assessment Purpose and content focus, coupled with the variation in approaches to Assessment Purpose, point to fundamental differences between assessment models. While the impact of different assessment models on pre-service teachers’ approaches to assessment is not yet clearly understood, this finding adds a further dimension to the variability in assessment education of pre-service teachers. This finding adds to the call from researchers for systematic studies into effective models of assessment education (Poth, 2013) with a focus on understanding the influence of teacher educators’ approaches to assessment (Brookhart, 2016). In particular, understanding the impact of different models of assessment education on pre-service teachers’ assessment literacy will allow teacher education programs to more effectively and efficiently prepare assessment capable teachers.

Limitations

Although important findings have emerged from this study, there were constraints to the study design and analysis. The first constraint was the lack of knowledge on the demographics and overall population size of Canadian teacher educators from which to situate the findings from this study. As this study was the first nation-wide large-scale examination of Canadian teacher educators’ assessment literacy, this limitation was anticipated.

A second limitation was the impact of indirect effects (particularly through gender) on teacher educators approaches to assessment could not be determined. Although research indicates

male and female students may prefer different forms of assessment (Bierenbaum & Feldman, 1998) and perform differently on them (Hyde, Lindberg, Linn, Ellis, & Williams, 2008; Voyer & Voyer, 2014), a corresponding relationship for teachers' assessment preferences is lacking in the literature (Postareff, Virtanen, Katajavuori, & Lindblom-Ylänne, 2012). Previous studies that employed the ACAI noted no differences in approaches to assessment due to gender (DeLuca et al., 2016b). A plausible explanation for the relationship between gender and teacher educators' approaches to assessment could be that either males or females have a tendency to have a particular instructional focus (e.g., literacy, mathematics) and it is this instructional focus that is influencing the approaches to assessment. While an analysis of teacher educators' instructional focus was not possible in this study, previous research has shown that assessment practices are shaped by teachers' content area (DeLuca et al., 2016b) and that a teachers' pedagogy is closely coupled with assessment practice (Samuelowicz & Bain, 2001).

The third limitation was in the comparisons between mandatory and elective assessment courses. While a document analysis of assessment course syllabi was beyond the scope of this study, publically available course descriptions analyzed instead. The patterns that were discussed in this study should be taken as initial trends rather than conclusive findings due to the small number of short course descriptions examined. Future research could address this limitation by investing in professional relationships with teacher educators and/or administrators prior to requesting course syllabi.

The final limitation was with the design of the ACAI. The ACAI presents participants with fixed items, each describing a specific behavior that corresponds to a specific approach to assessment. Teacher educators, drawing upon their teaching experience and/or assessment knowledge, may have recognized the underlying approach to assessment and, despite the anonymous nature of the survey, based their responses upon professional expectations rather than their personal priorities. The survey also constrained teacher educators to three behaviours per question and in doing so, did not allow teacher educators to either describe their own approach

(i.e., a fourth option) or explain why particular behaviours were prioritized. These limitations could be addressed by including an open-ended response after each question for participants to describe their rationale and/or a forth approach.

Significance and Emerging Questions

The influence of teacher educators is immense, experienced both directly by teacher candidates but also indirectly by the future students of those teachers. As noted by Ginot,

I have come to the frightening conclusion that I am the decisive element. It is my personal approach that creates the climate. It is my daily mood that makes the weather...

In all situations, it is my response that decides whether a crisis is escalated or de-escalated, a person is humanized or dehumanized. (1972)

Within a teacher education program, teacher educators shape future teachers' classroom practices through the development of discrete teaching skills and knowledge and by equipping teacher candidates to face a vast array of unforeseeable instructional dilemmas, including those associated with their assessment practices. As noted by Brookhart (2016) "teacher candidates' repertoire of effective teaching practices depends on the beliefs about learning and the approach to assessment espoused by the respective teacher educator" (p. 17). Findings from this study begin to lay the foundation for future studies into the impact of Canadian teacher educators' assessment literacy on teacher education. Without an understanding of teacher educators' approaches to assessment, leveraging teacher education programs to more effectively and efficiently prepare assessment capable teachers is a formidable challenge (Popham, 2009, 2013).

Findings from this research serve to inform the development and delivery of future assessment education. As this study provides the first examination of Canadian teacher educators' assessment literacy, teacher educators are provided the opportunity to compare their assessment literacy to that of K-12 classroom teachers and teacher candidates. As noted previously, research on teacher educators is often either self-study (Bullock & Christou, 2009; Grant & Gillette, 2006; Zeichner, 2005) or is drawn upon the experiences of small numbers of teacher educators

(Cochran-Smith, 2003; Korthagen, Loughran & Lunenberg 2008). Future research in this area needs to examine patterns and trends of teacher educators' assessment literacy so that individual teacher educators can situate their beliefs and practices in the larger context of Canadian teacher education. Additionally, teacher education programs can provide targeted support for teacher educators whose approaches to assessment do not align closely with existing assessment policies with the program.

This study highlights two promising areas of future research. The first is the need to further clarify and understand the factors that shape teacher educators' assessment literacy. In particular, the influences of the instructional focus (e.g., math educators, literacy educators, assessment educators), instructional method (e.g., large lecture hall, small class size), and teaching experience (e.g., K-12 classrooms, university content), on teacher educators' assessment literacy appear promising. Furthermore, a comparison between teacher educators' stated and enacted approaches to assessment is needed, ideally through mixed method studies that pair survey reports with qualitative observations.

A second area of future research is to determine the impact of teacher educators' assessment literacy on the developing approaches to assessment of pre-service teachers. Without of teacher educators' assessment literacy, leveraging teacher education programs to more effectively and efficiently prepare assessment capable teachers is a formidable challenge (Popham, 2009, 2013). Findings from this research may serve to inform the development and delivery of future assessment education with the overall aim of enhancing the quality of assessment in Canadian schools and classrooms, ultimately supporting student learning and achievement.

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Appendix A

Recruitment Scripts

Dear _____,

I would appreciate if you could forward the message below to all teacher educators (i.e., instructors) within your preservice teacher education program. This message invites teacher educators to participate in a short survey on their approaches to assessment education.

If you are interested, I am happy to provide you with a detailed report outlining teacher educators' views on classroom assessment instruction from across Canada once the study is complete. Should you have any questions regarding this study, please don't hesitate to contact me (andrew.coombs@queensu.ca) or my supervisor, Dr. Christopher DeLuca (cdeluca@queensu.ca).

Sincerely,
Andrew Coombs, MEd student

Teacher Educators' Approaches to Assessment

Dear Teacher Educator:

We value your views on classroom assessment practices and ask that you take a few minutes to complete a short survey on teacher educators' approaches to assessment. Your responses will also help us better understand the assessment education of Canadian teacher candidates. Upon completing the survey, your name will be entered into a draw to *win a \$100 gift certificate of your choice*. This research has been cleared by the Queen's University General Review of Ethics Board. More information about this study is below. By clicking on the following link, you are freely agreeing to participate in this voluntary study and confirm that you understand the risk and benefits of participation: [CLICK HERE FOR SURVEY](#)

Thank you for considering this request.

Christopher DeLuca, PhD & Andrew Coombs, MEd student
Faculty of Education, Assessment and Evaluation Group
Queen's University

Research Study Information

Study Leadership

This research project is supported by Dr. Christopher DeLuca and Dr. Lyn Shulha (Queen's University) and led by Andrew Coombs, a MEd student in the Faculty of Education at Queen's University.

Purpose

The purpose of this study is to examine the approaches to assessment held by teacher educators in teacher education programs across Canada.

Eligibility

To be in this study, you must be a sole or co-instructor of at least one course or module within a teacher education program in Canada during the 2016-2017 academic year.

Participation

During this study, you will complete a questionnaire that will take between 10 and 15 minutes to complete. The questionnaire is based on five classroom assessment related scenarios, a 12-question section regarding your instructional content, and a short demographic section. Your participation is voluntary. You may choose to withdraw while completing the survey by simply closing your web browser window; however, once you submit your survey you will be unable to withdraw your data as no identifiable information is collected on the survey.

Risks of Participation

The risks you run by taking part in this study are minimal and not higher than those faced in everyday life.

Benefits of Participation

Upon request, a short report detailing the trends in teacher educators' approaches to assessment across Canada can be provided. You may also choose to enter your name into a draw to win a \$100 gift certificate.

Confidentiality

If you choose to enter the draw for a \$100 gift certificate, you will be asked for your email address. However, your email address will not be retained with your responses to the survey questions. Survey data will be stored only on a password-protected computer. Your responses will not be reported individually, but aggregated with numerous other participant responses.

Further Information

If you have any questions or would like additional information about this study, please contact Andrew Coombs at andrew.coombs@queensu.ca. You may also contact Dr. Christopher DeLuca at cdeluca@queensu.ca. For ethical concerns, you may contact the General Research Ethics Board, Queens University at 613-533-6000.

Consent

By clicking on the survey link below you are agreeing to participate in this study and that you understand the information on this form, that any questions you may have about this study have been answered, and that you are eligible and voluntarily agree to participate.

[CLICK HERE FOR SURVEY](#)

Appendix B

Graduate Research Ethics Board Approval Letter



August 18, 2016

Dr. Christopher DeLuca
Associate Professor
Faculty of Education
Duncan McArthur Hall
Queen's University
511 Union Street West
Kingston, ON, K7L 3N6

Dear Dr. DeLuca:

RE: Amendment for your study entitled: **GEDUC-702-13 Teacher Assessment Competency within the Accountability Era of Canadian Education: Constructing a Baseline Measure; ROMEO# 6011011**

Thank you for submitting your amendment requesting the following changes:

- 1) To add Mr. Andrew Coombs to the Project Team as a Research Assistant;
- 2) To recruit up to 300 teacher educators to take the Approaches to Classroom Assessment Inventory (ACAI) survey via the existing weblink;
- 3) CORE certificate for Mr. Coombs;
- 4) Recruitment Script for Teacher Educators (v. 2016/08/17);
- 5) Letter of Information/Consent Form for Teacher Educators (v. 2016/08/17).

By this letter you have ethics clearance for these changes.

Good luck with your research.

Sincerely,

A handwritten signature in cursive script that reads "John B. Freeman".

John Freeman, Ph.D.
Chair
General Research Ethics Board

c: Mr. Andrew Coombs, Research Assistant

Appendix C

Teacher Education Program Demographics

Institution	Frequency	Teacher Candidate Population	Active Teacher Educators	Explicit Assessment Course	Mandatory Course in Assessment
Athabasca University	1	---	---	---	---
Brandon University	1	357	44	Yes	Yes
Brock University	6	591	98	Yes	Yes
Lakehead University	5	380	75	Yes	Yes
McGill University	1	1307	148	Yes	Yes
Mount Royal University	2	---	---	Yes	Yes
Mount Saint Vincent University	2	91	---	Yes	Yes
Queen's University	13	481	74	Yes	Yes
Simon Fraser University	4	1298	70	Yes	No
St. Thomas University	2	---	13	Yes	Yes
Thompson Rivers University	1	78	42	No	No
Université de Sherbrooke	1	---	---	---	---
Université du Québec	1	---	---	Yes	Yes
University of Alberta	2	595	89*	Yes	Yes
University of British Columbia	4	482	50*	Yes	No
University of Calgary	1	889	---	Yes	Yes
University of Lethbridge	1	400	43	Yes	Yes
University of Manitoba	1	344	78	Yes	No
University of New Brunswick	2	202	20*	Yes	Yes
University of Ottawa	2	884	38*	Yes	Yes
University of Prince Edward Island	1	102	38	Yes	Yes
University of Regina	2	1435	54	Yes	Yes
University of Saskatchewan	1	380	59	Yes	No
University of the Fraser Valley	2	64	22	Yes	Yes
University of Toronto	6	2496	77**	No	No
University of Western Ontario	8	286	68	Yes	Yes
University of Winnipeg	1	140	82	Yes	Yes
Wilfrid Laurier University	1	113	37	Yes	Yes
University Not Specified	29	---	---	---	---

Note: * for the winter term only; ** for the consecutive program only.

Appendix D

Approaches to Classroom Assessment Inventory

WELCOME TO THE ACAI

The purpose of this survey is to examine the approaches to assessment supported by teacher educators across Canadian teacher education programs. This survey contains scenario-based questions designed to help analyze your approach to classroom assessment. Given this format, there are no correct answers. Rather, you are asked to prioritize your response to each assessment scenario. In completing the following questions, please respond to each scenario based on how you would encourage your teacher candidates to respond to each scenario. The survey should take approximately 10-15 minutes to complete. At the end of the survey, you will be invited to provide your email address to enter a draw to win a \$100 Gift Certificate.

LETTER OF INFORMATION & CONSENT

Study Leadership: This research project is supported by Dr. Christopher DeLuca and Dr. Lyn Shulha (Queen's University) and led by Andrew Coombs, a MEd student in the Faculty of Education at Queen's University.

Purpose: The purpose of this study is to examine the approaches to assessment held by teacher educators in teacher education programs across Canada.

Eligibility: To be in this study, you must be a sole or co-instructor of at least one course or module within a teacher education program in Canada during the 2016-2017 academic year.

Participation: During this study, you will complete a questionnaire that will take between 10 and 15 minutes to complete. The questionnaire is based on five classroom assessment related scenarios, a 12-question section regarding your instructional content, and a short demographic section. Your participation is voluntary. You may choose to withdraw while completing the survey by simply closing your web browser window; however, once you submit your survey you will be unable to withdraw your data as no identifiable information is collected on the survey.

Risks of Participation: The risks you run by taking part in this study are minimal and not higher than those faced in everyday life.

Benefits of Participation: Upon request, a short report detailing the trends in teacher educators' approaches to assessment across Canada can be provided. You may also enter your name into a draw to win a \$100 gift certificate.

Confidentiality: If you choose to enter the draw for a \$100 gift certificate, you will be asked for

your email address. However, your email address will not be retained with your responses to the survey questions. Survey data will be stored only on a password-protected computer. Your responses will not be reported individually, but aggregated with numerous other participant responses.

Further Information: If you have any questions or would like additional information about this study, please contact Andrew Coombs at andrew.coombs@queensu.ca. You may also contact Dr. Christopher DeLuca at cdeluca@queensu.ca. For ethical concerns, you may contact the General Research Ethics Board, Queens University at 613-533-6000.

Consent: By clicking Next, you are agreeing to participate in this study and that you understand the information on this form, that any questions you may have about this study have been answered, and that you are eligible and voluntarily agree to participate.

PART A: ASSESSMENT SCENARIO-BASED QUESTIONS

You will be presented with five scenarios in this section. Each scenario has 4 related questions. Please respond to the scenario based on how you would encourage your teacher candidates to respond to this scenario. You may select a single response for each question. If selecting multiple responses within a question, please prioritize them.

Scenario 1

You give your class a paper-pencil summative unit test with accommodations and modifications for identified learners. Sixteen of the 24 students fail. What actions should a teacher prioritize? Please respond based on how you would encourage your teacher candidates to respond to this scenario.

I would encourage my teacher candidates to:

	1 st Priority	2 nd Priority	3 rd Priority
Record the test grade as each student's summative assessment for the unit but reduce its weight in the final grade.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Based on your analysis of the test, re-teach parts of the unit focusing on items students struggled with, give students opportunities to apply their learning, and then re-test material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask students to reflect on their test preparation, analyze their test responses, and make a personal plan for re-learning the material. Then re-test the material.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Recognize that your test design may be flawed and design a revised unit test to give students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Remove test questions that most students failed and re-calculate student scores without those questions.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Schedule student conferences (individual or group) to discuss grades, areas of confusion, and next steps.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Allow all students to retake a similar test and average the two grades.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensure students with identified learning exceptionalities retake a similar test and take the better of the two grades for those students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have each student who failed the test negotiate with you a new task/activity that would appropriately demonstrate their learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Analyze test questions that the majority of students consistently answered incorrectly. Then provide students with new questions to test those concepts.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consider student test scores in light of previous, formative assessment information available for each student. Consider this information and adjust grades accordingly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Reflect on which students failed, considering wording of test items and extenuating circumstances that may have contributed to the failure in relation to previous assessment information. Then adjust grades accordingly.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scenario 2

You discover that one of your students has plagiarized some of his assignment (i.e., an essay).

What actions should a teacher prioritize? Please respond based on how you would encourage your teacher candidates to respond to this scenario.

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Administer consequences in alignment with school policies on plagiarism.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have him highlight the plagiarized text and then rewrite the section in his own words. As a teacher, reflect on how this incident might inform your future teaching practice.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ask him to document how he obtained and used reference materials for the assignment and what he would do differently next time. Have him write a work plan for re-doing the assignment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Reflect on how you as a teacher designed and presented the assignment. In the future ensure that you deliberately design opportunities for students to learn about plagiarism.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Grade the aspect of student work that are original and deduct grades for the plagiarized sections.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Talk with him about the severity of plagiarism and negotiate potential next steps for his learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Explain to him the policy on plagiarism and how you consistently apply the policy so that it is fair for all students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consider his specific learning needs and exceptionalities before determining whether or not to apply the general plagiarism policy.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Conference with him to review the implications of plagiarizing and agree upon an appropriate alternate assignment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:

	1 st Priority	2 nd Priority	3 rd Priority
Consistently apply a grade of zero to the plagiarized work.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consider the original aspects of the assignment and the plagiarized text to determine what he knows and does not appear to know about the content expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Examine extenuating circumstances that led to the plagiarism and then develop an alternative assignment to assess the expectations relevant to the plagiarized section of the assignment.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scenario 3

Out of 28 students in your class, you have 4 identified students on Individual Education Plans (IEP) (who require accommodations but not modified curriculum) as well as several other unidentified students with differentiated learning needs. You must decide how to accurately measure learning in your class. What actions should a teacher prioritize? Please respond based on how you would encourage your teacher candidates to respond to this scenario.

I would encourage my teacher candidates to:

	1 st Priority	2 nd Priority	3 rd Priority
Provide the 4 identified students with accommodations on all summative assessments.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Implement scaffolded formative assessments with all of your students based on their individual learning needs, leading up to the final accommodated unit test.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Allow each student to develop a personal learning plan based on his/her strengths, learning needs, and the learning goals.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Design a variety of assessment tasks and allow students to choose how they will demonstrate their achievement of learning expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Adjust your rubrics and scoring guides to reflect accommodated and modified programs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Explain to students and parents the purpose of accommodations and how they will be implement and communicated on students' report cards.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Grade students based on the same assessments including homework, quizzes, and a unit test.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Ensure students with identified learning exceptionalities are provided with accommodations on all assessment tasks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Negotiate differentiated assessments for all students based on their individual learning needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Use the same scoring rubric for all students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop different scoring rubrics for identified students.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Use the same scoring rubric for all students but use professional judgment to apply criteria differently based on individual student ability.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scenario 4

You are planning a unit for your class. What actions should a teacher prioritize? Please respond based on how you would encourage your teacher candidates to respond to this scenario.

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Start by designing a summative evaluation and use backward planning to create your lesson plans.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Design formative assessments to be used during instruction. Use information from these assessments to guide the design of subsequent lessons, learning activities, and summative assessment tasks.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Start by reviewing the curriculum learning expectations with students and require each student to develop and negotiate a personal learning and assessment plan for the unit of study.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Design a summative evaluation that covers all relevant curriculum expectations for the unit.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Consult school policy to decide how homework, quizzes, and the summative evaluation will be weighted in the overall grade for the unit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Co-construct learning goals and discuss assignments and grading criteria for the unit with your students	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:	1 st Priority	2 nd Priority	3 rd Priority
Plan class lessons and assessments that are the same for all students and encompass the curriculum expectations.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Give all students a diagnostic assessment at the beginning of the unit to group students for differentiated learning and assessment activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Give all students a diagnostic assessment at the beginning of the unit and have students use their results to select appropriate learning and assessment activities.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:

	1 st Priority	2 nd Priority	3 rd Priority
Use the professionally developed quizzes and unit test provided in the teacher's guide.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop assessments based on the content and activities of your enacted lessons.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Develop assessments based on questions/activities that have worked well with other students like yours but adjust them to take into consideration the content and activities of your enacted lessons.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scenario 5

A parent of an identified student is concerned about upcoming standardized test. What actions should a teacher prioritize? Please respond based on how you would encourage your teacher candidates to respond to this scenario.

I would encourage my teacher candidates to:

	1 st Priority	2 nd Priority	3 rd Priority
Standardized testing provides an important measure of how the school system is working for all students and the results allow school districts to invest resources into schools where improvement is needed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standardized tests can provide feedback on students' learning towards educational standards and help guide teaching and learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The standardized test will provide students an opportunity to develop learning strategies, test preparation skills, and goals for their learning.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:

	1 st Priority	2 nd Priority	3 rd Priority
Prior to testing, all students will complete practice tests to prepare and become familiar with the standardized test format.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standardized test results will not be incorporated into her child's report card grades but will facilitate instructional decisions regarding subsequent courses or programs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The purpose of standardized testing will be explained in detail to all students prior to testing and results explained to students and parents.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:

	1 st Priority	2 nd Priority	3 rd Priority
All eligible students in the class must write the standardized assessment. Her child's IEP will be consulted prior to testing and appropriate accommodations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Her child's IEP will be consulted prior to testing and appropriate accommodations will be provided.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Discuss with the parent why standardized tests are required and how classroom assessments enable greater differentiation.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

I would encourage my teacher candidates to:

	1 st Priority	2 nd Priority	3 rd Priority
Standardized assessments are designed to provide a measure of students' achievement across the school district.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Report card grades allow parents to draw more valid conclusions about their child's growth and achievement of expectations that are grounded in the curriculum and prioritized by the teacher in response to student needs.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Standardized assessments, in conjunction with report card grades, allow parents to draw more informed conclusions about their child's growth and achievement than either source alone can provide	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART B: QUESTIONS ABOUT YOUR ASSESSMENT INSTRUCTION

In your teaching of preservice courses, how much attention do you give to the following topics:

	Very Low	Low	Moderate	High	Very High
1. Choosing the appropriate purpose of assessment (e.g., diagnostic, formative, summative) based on instructional goals and assessment	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Constructing assessments in alignment with current assessment theory, principles, and practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Administering assessments in alignment with current assessment theory, principles, and practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Scoring assessments in alignment with current assessment theory, principles, and practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Interpreting and using assessment information in alignment with current assessment theory, principles, and practices.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Understanding current reporting and grading policies and theories	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Communicating assessment purposes, processes, and results to students, parents/guardians, and other stakeholders.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Cultivating fair assessment conditions for all learners, with sensitivity to student diversity and exceptional learners.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Disclosing accurate information about assessments. Protecting the rights and privacy of students that are assessed.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Understanding psychometric (i.e., technical) properties of assessments (e.g. reliability and validity).	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Integrating formative assessment (including assessment for and as learning) during instruction to guide next steps in teaching	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

12. Analyzing and using assessment information to guide instructional decisions and support student learning.

Other assessment topics (Please describe):

PART C: QUESTIONS ABOUT YOU AND YOUR BACKGROUND

1. What institution(s) are you currently employed as a teacher educator?
2. Overall, approximately how many teacher candidates do you instruct per year at your institution(s)
3. How many years have you been teaching within your teacher education program?
4. What teacher education courses have you been teaching within your teacher education program?
5. Briefly describe how 'assessment' topics are addressed in each of these courses?
6. How many years have you taught Grades 1-12 in public, private, or religious schools?
7. What gender do you identify with?

Females

Male

Other

Would you be interested in becoming involved in Part 2 of this study? Your involvement would be limited to providing a copy of course documentation (e.g. course syllabus, assignment descriptions) and providing the ACAI to your teacher candidates. If you are interested, please provide your email. Please note this question is optional.

Please provide your email address to be entered into a draw to win a \$100 gift certificate (optional). Note: you must click 'submit' to enter the draw.

We welcome your feedback. If you have any comments about this survey, please provide them here:

Appendix E

Assessment Profiles

Frequency	Assessment Purpose	Assessment Process	Assessment Fairness	Measurement Theory
8	<i>AaL</i>	<i>Communication</i>	<i>Differ.</i>	<i>Validity</i>
8	<i>AaL</i>	<i>Communication</i>	<i>Differ.</i>	<i>Balanced</i>
6	<i>AfL</i>	<i>Communication</i>	<i>Differ.</i>	<i>Validity</i>
5	<i>AfL</i>	<i>Communication</i>	<i>Differ.</i>	<i>Balanced</i>
5	<i>AaL</i>	<i>Design</i>	<i>Differ.</i>	<i>Balanced</i>
4	<i>AfL</i>	<i>Design</i>	<i>Differ.</i>	<i>Balanced</i>
3	<i>AoL</i>	<i>Design</i>	<i>Equitable</i>	<i>Balanced</i>
3	<i>AfL</i>	<i>Design</i>	<i>Equitable</i>	<i>Validity</i>
3	<i>AfL & AaL</i>	<i>Comm.</i>	<i>Differ.</i>	<i>Balanced</i>
2	<i>AoL</i>	<i>Design</i>	<i>Equitable & Differ.</i>	<i>Balanced</i>
2	<i>AfL</i>	<i>Design</i>	<i>Differ.</i>	<i>Validity</i>
2	<i>AfL</i>	<i>Use/Scoring</i>	<i>Equitable</i>	<i>Balanced</i>
2	<i>AfL</i>	<i>Communication</i>	<i>Equitable</i>	<i>Balanced</i>
2	<i>AfL</i>	<i>Communication</i>	<i>Differ.</i>	<i>Validity & Balanced</i>
2	<i>AfL</i>	<i>Communication</i>	<i>Equitable & Differ.</i>	<i>Validity</i>
2	<i>AfL & AaL</i>	<i>Communication</i>	<i>Differ.</i>	<i>Validity</i>
1	<i>AoL</i>	<i>Communication</i>	<i>Standard</i>	<i>Reliability</i>
1	<i>AoL</i>	<i>Communication</i>	<i>Standard</i>	<i>Validity</i>
1	<i>AoL</i>	<i>Communication</i>	<i>Equitable</i>	<i>Balanced</i>
1	<i>AoL</i>	<i>Communication</i>	<i>Standard & Differ.</i>	<i>Reliability</i>
1	<i>AfL</i>	<i>Design</i>	<i>Standard</i>	<i>Reliability</i>
1	<i>AfL</i>	<i>Design</i>	<i>Standard</i>	<i>Balanced</i>
1	<i>AfL</i>	<i>Design</i>	<i>Equitable</i>	<i>Balanced</i>
1	<i>AfL</i>	<i>Design</i>	<i>Equitable</i>	<i>Validity & Balanced</i>
1	<i>AfL</i>	<i>Design</i>	<i>Standard & Equitable</i>	<i>Reliability & Validity</i>
1	<i>AfL</i>	<i>Design</i>	<i>Standard & Differ.</i>	<i>Balanced</i>
1	<i>AfL</i>	<i>Design</i>	<i>Equitable & Differ.</i>	<i>Balanced</i>
1	<i>AfL</i>	<i>Communication</i>	<i>Standard</i>	<i>Reliability</i>
1	<i>AfL</i>	<i>Communication</i>	<i>Standard</i>	<i>Validity</i>
1	<i>AfL</i>	<i>Design & Use/Scoring</i>	<i>Equitable</i>	<i>Reliability</i>
1	<i>AfL</i>	<i>Design & Use/Scoring</i>	<i>Differ.</i>	<i>Balanced</i>
1	<i>AfL</i>	<i>Design & Comm.</i>	<i>Equitable</i>	<i>Validity & Balanced</i>
1	<i>AfL</i>	<i>Design & Comm.</i>	<i>Differ.</i>	<i>Validity</i>

1	<i>AfL</i>	<i>Design & Comm.</i>	<i>Equitable & Differ.</i>	<i>Validity</i>
1	<i>AfL</i>	<i>Use/Scoring & Comm.</i>	<i>Equitable</i>	<i>Balanced</i>
1	<i>AaL</i>	<i>Design</i>	<i>Equitable</i>	<i>Validity</i>
1	<i>AaL</i>	<i>Design</i>	<i>Equitable</i>	<i>Validity & Balanced</i>
1	<i>AaL</i>	<i>Design</i>	<i>Differ.</i>	<i>Validity</i>
1	<i>AaL</i>	<i>Design</i>	<i>Differ.</i>	<i>Reliability & Balanced</i>
1	<i>AaL</i>	<i>Use/Scoring</i>	<i>Equitable</i>	<i>Reliability</i>
1	<i>AaL</i>	<i>Communication</i>	<i>Equitable</i>	<i>Reliability</i>
1	<i>AaL</i>	<i>Communication</i>	<i>Equitable</i>	<i>Validity</i>
1	<i>AaL</i>	<i>Communication</i>	<i>Equitable</i>	<i>Balanced</i>
1	<i>AaL</i>	<i>Communication</i>	<i>Equitable</i>	<i>Reliability & Validity</i>
1	<i>AaL</i>	<i>Communication</i>	<i>Differ.</i>	<i>Reliability & Balanced</i>
1	<i>AaL</i>	<i>Communication</i>	<i>Equitable & Differ.</i>	<i>Reliability</i>
1	<i>AaL</i>	<i>Design & Use/Scoring</i>	<i>Differ.</i>	<i>Balanced</i>
1	<i>AaL</i>	<i>Design & Comm.</i>	<i>Standard</i>	<i>Validity</i>
1	<i>AaL</i>	<i>Design & Comm.</i>	<i>Equitable</i>	<i>Validity</i>
1	<i>AaL</i>	<i>Design & Comm.</i>	<i>Differ.</i>	<i>Validity</i>
1	<i>AaL</i>	<i>Design & Comm.</i>	<i>Differ.</i>	<i>Balanced</i>
1	<i>AoL + AfL</i>	<i>Design</i>	<i>Differ.</i>	<i>Reliability & Balanced</i>
1	<i>AoL + AfL</i>	<i>Communication</i>	<i>Differ.</i>	<i>Balanced</i>
1	<i>AoL + AfL</i>	<i>Design & Comm.</i>	<i>Equitable</i>	<i>Balanced</i>
1	<i>AoL + AfL</i>	<i>Use/Scoring & Comm.</i>	<i>Differ.</i>	<i>Reliability & Balanced</i>
1	<i>AoL + AaL</i>	<i>Design & Comm.</i>	<i>Differ.</i>	<i>Reliability</i>
1	<i>AfL & AaL</i>	<i>Design</i>	<i>Standard</i>	<i>Reliability & Balanced</i>
1	<i>AfL & AaL</i>	<i>Design</i>	<i>Equitable</i>	<i>Balanced</i>
1	<i>AfL & AaL</i>	<i>Design</i>	<i>Differ.</i>	<i>Reliability</i>
1	<i>AfL & AaL</i>	<i>Design</i>	<i>Differ.</i>	<i>Validity</i>
1	<i>AfL & AaL</i>	<i>Design</i>	<i>Standard & Equitable</i>	<i>Validity</i>
1	<i>AfL & AaL</i>	<i>Communication</i>	<i>Equitable</i>	<i>Balanced</i>
1	<i>AfL & AaL</i>	<i>Communication</i>	<i>Differ.</i>	<i>Validity & Balanced</i>
1	<i>AfL & AaL</i>	<i>Design & Comm.</i>	<i>Differ.</i>	<i>Balanced</i>
1	<i>AfL & AaL</i>	<i>Design & Comm.</i>	<i>Differ.</i>	<i>Validity & Balanced</i>

Note. AoL = Assessment of Learning, AfL = Assessment for Learning, AaL = Assessment as Learning, Comm. = Communication, Differ. = Differentiated