1-1-2019

Improving Beginning Teacher Effectiveness: The Most Important and Difficult Competencies and How They Differ in Low-Income Schools

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Recommended Citation

Improving Beginning Teacher Effectiveness: The Most Important and Difficult Competencies and How They Differ in Low-Income Schools

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Document Type
Dissertation

Degree Name
Ph.D.

Department
Curriculum and Instruction

First Advisor
Garrett Roberts, Ph.D.

Keywords
Beginning teachers, Low income schools, Teacher effectiveness

Subject Categories
Curriculum and Instruction | Education | Teacher Education and Professional Development

Publication Statement

Improving Beginning Teacher Effectiveness:

The Most Important and Difficult Competencies

and How They Differ in Low-Income Schools

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A Dissertation

Presented to

the Faculty of the Morgridge College of Education

University of Denver

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In Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

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by

Jessica Lerner

March 2019

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Title: Improving Beginning Teacher Effectiveness: The Most Important and Difficult
Competencies and How They Differ in Low-Income Schools
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Degree Date: March 2019

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Chapter One: Introduction

Research suggests teacher quality is vital for improving student achievement (Aaronson et al., 2007; Kane et al., 2005; Nye et al., 2004; Rivkin et al., 2005; Wright et al., 1997), especially in low-income schools (Nye et al., 2004). Unfortunately, low-income schools tend to have more beginning teachers, who tend to be less effective than more experienced teachers (Clotfelter, Ladd, & Vigdor, 2010). Teacher preparation programs need a better understanding of the practices most likely to produce effective beginning teachers. The purpose of this study was to investigate consensus among expert educators on the teaching competencies that warrant emphasis during teacher preparation and training.

Research Problem and Significance

International assessment data suggest students in the United States lag behind many industrialized nations in academic achievement. The most recent results of the Programme for International Student Assessment (PISA) placed the U.S. 38th out of 71 countries in math and science (Desilver, 2017). Moreover, differences in achievement among students from high- and low-poverty families are stark and pervasive (Sass, Hannaway, Xu, Figlio, & Feng, 2012). Standardized test scores show the achievement gap between high and low-income students has widened over the past twenty years (Reardon, 2011).

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The importance of teacher quality. For more than two decades, scholars have attempted to isolate the factors most likely to increase student achievement and reduce educational disparities. Researchers began by investigating the variables most likely to predict student achievement on standardized tests. For example, Wright, Horn, and Sander (1997) conducted a longitudinal analysis of student achievement data from the Tennessee Value-Added Assessment system. They examined the relative magnitude of several factors on student achievement, including: teacher effects, class size, intra-classroom heterogeneity, and prior student achievement level. Each of the factors was statistically isolated to test its effect on student achievement. They found that teacher effects were the dominant factor affecting student achievement gains.

Similarly, Nye, Konstantopoulos, and Hedges (2004) examined data from the Tennessee Class Size Experiment, in which students and teachers were randomly assigned to small or large classes, to estimate teacher and class size effects on student achievement. Random assignment enabled researchers to ensure that systematic differences in student achievement was due to one of two sources: class size or teacher effectiveness. To isolate teacher effects, the researchers controlled for class size. They found "substantial differences among teachers in the ability to produce achievement gains in their students" (p. 253). The teachers who produced higher than average achievement gains were considered higher quality teachers. Subsequent studies provided more evidence that variation in teacher quality could be statistically isolated as a significant factor predicting student achievement (Aaronson, et al., 2007; Kane, et al., 2005; Rivkin,

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et al., 2005; Wright, et al., 1997). Moreover, research suggested that the effect of quality teaching on student achievement persists over several years (Konstantopoulos, 2011).

While this influential research showed that some teachers affected student achievement more than others, at the time researchers were unable to predict which teachers were effective based on the characteristics included in their data sets. For example, variation in teacher quality could not reliably be explained by traditional human capital variables, including level of teacher education (Aaronson et al., 2007; Kane et al., 2005; Rivkin et al., 2005). Researchers did find that beginning teachers were less effective than those with more experience, but these effects leveled off after the first five years of experience (Clotfelter, Ladd, & Vigdor, 2010). In fact, research showed that teacher quality tended to improve significantly after the first year of teaching (Hanushek, Rivkin, & Kain, 2004). This research suggested that teacher quality was important, but it was unclear what made some teachers more effective than others, aside from having at least one year of teaching experience.

The elucidation that teachers were vital for student success prompted reform efforts aimed at defining, measuring, and improving teacher effectiveness, including teacher evaluation reform (Anderson, Butler, Palmiter, & Arcaira, 2016; Sawchuk, 2015) and improving teacher preparation (Worrell et al., 2014). However, there are conflicting conclusions among educational scholars about how to best define effective teaching and how to best prepare future teachers. Partee (2012) notes,

> Research shows that an effective teacher is key to student success. But determining what evidence best reflects teacher effectiveness and how this information can be used to improve the quality of teaching are among the significant issues facing public education today. (p. 1)

Research problem #1: Defining effective teaching. To measure teaching quality, effective teaching must be accurately defined. Because traditional human capital variables like level of education fail to predict teacher effectiveness (Clotfelter, Ladd, & Vigdor, 2010; Rivkin et al., 2005), school districts and policy-makers have turned their attention to more comprehensive teacher evaluation systems as an important piece of the larger reform agenda. To ensure every student has an effective teacher, states and school districts need a reliable method to distinguish high- and low-quality instruction (Davis, 2013). The following section provides a brief summary of the history of teacher evaluation reform and the two primary methods of measuring teacher quality: value-added models and classroom observation.

Teacher evaluation reform. In 2009, The New Teacher Project (TNTP) released a report titled, "*The widget effect: Our national failure to acknowledge and act on differences in teacher effectiveness.*" In this report, TNTP examined teacher evaluation practices in twelve school districts across four states. The report concluded, "A teacher's effectiveness – the most important factor for schools in improving student achievement – is not measured, recorded, or used to inform decision-making in any meaningful way" (p. 3). For example, at the time of the report, many of the school districts used binary evaluation ratings (either "satisfactory" or "unsatisfactory"). In those systems, more than 99% of teachers received the "satisfactory" rating. With no meaningful distinction between high and low-performing teachers, the report contended, teaching excellence goes unrecognized and poor performance goes unaddressed. Teachers were being treated as interchangeable parts.

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The TNTP report recommended districts "adopt a comprehensive performance

evaluation and development system that fairly, accurately, and credibly differentiates

teachers based on their effectiveness in promoting student achievement…" (p. 27). The

report advocated for classroom observation as the primary measure of teacher quality.

Isolating a teacher's impact on growth in student test scores (also called the value-added

model) was mentioned as a promising supplementary data point. The report was widely

read and had a major influence on subsequent policy (Di Carlo, 2014). Randi Weingarten,

President of the American Federation of Teachers (AFT), publicly supported the findings

in an AFT online press release (AFT, 2009), asserting that the report "points the way to a

credible, fair, accurate and effective teacher evaluation system that would improve

teaching and learning" (p. 1).

Several grants and federal initiatives echoed the call-to-action in the TNTP report.

Race to the Top, the School Improvement Grants Program, No Child Left Behind, and

the Measures of Effective Teaching project all promoted similar changes to teacher

evaluation policy (Institute of Education Sciences, 2014). Between 2009 and 2013, over

two-thirds of the U.S. states made significant changes to their teacher evaluation

guidelines (Hull, 2013).

Building on the attention garnered by *The Widget Effect*, TNTP released a policy

brief the following year (2010) titled *Teacher Evaluation 2.0*, in which it outlined several

design standards for educator evaluation systems, including employing multiple measures

of teacher performance. TNTP recommended using objective student growth measures

whenever possible. However, the report was criticized by the National Education Policy

Center (Milner, 2010) for its emphasis on using standardized test scores as one of the measures of teacher effectiveness, noting that those models had been "repeatedly shown to be insufficient to overcome validity concerns" (p. 4). Nevertheless, by 2013, teacher evaluation policy in 35 states required the incorporation of student achievement gains as one measure of teacher effectiveness (National Council on Teacher Quality, 2013).

Value-added models. In 2011, the U.S. Department of Education announced that, under the Elementary and Secondary Education Act waiver process, states would be allowed to waive some reporting requirements if they developed and implemented educator evaluation systems that included student growth as a significant factor (Partee, 2012). Statistical models that attempt to isolate a particular teacher's impact on student achievement growth are known as *value-added models (VAM).* According to analysis by the Institute of Education Science (IES) (2010), standard education production functions employ hierarchical linear models to estimate teacher value-added using longitudinal student test score data. However, IES cautions that value-added models are imprecise due to estimation error rates. Estimation error largely stems from two sources: (a) random student-level variation, including background and abilities, and (b) idiosyncratic events that affect all students in the class, such as disruption during testing. IES analysis of existing literature found that teacher average test score gains can be unstable over time, with only moderate year-to-year correlations.

Other researchers also caution against using value-added models due to validity concerns. For example, Darling-Hammond (2015) contends that several assumptions undergird VAM including (a) student learning is accurately measured by the included

assessments, (b) students are randomly assigned to teachers, and (c) teachers are the only contributor to student learning during the specified time period. Darling-Hammond asserts, "In the United States, at this moment in history, the violations of these assumptions are considerable" (p. 132).

First, Darling-Hammond disputes that the commonly-used standardized tests accurately measure student growth. She states that the purpose of these tests to measure grade-level skills. This narrow focus results in inaccuracy for students significantly below or above grade level competence. Second, racial and income segregation in schools results in nonrandom distribution of students in schools and classrooms. Finally, while she acknowledges that teachers are an important school-level factor, she notes that there are multitudes of other factors contributing to student outcomes. Similarly, Rothstein (2008) found the assumptions underlying common value-added models are incorrect. Rothstein concludes, "Estimates of teachers' effects based on these models cannot be interpreted as causal" (p. 210). Darling-Hammond and Rothstein advocate for incorporating multiple measures to assess teacher effectiveness, including classroom observation.

Classroom observation instruments. An alternative to value-added models, classroom observation instruments provide criteria for judging the quality of instruction. The criteria are typically organized into rubrics, which describe observable teacher behaviors and instructional strategies (Archer, et al., 2016). In 2009, classroom-based observations were the most widely-used measure of teacher effectiveness (Little, Goe, & Bell, 2009), and by 2013, all states required classroom evaluation as a component of the

state's evaluation system (Hull, 2013). The 2011-12 Schools and Staffing survey showed that 99% of untenured teachers and 95% of tenured teachers are evaluated annually based on formal classroom observations (Cohen & Goldhaber, 2016).

Taken together, the teaching competencies presented in teacher evaluation rubrics present "a powerful statement by a community of educators about what signifies effective teaching" (Archer et al., 2016, p. 116). In practice, the content of the teacher evaluation rubrics represents a definition of effective teaching. Rubric content and resulting ratings are used to drive instructional coaching, professional development, job placement, and termination (Davis, 2013). Teacher education programs also rely on detailed definitions of effective teaching to set goals for candidate competency (Cochran-Smith & Zeichner, 2009).

While teacher evaluation rubrics may make expectations more transparent, some argue that a long list of competencies can be cumbersome or, worse, reduce teaching to a series of boxes to check. For example, Charlotte Danielson, the developer of the widely-used evaluation framework writes, "I am deeply troubled by the transformation of teaching from a complex profession requiring nuanced judgement to the performance of certain behaviors that can be ticked off on a checklist" (2016, p. 1).

Nevertheless, classroom observation-based evaluation is widely used, so it is important the rubrics used to measure teacher effectiveness accurately reflect the complexities of high-quality instruction. However, a recent analysis of 45 current teacher evaluation rubrics by the American Institutes for Research (2016) found low levels of alignment between rubric content and research-based instructional practices aligned to

Common Core standards. Updating and extending research on the instructional strategies linked to student outcomes is needed to improve the content of teacher observation frameworks and, in turn, inform the curricular content of teacher preparation programs (Council of Chief State School Officers, 2013).

   Research problem #2: Beginning teacher effectiveness. Beginning teachers, those who have been teaching for less than three complete school years (U.S. Department of Education, 2018), tend to be less effective than more experienced teachers (Clotfelter, Ladd, & Vigdor, 2010; Hanushek, Rivkin, & Kain, 2004; Xu, Ozek, & Hansen, 2015). Teacher preparation programs are tasked with producing effective teachers. However, there is insufficient research about the practices most likely to produce effective beginning teachers (The National Research Council, 2010). Further, teacher preparation has been widely criticized for failing to produce high-quality teachers. For example, Arthur Levine's (2006) report *Educating School Teachers* examines university-based teacher education programs. Levine concludes, "Many students seem to be graduating from teacher education programs without the skills and knowledge they need to be effective teachers" (p. 3). Levine concludes that teacher preparation programs have a "curriculum in disarray" which leads to a "chasm between theory and practice" (p. 4). To address this concern, Levine recommends focusing curriculum on the needs of the practicing teacher. This would require teacher education programs to shift their goals. Instead of internal measures of competency (e.g., grades), Levine recommends that teacher preparation programs gauge their success based on their graduates' effectiveness.

This shift in teacher education to focus on the competencies of practicing teachers is reflected in the evolution of national teacher standards. In 1992, the Interstate New Teacher Assessment and Support Consortium (INTASC) published *INTASC's Model Standards for Beginning Teacher Licensing and Development*. These standards included general principles and a description of the corresponding knowledge, dispositions, and performance indicators for beginning teachers. In 2011, InTASC changed the scope of its work, dropping the word "new" from its organizational title. They published updated standards that were no longer intended for beginning teachers, but for all practicing teachers. InTASC explained that the new standards would:

> set one standard for performance that will look different at different developmental stages of the teacher's career. What distinguishes the beginning from the advanced teacher is the degree of sophistication in the application of the knowledge and skills. (Council of Chief State School Officers, 2013, p. 6)

The new standards include rubrics of observable teacher behavior called Learning Progressions. InTASC recommends that teacher preparation programs use the developmental progressions to inform curriculum. The InTASC standards have become a national benchmark for defining teacher quality and informing teacher preparation. In fact, the Council for the Accreditation of Educator Preparation (CAEP) requires accredited teacher preparation programs to demonstrate candidate understanding of the InTASC standards.

However, CAEP acknowledges that, according to The National Research Council (2010), there is not sufficient research to inform teacher preparation programs about the practices most likely to result in effective beginning teachers. Moreover, there is disagreement among scholars about what teacher preparation programs should aim to

accomplish. Some argue that teacher education programs should prioritize the content and strategies most important for beginning teachers (Hammerness et al., 2005) and that beginning teachers should work on one or two teaching competencies at a time (Jackson, 2013). Others contend that beginning teachers should be held to the same teaching standards as all other teachers and should be expected to perform at or close to proficiency on all teaching competencies (Koch, 2013).

A recent IES (2018) study summarized data from the National Center for Education Statistics on early-career teachers' perceived levels of preparation in a variety of teaching competencies. The researchers found differences in perceived levels of preparation across instructional strategies (see Figure 1). Relative to other strategies, beginning teachers felt less prepared to use data to inform instruction, differentiate instruction, and handle classroom management issues.

Percent of early-career teachers reporting they were well prepared for instructional duties, School year 2011-2012.

Instructional duty	Well prepared	Not well prepared
Meet state content standards	75	25
Use data from student assessments to inform instruction	53	47
Differentiate instruction in the classroom	57	43
Assess students	67	33
Use computer in classroom instruction	67	33
Teach your subject matter	80	20
Use a variety of instructional methods	68	32
Handle a range of classroom management or discipline issues	55	45

■ Well prepared   ■ Not well prepared

Figure 1. Early-Career teacher levels of preparation (IES, 2018)

Because it is unclear from the literature which teaching competencies are most important for beginning teachers (The National Research Council, 2010), the implications of the IES (2018) study for teacher preparation are also unclear. Some instructional strategies may be more important than others for student outcomes. For example, beginning teachers that are well-prepared in classroom management may produce greater student achievement gains even if they are less-prepared to differentiate instruction or use computers in the classroom. Moreover, some strategies may be more difficult to learn or challenging to implement during the first year of teaching. To improve beginning teacher preparedness, educator preparation programs need to understand the relative importance and difficulty of various instructional strategies for beginning teachers. Strategies that are

both important and difficult warrant prioritization during teacher education (Goldman et al., 2008; Streveler, Olds, & Miller, 2003).

Research problem #3: Teacher quality in low-income schools. Research demonstrating the importance of teacher quality set teacher evaluation reform in motion. In addition to the primary finding that teachers mattered for student outcomes, the second important revelation was that teacher quality is particularly important for students in low-income schools (Nye et al., 2004), in which at least 75% of students are eligible for free or reduced-price lunch (Snyder & Musu-Gillette, 2015). Unfortunately, in the low-income schools where teacher quality matters most, average teacher effectiveness tends to be lower (Sass et al., 2012; Xu, Ozek, & Hansen, 2015). The following section describes the conflicting research about why teacher quality is lower in low-income schools and, consequently, a lack of consensus about how to address this issue.

Data from the IES report on beginning teachers' level of preparation (2018) shows that teachers in high-poverty schools reported significantly lower rates of preparation than those in low-poverty schools (Figure 2). Early-career teachers reported the lowest levels of preparation in classroom management, using data to inform instruction, and differentiating instruction.

Percentage of early-career public school teachers reporting the were well prepared for instructional duties in the first year of teaching, by school poverty level: School year 2011-12

	Higher poverty	Lower poverty
Meet state content standards.	68	80
Use data from student assessments to inform instruction.	48	56
Differentiate instruction in the classroom.	50	62
Assess students.	62	72
Teach your subject matter.	75	85
Use a variety of instructional methods.	60	74
Handle a range of classroom management or discipline situations.	48	60

Figure 2. Early-Career Teacher Levels of Preparation by Poverty Level (IES, 2018)

Research suggests at least two possible reasons for lower teacher preparation and quality in low-income schools. First, low-income schools tend to have less-experienced teachers (Hanushek, Rivkin, & Kain, 2004; Xu, Ozek, & Hansen, 2015) and beginning teachers are generally less effective than more experienced teachers (Clotfelter, Ladd, & Vigdor, 2010; Hanushek, Rivkin, & Kain, 2004; Xu, Ozek, & Hansen, 2015). These findings support policies that induce more experienced teachers to work in low-income schools (Sass et al., 2012) and/or increase the general effectiveness of beginning teachers. However, this research does not explain why beginning teachers in low-income schools feel less-prepared than those in higher-income schools.

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Another possibility is that low-income school settings are different from higher income settings. Johnson, Kraft, and Papay (2011) examined working conditions and student achievement in low-income schools in Massachusetts. They found that a supportive school context contributed to improved student achievement. In their interpretation, the school context affected the teachers' effectiveness; the low-income schools were often less-supportive environments. Another interpretation is that low-income schools require specialized teaching skills. Miller et al. (2005) assert that attempts to close the income achievement gap have failed because "such efforts have ignored another kind of gap--the gap between the skills that teachers must have to provide high – quality instruction for disadvantaged students and the preparation that teachers actually receive before they enter the profession" (p. 62). The authors suggest that teachers in low-income schools should, for example, be proficient in formative assessment and provide rigorous, authentic tasks for students.

Because school income gaps are closely related to racial achievement gaps (Center for Education Policy Analysis, 2016), research on low-income schools can be useful in investigating educational issues pertinent to culturally and linguistically diverse (CLD) students. For example, in 2012-13, about 24% of students in the United States attended a high-poverty school, in which at least 75% of students qualified for free or reduced priced lunch. However, 45% of Black and Latino students attended high-poverty schools compared to 8% of White students (Snyder & Musu-Gillette, 2015). In other words, high-poverty schools have higher proportions of Black and Latino students.

However, there are limitations in interpreting research in high-poverty schools and its implications for CLD students. For example, disparities in educational attainment between Black and White students persist for families with similar incomes (Chetty, Hendren, Jones, & Porter, 2018), suggesting that poverty does not fully explain disparities across racial groups. Further, while more Black and Latino students attend high-poverty schools than White students, most Black and Latino students (55%) do not attend high-poverty schools. Therefore strategies aimed at improving outcomes for CLD students cannot be solely targeted to high-poverty schools.

Despite these limitations, the body of scholarship related to culturally responsive teaching supports the notion that teachers working with CLD (and often low-income) students should have specialized skills. For example, scholars emphasize the importance of high academic expectations with scaffolding (Ladson-Billings, 2009), cultural competence (Evans & Gunn, 2012; McGee Banks & Banks, 1995), culturally relevant curricula (Delpit, 2012; Ladson-Billings, 2009), and relationships with students and their families (Delpit, 2012; Ladson-Billings, 2009; McGee Banks & Banks, 1995).

Whether low teacher quality in low-income schools is caused by a disproportionate number of beginning teachers or by a lack of the specialized skills required in these settings, there are implications for teacher education programs. It is vital to either: (a) improve the general quality of beginning teachers or (b) train teachers specifically for work in low-income schools. There is a lack of consensus among educational researchers about which approach is warranted. Some researchers argue "good teaching is good teaching regardless of the learning environment" (Berman, 2015,

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p. 386) and others contend that teacher preparation should be specialized for work in low-income schools (National Partnership for Teaching in At-Risk Schools, 2005). Research on this topic is needed to inform teacher preparation programs tasked with preparing beginning teachers for a variety of school settings.

Theoretical Framework

In addition to clarity on *what* beginning teachers should learn, improving teacher education requires an understanding of *how* people learn. One of the most influential learning theorists of the past century has been Soviet psychologist Lev Vygotsky (1896-1934). Vygotsky reframed learning as social and cultural rather than an individual phenomenon. In the early 20th century most educational scholars viewed learners as passive vessels or as autonomous agents. Vygotsky proposed that learning resulted from interactions with one's environment – either with another person or through an organized learning activity (Kozulin, 2003). According to Vygotsky's sociocultural theory, the psychological tools that help people learn are symbolic artifacts, like texts and symbols. Each culture has its own set of psychological tools. In a multicultural context, there are many different psychological tools. Moreover, the nature of the interactions with one's environment is largely culturally-specific and depends on the goals of the given community. For example, some cultures focus on learning practical tasks while others emphasize more abstract skills (Kozulin, 2003).

In one component of his sociocultural theory, Vygotsky aimed to develop a theory of learning to help explain how intellectual capabilities are developed and what kind of instruction is optimal for a particular child (Chaiklin, 2003). Vygotsky describes two

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developmental zones: the objective zone and the subjective zone. The objective zone does not refer to an individual, but rather reflects the sociocultural context in which the person lives. Chaiklin (2003) explains, "One can say that the [objective] zone for a given age period is normative, in that it reflects the institutionalized demands and expectations that developed historically in a particular societal tradition of practice" (p. 49). In contrast, the subjective zone refers to an individual's development in relation to that objective context.

The distinction between the objective and subjective zones of development is important to understand Vygotsky's Zone of Proximal Development (ZPD). He describes ZPD as "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). In this statement, "potential development" is not a property of the individual, but rather the presence of certain developmental functions (subjective zone) in relation to his or her sociocultural context (objective zone) (Chaiklin, 2003).

While Vygotsky's theory was specific to child development, it has often been applied to adult learning. For example, Kilgore (2010) used ZPD to describe the interplay among individuals in a group in her theory of collective learning in social movements. Baumgartner (2001) lists sociocultural theory as one of four theories of adult learning. Baumgartner contends that sociocultural elements such as race, class, gender, ethnicity, and sexual orientation influence adult development. As such, individuals are "inextricable

from society in which they live; they develop in ways intrinsic to themselves but molded

by the discriminatory forces of society within which they function" (p. 18).

What can sociocultural theory and the ZPD tell us about teacher development?

From a Vygotskian perspective, a teacher's ZPD is based on his or her own development

(subjective zone) in relation to the sociocultural context (objective zone). An education

program must consider what content is appropriate for the present developmental stage

and how an individual teacher relates to that content. The objective zone of development

for beginning teachers may differ from that of more experienced teachers or for teachers

in low-income schools. Further, the ZPD may vary between teachers. For example,

developmentally appropriate content for new teachers in low-income schools may be

culturally responsive teaching strategies. However, a Latina teacher may have different

psychological tools than a White teacher based on her own cultural experiences. Figure 3

provides a visual depiction of the ZPD as applied to beginning teacher development.

Subjective Zone of Development	Zone of Proximal Development	Objective Zone of Development
• An individual teacher's stage of development • Based on culturally-specifc psychological tools and systems	• The distance between subjective and objective zones of development • Influenced by problem-solving and collaboration	• Developmentally-appropriate competencies for beginning teachers • Situated in historical and cultural context

Figure 3. Vygotsky's ZPD Applied to Beginning Teacher Development

What is the developmentally appropriate zone of objective development for beginning teachers? In other words, what do we expect beginning teachers to master? To help answer this question, several models of teacher development were developed in the 1970s and 1980s. Fuller (1969) proposed a pre-service model in which teacher candidates move through stages of concern, including: (a) identifying with the pupils in the class, to (b) concerns about professional survival, to (c) concern about their own teaching performance, and finally to (d) concern about student learning.

Other models address the development of beginning in-service teachers. For example, Katz (1972) identified four developmental stages that teachers tend to experience in their first five years: (a) survival, (b) consolidation, (c) renewal, and (d) maturity. Katz contends that teachers in the survival stage often do not accept responsibility for what occurs in the classroom. When they move to consolidation, teachers begin to focus on instruction and the needs of their students. As teachers move to renewal, they have become competent in their instruction and are striving to continually improve. By the time the teacher reaches maturity, he or she is considering more abstract questions about their teaching philosophy and their impact on the school community.

While these teacher development models can help inform the type of support beginning teachers may need, they do not address what constitutes developmentally appropriate curricular content for teacher education programs or the competencies of well-prepared beginning teachers. Despite a lack of research in this area, policy groups and school districts have attempted to identify the most vital teaching competencies for beginning teachers. For example, TNTP published a report in 2014 titled *Fast Start:*

Training Better Teachers Faster, with Focus, Practice and Feedback. The report

summarized conclusions based on experiences with their own teacher education program.

The authors advocated that teacher education focus on a narrow curriculum with only on

the most essential teaching skills. The recommended skills included: (a) delivering

lessons clearly, (b) maintaining high academic expectations, (c) maintaining high

behavioral expectations, and (d) maximizing instructional time.

Similarly, Denver Public Schools recently adopted a coaching model for early-

career teachers designed to quickly improve their effectiveness. The *DPS Playbook for

Early Career Teachers* (2016) states,

> Through a recent analysis of Denver Public Schools (DPS) data, national data,
> and interviews with Team Leads and district leaders, we learned that early career
> teachers tend to improve faster when they are coached on a narrow set of skills
> and receive direct, bite-sized feedback on those specific skills, rather than trying
> to develop in many areas at once. (p. 3)

This narrow set of skills, termed "Gateway Skills," are a subset of the

competencies on the district's teacher evaluation framework. Gateway Skills include:

- Implements high, clear expectations for students' behavior and routines

- Clearly communicates standards-based content-language objective(s) for

  the lesson

- Intentionally uses instructional methods and pacing to teach the content-

  language objective

- Checks for understanding of content-language objective(s)

There is some congruity between TNTP's *Fast Start* skills and DPS's Gateway

Skills. Both emphasize behavior expectations and clear lesson delivery. However, there is

no empirical research to inform whether beginning teachers are more effective if they are trained on a subset of competencies. Despite decades of research on teacher development, it is unclear what constitutes the objective zone of development or the Zone of Proximal Development for beginning teachers.

This study addresses the research problems through a Vygotskian perspective (see Table 1). Specifically, the study investigates beginning teachers' objective zone of development. The objective zone is comprised of the teaching competencies that reflect current institutional demands and expectations for teachers. Investigating the objective zone helps answer the question: *What is a high-quality beginning teacher?* Because the objective zone of development is defined by social and cultural context (Chaiklin, 2003), the study also investigates whether the objective zone varies by school income level. This research question helps answer the question: *Is high-quality beginning teaching different in low-income schools?* Finally, understanding the typical Zone of Proximal Development for beginning teachers requires an examination of the distance between actual and potential development. Better understanding the ZPD will help us answer the question: *Which competencies merit prioritization in teacher education?*

Table 1
Research Theory and Study Alignment

Research Problem	Related Research Question	Vygotsky Theory Connection
1. The field needs a research-based definition of effective teaching.	What are the observable teaching competencies associated with improved student outcomes?	The objective zone of development reflects societal and cultural expectations for effective teaching. These expectations should be continuously informed by educational research.

2.	There is a lack of consensus on essential and developmentally appropriate competencies for beginning teachers.	How important are various teaching competencies for beginning teacher effectiveness?	The objective zone of development for beginning teachers may differ from that of more experienced teachers.
		How difficult are various teacher competencies for beginning teachers to implement?	To target the Zone of Proximal Development, education programs must consider the relative difficulty of various competencies for beginning teachers.
3.	There is a lack of consensus on the teaching competencies important in low-income schools.	Do the importance and difficulty of various teaching competencies for beginning teachers differ for those in low-income schools?	The objective zone of development is context-specific. Relevant teaching competencies may vary in low-income school settings.

A better understanding of beginning teacher development can help teacher education programs matriculate more effective beginning teachers. Specifically, education programs need to better understand how important various competencies are for beginning teachers, the relative difficulty of learning those competencies, and whether those competencies vary by school setting.

Study Purpose

The purpose of this study was to investigate consensus among expert educators on the relative importance and difficulty of teaching competencies for beginning teachers. The study also investigated whether the importance and difficulty of teaching competencies differs across school settings. The study did not aim to compare high and low poverty school settings, but rather to investigate whether "good teaching is good teaching" regardless of setting or if low-income schools require specialized teaching competencies. Therefore, experts rated competency importance and difficulty for unspecified school settings and again for low-income schools.

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To meet this purpose, the Delphi method was used, in which a series of surveys are used to collect data from a panel of selected experts (Day & Bobeva, 2005; Hsu & Sandford, 2007). Previous studies have employed the Delphi method to determine which topics merit emphasis in education programs by asking experts to rank both importance and difficulty (e.g., Goldman et al., 2008; Streveler et al., 2003). In this study, expert consensus was used to help inform teacher education programs through a better understanding of beginning teacher development.

A panel of experts was selected from two skill classes: academic and practitioner. Academic experts included faculty and researchers in education and teacher preparation. Practitioners included those who work with new teachers in school, district, and community settings. The study employed Okoli and Pawlowski's (2004) five-step process for selecting participants, described in Chapter Three.

Teaching competencies were derived from two sources: the research synthesis presented in Chapter Two and open-ended survey responses provided by participants. Then, the expert panel rated each competency according to its importance and its difficulty for beginning teachers to implement. The panel was asked to separately rate importance and difficulty for beginning teachers and for beginning teachers in low-income schools. Beginning teachers were defined consistent with the U.S. Department of Education's legal definition (2018): those who have been teaching for less than three complete school years.

Research Questions

The study addressed the following research questions:

1. How important are various teaching competencies for beginning teacher effectiveness?

2. How difficult are various teacher competencies for beginning teachers to implement?

3. To what extent do academics and practitioners exhibit consensus on competency importance and difficulty?

4. Do the importance and difficulty of various teaching competencies for beginning teachers differ for those in low-income school settings?

Data Analysis

To develop consensus among expert educators on the importance and difficulty of various observable teaching competencies for beginning teachers, I employed a multi-phase Delphi study. The Delphi technique is a method for consensus-building by using a series of surveys to collect data from a panel of selected experts (Hsu & Sandford, 2007).

The Delphi study included the following the three phases described by Hsu and Sandford, 2007: (a) respondents selected important observable teaching competencies from a pre-populated list; (b) respondents rated each competency from the synthesized list on a 4-point rating scale for both importance and difficulty; (c) respondents were provided summary data from the previous round and rated each competency on importance and difficulty again. Results from each round were calculated for measures of central tendency and indicators of consensus.

Strengths and Limitations

The Delphi method was developed in the 1950s by the RAND Corporation as a technique to develop consensus among a group of experts (Hsu & Sandford, 2007; Okoli & Pawlowski, 2004). It is an inductive, data-driven approach, which is often used in areas in which little empirical evidence exists (Paré, Cameron, Poba-Nzaou, & Templier, 2013). The competencies necessary for beginning teachers is a topic of practical importance for school districts and teacher preparation programs, however, no published studies were located that explicitly linked beginning teacher competencies to student outcomes study (see review of literature results in Chapter Two). Therefore, the Delphi technique is an appropriate method of study.

Delphi studies do not attempt to survey a sample statistically representative of a specific population. Rather, the careful selection of qualified experts is an important requirement of a Delphi study (Hsu & Sandford, 2007; Okoli & Pawlowski, 2004). An expert panel of teacher education faculty and district-based leaders of new teacher development is well-positioned to address the proposed research questions, as the panel has extensive collective experience training, coaching, and evaluating beginning teachers. However, it is possible that the expertise of panel members was unevenly distributed across topics (Hsu & Sandford, 2007). For example, some respondents may have lacked in-depth knowledge about teacher assessment practices and may have been unable to accurately rate the importance or difficulty of assessment-related competencies. To address this limitation, I followed Altschuld and Thomas' (1991) recommendations by keeping items general rather than overly technical or complex. It is also possible that the

two panels (academics and practitioners) had differing views on what constitutes effective teaching. Therefore, I tested for differences between the two subgroups.

Because the relatively small sample size requirement is a strength of the Delphi method, response rate is extremely important (Hsu & Sandford, 2007). Panelists were asked to complete three rounds of questionnaires and the quality and completeness of each of their responses was crucial to the study's findings. To maintain respondent motivation, I communicated continuously with the group and was attentive to individual panelists. All participants completed rounds one and two, however, one participant did not complete round three. While the total number of participants in round three (n=30) was still greater than the target participant number for the study (n=24), the missing data could have affected competency mode or IQR in round three.

Another strength of the Delphi method is that respondents are anonymous to other participants and, therefore, are less likely to be influenced by group dynamics like dominant individuals or group pressure for conformity (Hsu & Sandford, 2007). However, respondents are provided with feedback based on the group's responses. This could lead to subtle pressure to conform to the group's ratings (Hsu & Sandford, 2007). To address this limitation, I followed Hsu and Sandford's (2007) recommendation by exercising caution when communicating with respondents to avoid transmitting pressure to conform to group averages.

Summary

Students in the United States lag behind many industrial nations in academic achievement (Desilver, 2017), with students from low-income families scoring lower

than their more affluent peers (Sass, Hannaway, Xu, Figlio, & Feng, 2012). Research suggests teacher quality is a significant factor predicting student achievement (Aaronson et al., 2007; Kane et al., 2005; Nye et al., 2004; Rivkin et al., 2005; Wright et al., 1997). To ensure high-quality teachers for every student, teaching must be accurately defined and teachers must be adequately trained. However, there is insufficient research about the practices most likely to produce effective beginning teachers (The National Research Council, 2010). A better understanding of beginning teacher development is needed to improve teacher preparation and teacher quality.

The purpose of this study was to investigate consensus among expert educators on the relative importance and difficulty of teaching competencies for beginning teachers, and whether the importance and difficult of those competencies differ in low-income school settings. Results of this Delphi study may help inform teacher preparation programs about the competencies that warrant emphasis during training. Results may also contribute to a better understanding of beginning teacher development.

Chapter Two: Review of the Literature

Background

Over the past thirty years, research has consistently suggested teachers are a significant factor predicting student achievement (Aaronson, et al., 2007; Kane, et al., 2005; Nye, et al., 2004; Rivkin, et al., 2005; Wright, et al., 1997). Studies have also shown that a large portion of the variance in teacher quality can be attributed to the teacher's observable behaviors in the classroom rather than their personal characteristics, such as their beliefs (Creemers & Kyriakides, 2006; Muijs & Reynolds, 2010).

Researchers investigating which behaviors are most likely to result in improved student outcomes have identified specific teacher competencies associated with student test score gains (e.g., Beesley & Apthorp, 2010; Hattie, 2009; Kyriakides et al., 2013). Practitioners and policy-makers use this set of teaching competencies to develop frameworks for teacher evaluation, which, in turn, define effective teaching (Archer et al., 2016) and guide teacher preparation curriculum (Council of Chief State School Officers, 2013).

This set of competencies represents what Vygotsky called the *Objective Zone of Development*, in that it reflects the "institutionalized demands and expectations that developed historically" (Chaiklin, 2003, p. 49). In other words, research on effective

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teaching directly informs what is expected of teachers in the classroom. This objective zone of development is not static; it is situated in the present historic and cultural context. It is influenced by the type of studies researchers choose to conduct and which studies are published in educational books and journals. Vygotsky asserted that optimal learning takes place within the Zone of Proximal Development (ZPD), or the space between an individual's subjective zone and the developmentally-appropriate objective zone. To target the ZPD, teacher preparation programs must first define the objective zone. Therefore, a comprehensive and accurate list of research-based, observable competencies is essential for effective teacher preparation.

  Student outcomes. Studies on teacher effectiveness often rely on student achievement, or cognitive outcomes, to measure student success (Kyriakides et al., 2013). However, as Jennings and DiPrete (2010) note, "Education is about more than academic achievement, and we know very little about schools' or teachers' effectiveness in achieving other educational goals" (p. 138). Ultimately, the goal of teacher evaluation reform is to improve student outcomes (Davis, 2013). However, many researchers have called for a broader definition of student outcomes (Aronson & Laughter, 2016; Jennings and DiPrete, 2010; Kyriakides et al., 2013).

  For example, in their synthesis of the theory and practice of Culturally Relevant Education (CRE), Aaronson and Laughter (2016) examined literature for studies that tied elements of CRE to a range of student outcomes, including student achievement, student engagement, and other measures of student success. In their discussion of Culturally Relevant Pedagogy, the authors note that CRE scholars "think in terms of long-term

academic achievement and not merely end-of-year tests" (p. 166). Examples of student outcomes included in Aaronson and Laughter's synthesis include: student interest engagement in content (Adams & Laughter, 2012; Christianakis, 2011; Dimick, 2012; Ensign, 2003); student cultural competence (Milner, 2011); and student empowerment (Martell, 2013).

Relevant Prior Syntheses of Literature

Several systematic reviews of literature have attempted to synthesize the teacher-level factors most important for student achievement, including Hattie (2009 & 2012), Beesley and Apthorp (2010), and Kyriakides et al. (2013). In 2009, John Hattie published the book *Visible Learning*, a meta-analysis examining factors at the classroom, student, and school levels based on fifteen years of research analysis. He analyzed 800 prior meta-analyses, which included studies on about 240 million students. Based on his results, he ranked 138 "influences" related to student learning based on their effect size. He calculated effect size (Cohen's *d*) by dividing average test score gains (post-test minus pre-test) by spread (standard deviation). Hattie found the average effect size of all the factors he analyzed was 0.40. Therefore, he considered 0.40 a "hinge point." Factors with effect sizes greater than this average hinge point were deemed effective. While Hattie considered school, classroom, and student-level effects, he found "The majority of effects above the average were attributable to success in teaching" (Hattie, 2012, p. 11).

In Hattie's follow up book, *Visible Learning for Teachers* (2012), he updates the included research and provides detailed guidance about implementing the most effective strategies. An excerpt of Hattie's findings, which reflect the top ten observable teacher-

level influences and their effect sizes, is shown in Table 2. A full list of Hattie's

observable teacher-level influences that reached the "hinge-point" is included in

Appendix A.

Table 2
Influences on Achievement (Hattie, 2012)

Influence	Description	Effect Size
Self-reported grades/ Student expectations	Student expectations and assessment of their own performance	1.44
Teacher credibility	Student perceptions of teacher trustworthiness, competence, dynamism, and immediacy	0.90
Providing formative evaluation	Assessment of learning progress before or during the learning process	0.90
Classroom discussion	Whole class discussion	0.82
Reciprocal teaching	Enabling students to use strategies such as summarizing, questioning, clarifying, and predicting	0.74
Teacher clarity	Clearly communicating the intention of the lesson, organization and explanation of content, and success criteria	0.75
Feedback	Information about task, process, and self-regulation – from teacher to student and from students to teacher	0.75
Acceleration	Providing accelerated curricula for gifted or academically advanced students	0.68
Classroom behavior	Enforcing specific and reasonable classroom rules	0.68
Self-verbalization and self-questioning	Students employ meta-cognition to set learning goals and monitor learning	0.64

While Hattie's research considered school and student-level factors, other syntheses have focused specifically on teacher competencies. In 2006, Creemers and Kyriakides proposed the dynamic model of teaching, which refers to eight factors which "describe the teacher's instructional role and were found to be consistently related with student outcomes" (p. 355). The authors based the model on their review of prior teacher effectiveness research. The eight factors in the dynamic model include: (a) orientation, (b) structuring, (c) modeling, (d) questioning, (e) application, (f) assessment, (g) time management, and (e) classroom as a learning environment. In 2013, Kyriakides, Christoforou, and Charalambous conducted a meta-analysis to determine the average effect size (Cohen's *d*) of the dynamic model factors and several other teacher-level factors. Table 3 summarizes Kyriakides et al.'s definitions for each of the dynamic model factors and reported average effect size.

Table 3

Dynamic Model Factors (Kyriakides et al., 2013)

Dynamic Model Factor	Operational Definition	Effect Size
Classroom as a learning environment	Creating and sustaining a positive and effective learning environment	0.45
Modeling	Presenting strategies for solving problems; guiding students to devise their own strategies	0.41
Orientation	Providing a lesson or task objective; asking students to provide reason for lesson activity	0.36
Structuring	Reviewing objectives; previewing content to be covered; calling attention to main ideas; reviewing main ideas at the end	0.36
Time management	Efficiently organizing and managing the classroom environment; maximizing student engagement rates	0.35
Questioning	Asking product and process questions; pausing after questioning; providing feedback on student responses; sustaining interactions with students	0.34
Assessment	Gathering information used to identify student needs or evaluate the teacher's own practice	0.34
Application	Providing students opportunities to practice and apply learning	0.18

The factors in Kyriakides et al.'s meta-analysis that were not a part of the dynamic model included: (a) self-regulation, (b) concept-mapping, (c) computer use, (d) interpersonal behavior, and (e) classroom organization. The authors did not include definitions for these additional five factors. Therefore, Table 4 reflects factor definitions, source of definitions, and average effect size as reported by Kyriakides et al. (2013).

Table 4
Additional Teacher-Level Factors (Kyriakides et al., 2013)

Factor	Operational Definition	Effect Size
Concept-mapping	It is a method to construct graphic representations of information (Seel, 2012b).	0.75
Self-regulation	Responsibility for learning outcomes assumed by the learner, including self-generated thoughts, feelings, and actions for attaining academic goals (Seel, 2012c).	0.47
Computer use	In computer-based learning (CBL), the computer is used for instructional purposes (Seel, 2012a)	0.20
Interpersonal behavior	Teacher-student communication in the learning process (Wubbels & Brekelmans, 1998).	0.16
Classroom organization	A safe physical environment, including the strategic placement of furniture, learning centers, and materials in order to optimize student learning and reduce distractions (Stronge, Tucker, & Hindman, 2004).	0.05

Researchers Marzano, Pickering, and Pollock conducted another influential meta-analysis in 2001. They presented their synthesis on the instructional strategies linked to student achievement in *Classroom Instruction that Works*. They identified nine "high-yield" strategies. In 2010, Beesley and Apthorp extended and updated this work by generating updated effect size estimates using literature published after Marzano et al.'s work ended. Table 5 below reflects each of the nine strategies, its definition, and its effect size (Hedges's *g*), as calculated by Beesley and Apthorp (2010).

Table 5

Instructional Strategies, Definitions, and Effect Sizes
(Beesley & Apthorp, 2010)

Category	Definition	Mean Effect Size
Setting objectives and providing feedback	Provide students with a direction for learning and with information about how well they are performing relative to a particular learning objective so they can improve their performance	Feedback: 0.76 Objectives: 0.31
Cues, questions, and advance organizers	Enhance students' ability to retrieve, use, and organize what they already know about a topic.	Advance organizers: 0.74 Cues and questioning: 0.20
Identifying similarities and differences	Enhance students' understanding of and ability to use knowledge by engaging them in mental processes that involve ways in which items are alike and different.	0.65
Generating and testing hypotheses	Enhance students' understanding of and ability to use knowledge by engaging them in mental processes that involve making and testing hypotheses.	0.58
Nonlinguistic representations	Enhance students' ability to represent and elaborate on knowledge using mental images.	0.49
Cooperative learning	Provide students with opportunities to interact with one another in ways that enhance their learning.	0.44
Assigning homework and providing practice	Extend the learning opportunities for students to practice, review, and apply knowledge. Enhance students' ability to reach the expected level of proficiency for a skill or process.	Practice: 0.42 Homework: 0.13
Summarizing and note taking	Enhance students' ability to synthesize information and organize it in a way that captures the main ideas and supporting details.	0.32
Reinforcing effort and providing recognition	Enhance students' understanding of the relationship between effort and achievement by addressing students' attitudes and beliefs about learning. Provide students with abstract tokens of recognition or praise for their accomplishments related to the attainment of a goal.	0.16

Examination of these three meta-analyses reveals inconsistencies in findings and definitions of terms. For example, Hattie includes the lesson objective as a component of "teacher clarity" (effect size 0.75), Kyriakides et al. include objective-setting as a component of "orientation" (effect size 0.36), and Beesley and Apthorp calculate objective-setting separately (effect size 0.31). This inconsistency could be related to regional terminology differences, as Hattie is based in Australia, Kyriakides is based in Greece, and Beesely and Apthorp are based in the United States.

To synthesize these three meta-analyses, I grouped them into categories reflective of a model teacher evaluation framework. I chose Denver Public School's LEAP framework as a model because, in their analysis of 45 evaluation models, the American Institutes for Research (2016) rated Denver Public School's LEAP as the most closely-aligned to Common Core research-based general instructional practices. The LEAP framework includes three broad domains with corresponding expectations and indicators. The *Learning Environment* and *Instruction* domains are assessed through classroom observation, while *Professionalism* is assessed through contributions outside of the classroom (LEAP Handbook, 2018). Therefore, for the purposes of this analysis, only Learning Environment and Instruction are included. The Learning Environment domain has two expectations: (a) positive classroom culture and climate and (b) effective classroom management. The Instruction domain also has two expectations: (a) masterful content delivery and (b) high-impact instructional moves. The full list of LEAP domains, expectations, and indicators is included in Appendix B.

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Table *6* reflects a synthesis of the three meta-analyses discussed above (Beesley & Apthorp, 2010; Hattie, 2012; Kyriakides et al., 2013) grouped by the categories in the LEAP framework. Effect sizes were removed due to inconsistencies across the meta-analyses. However, it is important to note that the teaching competencies are not assumed to have equal effects on student outcomes.

Table 6

Synthesis of Meta-Analyses

(Beesley & Apthorp, 2010; Hattie, 2012; Kyriakides et al., 2013)

Domain	Category	Competency
Learning Environment	Positive classroom culture and climate	Creates and sustains a positive learning environment (Kyriakides)
		Facilitates student responsibility for learning (Kyriakides)
		Communicates effectively with students (Kyriakides)
		Reinforces student effort and provides recognition (Beesley & Apthorp)
		Maintains positive teacher-student relationships (Hattie)
		Creates student-centered learning environment (Hattie)
		Communicates high expectations for student learning (Hattie)
	Effective classroom management	Efficiently organizes and manages classroom environment (Kyriakides)
		Creates safe physical environment with access to learning materials (Kyriakides)
		Provides rules and guidelines for student behavior (Hattie)
Instruction	Masterful content delivery	Provides clear explanation of content and expectations (Hattie)
		Models problem solving and provides guided and independent practice (Beesley & Apthorp; Hattie; Kyriakides)
		Facilitates student synthesis of information through summarizing and note-taking (Beesley & Apthorp)
		Previews and reviews content, emphasizing main ideas (Kyriakides)
		Provides graphic and nonlinguistic representations of content (Beesley & Apthorp; Kyriakides) including concept-mapping (Hattie)
		Uses technology for instructional purposes (Kyriakides)
		Prompts students to identify similarities and differences (Beesley & Apthorp)
		Engages students in generating and testing hypotheses (Beesley & Apthorp)
	High-impact instructional moves	Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning (Hattie; Kyriakides)
		Conducts formative assessment (Hattie; Kyriakides)
		Differentiates content by providing scaffolding and acceleration (Hattie)
		Sets lesson objectives (Beesley & Apthorp; Hattie; Kyriakides)
		Provides rationale for lesson (Hattie; Kyriakides)
		Provides feedback (Beesley & Apthorp; Hattie)
		Facilitates classroom discussion (Hattie) and poses critical questions (Beesley & Apthorp; Hattie; Kyriakides)
		Promotes student collaboration and cooperation (Beesley & Apthorp; Hattie) including small-group learning (Hattie)

Literature Review Purpose

Previous meta-analyses (Beesley & Apthorp, 2010; Hattie, 2012; Kyriakides et al., 2013) have identified a broad range of effective teaching competencies. However, these studies relied on a narrow definition of student outcomes (i.e., test scores). Further, these meta-analyses did not specifically examine the competencies important for beginning teachers. Therefore, the purpose of this literature review is to (a) extend existing meta-analyses on effective teaching competencies by synthesizing recent research, including research that utilizes a broad definition of student outcomes and (b) identify research specific to beginning teacher effectiveness. The results of this synthesis will provide a comprehensive set of effective teacher competencies, which will be rated by experts in the proposed Delphi study (discussed in chapter three).

Relevant definitions:

- Beginning teachers: those who have been teaching for less than three complete school years (U.S. Department of Education, 2018).

- Effective teacher: a teacher who demonstrates better than average impact on student outcomes.

- Student outcomes: broadly defined measures of student success, including, but not limited to, student engagement, student achievement, and teacher-reported student success (Aaronson & Laughter, 2016).

- Teaching competencies: observable teacher behaviors and teaching strategies.

Literature Search Procedures

Inclusion criteria and search procedure. To be included in the literature review, studies: (a) included student outcomes, broadly defined as student engagement, student achievement, or other measures of student success (Aaronson & Laughter, 2016), (b) included an observable teacher competency, (c) conducted in a classroom setting, (d) were based U.S. general education K-12 setting with face-to-face instruction, and (e) published in a peer-reviewed journal.

The search utilized ERIC to identify journal articles published between 2007 and 2017. Search terms included a combination of the following: teaching strategy, teacher characteristic, student outcomes, student achievement, and academic achievement.

Studies were screened in several phases (see Table 7). The following data were extracted from the studies included in the synthesis: methodology, student population, teaching competency (independent variable) and student outcome (dependent variable). Results of the synthesis were analyzed by theme as they related to the independent variable: teacher competency.

Table 7
Search Procedure

Phase	Description	Number of records remaining
1	Database Search	396
2	Duplicates removed	371
3	Titles Screened	134
4	Abstracts Screened	65
5	Full-text assessed for eligibility	17

Results

I grouped the included studies into themes according to the domains and categories of Denver Public Schools' LEAP framework: Learning Environment ($n = 10$), including (a) positive classroom culture and climate ($n = 9$) and (b) effective classroom management ($n = 1$); and Instruction ($n = 9$), including (a) masterful content delivery ($n = 4$) and (b) high-impact instructional moves ($n = 5$). Quantitative, qualitative, and mixed-methods studies were included.

Of the 17 studies included, most employed quantitative research methods ($n = 10$). The remainder were mixed-methods ($n = 4$) and qualitative ($n = 3$). Table 8 summarizes the findings, including a description of each study and its connection to student outcomes.

Table 8
Summary of Included Research

Study	Description of study	Methodology	Connections to outcomes	Theme(s) and Sub-Theme(s)
Reyes, Brackett, Rivers, White, & Salovey (2012)	Multi-method study investigating the relationship between classroom emotional climate and academic achievement. Researchers used classroom observations, student reports, and report card grades in 63 fifth and sixth grade classrooms.	Mixed-methods	Researchers found positive relationships between classroom emotional climate and grades - mediated by engagement.	Learning environment: Positive classroom culture and climate

Study	Description of study	Methodology	Connections to outcomes	Theme(s) and Sub-Theme(s)
Swanson (2013)	Quantitative analysis of 102 Spanish teachers' self-reported sense of humor and their students' exam scores	Quantitative	Analyses indicate that Spanish teachers' sense of humor is related to student achievement on the exams.	Learning environment: Positive classroom culture and climate
Emdin (2012)	Qualitative study illustrating the relationship between hip-hop identity in urban science classrooms and student engagement.	Qualitative	When teachers bring hip-hop into their science instruction, certain markers of interest and involvement that were previously absent from science classrooms became visible.	Learning environment: Positive classroom culture and climate
Walker (2008)	Mixed methods study investigating the relationship between teacher style, student engagement, self-efficacy, and student test scores in three 3rd and 5th grade classrooms.	Mixed-methods	The most academically and socially competent students were those whose teachers practiced an authoritative teaching style (consistent classroom management, support of student autonomy, and personal interest in students.	Learning environment: Positive classroom culture and climate; Effective classroom management
Cholewa, Amatea, West-Olatunji, & Wright (2012)	Qualitative grounded theory study of a 5th grade teacher who has demonstrated strong academic gains with her low-income African American students. Data were collected from videotaped classroom instruction and in-person meetings with the participant.	Qualitative	The data analysis produced one overarching theme: emotional connectedness and three sub-themes: creating teacher-student connections, creating teacher-class connections, and being transparent and joining.	Learning environment: Positive classroom culture and climate

Study	Description of study	Methodology	Connections to outcomes	Theme(s) and Sub-Theme(s)
Eryilmaz (2014)	This mixed-methods study investigated the relationship between adolescent students' perceptions of teachers' likeability and students' well-being and academic success.	Mixed-methods	Results indicate that liked teachers were associated with student academic success. The most important traits of liked teachers included extroversion, conscientiousness, agreeableness, emotional stability, and openness.	Learning environment: Positive classroom culture and climate
Brown & Chu (2012)	This quantitative study examined the relationship between students' ethnic identity, perceptions of discrimination, and academic performance among 4th grade Mexican immigrant children. The researchers also examined the teacher's attitudes about diversity.	Quantitative	Teachers who value diverse classrooms had immigrant students with more positive ethnic identities and who perceived less peer discrimination. In predominately White communities, students' strong positive ethnic identities were tied to better academic outcomes.	Learning environment: Positive classroom culture and climate
Dever & Karabenick (2011)	The researchers investigated the relationship between academic expectations and caring for students on student interest and achievement among middle and high school students. They used hierarchical modeling to test whether the effects were moderated by student ethnicity.	Quantitative	Across all student groups, high expectations were positively related to interest and achievement gains. However, higher levels of teacher caring were related to lower achievement gains regardless of ethnicity. For Hispanic students, a trend showed a relationship between teacher caring and student interest, but it was not statistically significant.	Learning environment: Positive classroom culture and climate

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Study	Description of study	Methodology	Connections to outcomes	Theme(s) and Sub-Theme(s)
Campbell, Nishio, Smith, Clark, Conant, Rust, et al. (2014)	Quantitative study examining the relationship between early career teachers' mathematical content knowledge and their students' achievement in upper elementary school.	Quantitative	This study identified a significant relationship between teachers' mathematical content knowledge and their students' achievement, after controlling for student- and teacher-level characteristics.	Instruction: Masterful content delivery
McCutchen, Green, Abbott, & Sanders (2009)	Quantitative, quasi-experimental study examining the effects of teachers' linguistic knowledge on student performance in grades three, four, and five.	Quantitative	Teachers' linguistic knowledge was related to improved student performance.	Instruction: Masterful content delivery
Tchoshanov (2011)	Mixed-methods examining teachers' content knowledge and student achievement in 102 middle school math classrooms.	Mixed-methods	Teacher content knowledge of concepts and connections is significantly associated with student achievement and lesson quality in middle grades mathematics.	Instruction: Masterful content delivery
Shechtman, Roschelle, Haertel, & Knudsen (2010)	Quantitative analysis of the relationship between teachers' math content knowledge and student achievement in 125 seventh grade and 56 eighth grade classrooms.	Quantitative	Results suggest that mathematics knowledge for teaching may have a nonlinear relationship with student learning, that those effects may be heavily mediated by other instructional factors.	Instruction: Masterful content delivery

Study	Description of study	Methodology	Connections to outcomes	Theme(s) and Sub-Theme(s)
Schwerdt & Wuppermann (2011)	Quantitative analysis examining the relationship between teaching style (lecture-style presentations or in-class problem solving) and student achievement of middle school students in math and science.	Quantitative	The authors found that students score higher on standardized tests in the classrooms in which their teachers spent more time on lecture-style presentations than in the subject in which the teacher devoted more time to problem-solving activities.	Instruction: High-impact instructional moves
Thompson & Davis (2014)	This observational research examined specific learning activities observed in more than 2000 primary mathematics classrooms as predictors of student competency outcomes in mathematics.	Quantitative	Results revealed the use of mathematics concepts, technology, and hands-on materials produced substantive predictors of increased student mathematics achievement.	Instruction: High-impact instructional moves
Wilson, Taylor, Kowalski, & Carlson (2010)	Randomized control study in which 58 students (ages 14-16) were assigned to one of two groups (taught by the same teacher): inquiry-based strategies or common place teaching strategies.	Quantitative	Students in the inquiry group reached significantly higher levels of achievement.	Instruction: High-impact instructional moves
Guarino, Dieterle, Bargagliotti, & Mason (2013)	This quantitative study investigated the impact of teacher characteristics and instructional strategies on the mathematics achievement of students in kindergarten and first grade.	Quantitative	Working with counting manipulatives, using math worksheets, and completing problems on the board have positive effects on achievement in kindergarten. Explaining problem solving and working on problems from textbooks have positive effects on achievement in first grade.	Instruction: High-impact instructional moves

Study	Description of study	Methodology	Connections to outcomes	Theme(s) and Sub-Theme(s)
Newton, & Winches (2013)	Qualitative study in which participants were chosen based on student growth data. Researchers described the practice of successful elementary and middle school teachers in reading and math.	Qualitative	Researchers describe five central themes: 1) clear learning targets 2) low stakes formative assessments 3) constant, yet flexible planning 4) effective questioning 5) culture of high expectations coupled with good relationships.	Instruction: High-impact instructional moves; Learning environment: Positive classroom culture and climate

Themes

Learning environment. Learning environment was the most prevalent theme across the research analyzed for this synthesis. Of the two categories within learning environment, the sub-theme *positive classroom culture and climate* was more prevalent than *effective classroom management*. Some studies investigated classroom climate explicitly, while others included competencies related to climate, including: relationships with students, teacher likeability, maintaining high academic expectations, and affirming students' cultural identity. Because some studies included both learning environment sub-themes, they are combined in the discussion below.

Positive classroom culture and climate and effective classroom management.

Reyes, Brackett, Rivers, White, and Salovey (2012) analyzed classroom observation, student reports, and report card grades in 63 fifth and sixth grade classrooms. They found positive relationships between classroom emotional climate and grades. This relationship was mediated by student engagement. The authors underscore the importance of student-teacher relationships as a component of a positive classroom

climate: "…when a classroom climate is characterized by warm, respectful, and emotionally supportive relationships, students perform better academically in part because they are more emotionally engaged in the learning process" (p. 710).

In their qualitative grounded-theory study, Cholewa, Amatea, West-Olatunji, & Wright (2012) reported a similar finding. They selected a fifth-grade teacher who had demonstrated strong academic gains with her low-income, African-American students. Their classroom observations and personal interviews produced one overarching theme: emotional connectedness. The authors include three sub-themes: creating teacher-student connections, creating teacher-class connections, and being transparent and joining. Cholewa et al. describe the teacher as culturally responsive and write that she "affirmed her students' culture and lived experience and conveyed a desire to make the students' learning experience a positive on in which the students can maintain and build their cultural identity" (p. 270).

Cholewa et al.'s (2012) emphasis on affirming students' culture as a feature of classroom climate is congruent with Emdin's (2012) findings illustrating the relationship between hip-hop identity in urban science classrooms and student engagement. Emdin found that when teachers bring hip-hop into their science instruction, markers of student interest and involvement that were previously absent from science classrooms became visible. Emdin connects these findings to a larger theme related to student cultural affirmation: "…by engaging in a concerted focus on hip-hop culture, science educators can connect urban youth to science in ways that generate a genuine recognition of who they are, an appreciation of their motivation for academic success" (p. 21).

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Brown and Chu's (2012) quantitative study sheds light on the teacher characteristics and beliefs associated with their ability to affirm students' cultural identity. They examined the relationship between students' ethnic identity, perceptions of discrimination, and academic performance among 4th grade Mexican immigrant children. They found that teachers who value diverse classrooms had immigrant students with more positive ethnic identities and who perceived less peer discrimination. For immigrant children in predominately White communities, students' strong positive ethnic identities were tied to better academic outcomes.

Other aspects of classroom climate included a teacher's management style and student perceptions of teacher likeability. Walker (2008) conducted a mixed methods study investigating the relationship between teacher style, student engagement, self-efficacy, and student test scores in three 3rd and 5th grade classrooms. The most academically and socially competent students were those whose teachers practiced what Walker termed an "authoritative" teaching style. These teachers displayed consistent classroom management, supported their students' autonomy, and demonstrated personal interest in their students.

Eryilmaz (2014) conducted a mixed-methods study investigating the relationship between adolescent students' perceptions of teachers' likeability and students' well-being and academic success. Results indicated that liked-teachers were associated with student academic success. The most important traits of liked teachers included extroversion, conscientiousness, agreeableness, emotional stability, and openness. Swanson's (2013) quantitative analysis of 102 Spanish teachers examined teachers' self-reported sense of

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humor and their students' exam scores. Analyses indicated that Spanish teachers' sense of humor was related to student achievement on the exams.

Two studies supported the importance of teachers communicating high academic expectations. Newton and Winches (2013) conduced a qualitative study in which teachers were selected based on strong student growth data in reading and math. The researchers then conducted interviews and classroom observations to extract themes. The successful elementary and middle school teachers exhibited a classroom culture of high academic expectations paired with strong, positive teacher-student relationships.

Dever and Karabenick's (2011) found similar results regarding academic expectations in their quantitative study, although the role of teacher-student relationships was complex. Dever and Karabenick investigated the relationship between academic expectations and caring for students on student interest and achievement among middle and high school students in mathematics. The variable related to teacher caring was based on a student perception survey. The authors used hierarchical modeling to test whether the effects were moderated by student ethnicity. Across all student groups, high expectations were positively related to interest and achievement gains. However, higher levels of teacher caring were related to lower achievement gains regardless of ethnicity. For Hispanic students, a trend showed a relationship between teacher caring and student interest, but it was not statistically significant.

Taken together, these studies support the notion that a positive learning environment is associated with improved student outcomes. One study found classroom climate had a positive relationship with grades (Reyes, Brackett, Rivers, White, &

Salovey, 2012). Other studies found positive associations between student outcomes and a sub-theme of climate, including: relationships with students (Cholewa, Amatea, West-Olatunji, & Wright, 2012; Eryilmaz, 2014; Walker, 2008), high academic expectations (Dever & Karabenick, 2011; Newton, & Winches, 2013), and affirming students' cultural identity (Brown & Chu, 2012; Cholewa, Amatea, West-Olatunji, & Wright, 2012; Emdin, 2012).

Instruction. Nine studies investigated competencies in the Instruction category. Of those, four are discussed in the sub-theme *masterful content delivery* and five are discussed in the sub-theme *high-impact instructional moves*.

Masterful content delivery. All four studies in this category investigated the relationship between teachers' content knowledge and student outcomes. Three of the four studies measured content knowledge in mathematics and one measured linguistic knowledge in literacy. Tchoshanov's (2011) mixed methods study examined teachers' content knowledge and student achievement in 102 middle school mathematics classrooms. Results indicated teacher content knowledge of mathematical concepts and connections was significantly associated with student achievement and lesson quality. However, Shechtman, Roschelle, Haertel, and Knudsen's (2010) quantitative analysis of the relationship between teachers' mathematics content knowledge and student achievement in 125 seventh grade and 56 eighth grade classrooms found inconsistent results. Their findings suggested that mathematics knowledge for teaching may have a nonlinear relationship with student learning; the effects may be heavily mediated by other instructional factors.

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The third and most recent mathematics study was a quantitative examination of

the relationship between early career teachers' mathematical content knowledge and their

students' achievement in upper elementary school. Researchers identified a significant

relationship between teachers' mathematical content knowledge and their students'

achievement, after controlling for student and teacher characteristics (Campbell, Nishio,

Smith, Clark, Conant, Rust, et al., 2014).

McCutchen, Green, Abbott, and Sanders (2009) conducted a quantitative, quasi-

experimental study examining the effects of teachers' linguistic knowledge on student

performance in grades three, four, and five. The study suggested teachers' linguistic

knowledge was related to improved student performance in reading.

These studies generally support the notion that a teacher's content knowledge in

mathematics is be related to student outcomes in mathematics (Campbell, Nishio, Smith,

Clark, Conant, Rust, et al., 2014; Tchoshanov, 2011), although one study suggested those

affects may be heavily mediated by other instructional factors (Shechtman, Roschelle,

Haertel, & Knudsen, 2010). Only one study investigated teacher content knowledge in

literacy and found teacher linguistic knowledge was related to student performance

(McCutchen, Green, Abbott, & Sanders, 2009).

High-impact instructional moves. Five studies investigated specific instructional

strategies and their relationship to student outcomes. Two of these studies investigated

the instructional strategies associated with mathematics achievement in early elementary

school. Thompson and Davis (2014) conducted observational research examining specific

learning activities in more than 2000 primary mathematics classrooms. Results revealed

the use of mathematics concepts, technology, and hands-on materials were substantive predictors of increased student mathematics achievement. Guarino, Dieterle, Bargagliotti, and Mason (2013) quantitatively investigated the impact of teacher characteristics and instructional strategies on the mathematics achievement of students in kindergarten and first grade. Like Thompson and Davis (2014), this study suggested working with manipulatives was a predictor of student achievement. However, this association was detected in kindergarten classrooms and not in first grade. Guarino et al. also found positive effects on achievement in kindergarten for completing problems on the board. Explaining how mathematics problems are solved was found to be important in first grade. While Guarino et al.'s study distinguished between the two strategies, explaining how to solve problems and completing problems on the board could both be considered elements of direct instruction.

Schwerdt and Wuppermann (2011) conducted a quantitative analysis examining the relationship between teaching style (lecture-style presentations or in-class problem solving) and student achievement of middle school students in math and science. The authors found that students score higher on standardized tests in the classrooms in which their teachers spent more time on lecture-style presentations than in the subject in which the teacher devoted more time to problem-solving activities.

Wilson, Taylor, Kowalski, and Carlson (2010) investigated the effect of inquiry-based instruction on adolescent student achievement in science. They conducted a randomized control study in which 58 students (ages 14-16) were assigned to one of two groups taught by the same teacher. The instruction for one group employed inquiry-based

strategies while the other group experienced common place teaching strategies. Students

in the inquiry group reached significantly higher levels of achievement. While Wilson et

al. use the term "inquiry" to describe a teaching approach that begins with a question or

problem, their discussion of inquiry suggests a more complex set of pedagogical skills is

involved. They synthesize research findings that map onto the core components of

inquiry:

> [they] involve investigations that begin with what the student already knows; that
> engage students in learning content as well as how to organize and reason about
> the content; activities in which students control, reflect upon, and evaluate their
> learning; and that scaffold students working together and with the teacher to
> discuss evidence and connect their findings with scientific explanations. (p. 294)

Newton and Winches (2013) conducted a qualitative study in which they selected

successful elementary and middle school teachers based on reading and math student

growth data and described their practice through observation and interviews. The authors

describe five central themes: 1) clear learning targets; 2) low stakes formative

assessments; 3) constant, yet flexible planning; 4) effective questioning; 5) culture of

high expectations coupled with positive teacher-student relationships.

Of those five studies that investigated instructional strategies, there was little

overlap in the type of strategy examined. Therefore, findings on instructional strategies

are based on single studies. In these studies, researchers found a positive association

between student outcomes and direct instruction (Schwerdt & Wuppermann, 2011);

conceptual teaching, hands-on materials, and technology (Thompson & Davis, 2014);

modeling and using math manipulatives (Guarino, Dieterle, Bargagliotti, & Mason,

2013); inquiry (Wilson, Taylor, Kowalski, & Carlson, 2010); objectives, formative

assessment, planning, and questioning (Newton, & Winches, 2013).

Conclusions

This literature synthesis adds to the body of literature attempting to define

effective teaching. The purpose of this synthesis was to extend existing meta-analyses on

teacher competencies and student outcomes in two ways: (a) update research to include

studies published since 2007 and (b) include a broader definition of student outcomes.

Several studies in this synthesis considered student outcomes other than academic

achievement, including student engagement (Edmin, 2012; Walker, 2008), student well-

being (Eryilmaz, 2014), student self-efficacy (Walker, 2008), and student ethnic identity

(Brown & Chu, 2012).

Results of this synthesis support findings of prior meta-analyses, including

positive teacher-student relationships (Cholewa, Amatea, West-Olatunji, & Wright, 2012;

Reyes et al., 2012), high academic expectations (Dever & Karabenick, 2011; Newton &

Winches, 2013), direct instruction (Schwerdt & Wuppermann, 2011), using technology

(Thompson & Davis, 2014), problem-solving (Guarino et al., 2013), formative

assessment (Newton & Winches, 2013), effective questioning (Newton & Winches,

2013), and setting lesson objectives (Newton & Winches, 2013).

Within the instruction theme, results extend previous findings to include the use

of hands-on materials in mathematics (Guarino et al., 2013; Thompson & Davis, 2014),

inquiry-based instruction (Wilson et al., 2010), connecting content to student interest and

culture (Emdin, 2012) and demonstrating teacher content knowledge (Campbell et al.,

2014; McCutchen et al., 2009; Shechtman, et al., 2010; Tchoshanov, 2011). Within the learning environment theme, findings that extend prior meta-analyses include:

- Support of student autonomy and personal interest in students (Walker, 2008)

- Extroversion, conscientiousness, agreeableness, emotional stability, and openness (Eryilmaz, 2014)

- Teacher sense of humor (Swanson, 2013)

- Demonstrating value for diversity (Brown & Chu, 2012)

These results help define effective teaching by describing the teacher competencies associated with improved student outcomes. These competencies may be used to construct or revise teacher evaluation frameworks. However, several limitations to this study should be considered. First, most teacher evaluation frameworks span kindergarten through high schools. Existing research is not sufficient to support the inclusion of every strategy and teacher characteristic at every grade level. Second, the results of this synthesis are not exhaustive. Results are limited by the selected search terms and included research databases. Finally, while the search attempted to include observable teaching strategies, the distinction between observable and unobservable is not always clear (e.g., sense of humor). Therefore, when synthesizing research for the purposes of constructing teacher evaluation frameworks, decisions about which teaching strategies to include are not always straightforward.

Areas of Future Research

Future studies, including syntheses of literature, should focus on specific strategies to determine their usefulness across the educational spectrum. Second, it is

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unclear how important various competencies are to the overall quality of teaching. Additional research is needed to determine the appropriate evaluative weight of specific strategies and characteristics. Third, little is known about which competencies are developmentally appropriate for beginning teachers. Research suggests that beginning teachers are less effective than their more-experienced counterparts (Hanushek et al., 2004), but it is unclear if beginning teachers should be accountable for implementing all competencies or a subset of competencies. To approximate the appropriate developmental zone, the present study investigated consensus among experts about the relative importance and difficulty of teaching competencies for beginning teachers.

Finally, the literature synthesis results do not distinguish effective teaching competencies by school context. It is possible, for example, that some teacher competencies are more important in low-income schools than in high-income schools. Therefore, the present study also investigated whether competencies vary for beginning teachers in low-income school settings**.**

Chapter Three: Method
Overview

Teacher education programs are tasked with preparing effective beginning

teachers. However, there is a lack of consensus about what should be expected of

beginning teachers (what Vygotsky called the *Objective Zone of Development*), and about

how to best construct developmentally appropriate training to target their *Zone of*

Proximal Development (Vygotsky, 1978). Acknowledging the needs of beginning

teachers, policy groups (e.g., TNTP, 2014) and school district induction programs (e.g.,

Denver Public Schools, 2016) have attempted to prioritize education and professional

development by identifying the most vital teaching strategies for new teachers. However,

no empirical studies have been conducted to suggest which teaching competencies merit

emphasis.

Therefore, the purpose of this study is to investigate consensus among expert

educators on the relative importance and difficulty of teaching competencies for

beginning teachers, and whether the importance and difficulty of those competencies vary

in low-income school settings. To meet this purpose, I used the Delphi method, in which

a series of surveys collect data from a panel of selected experts (Day & Bobeva, 2005;

Hsu & Sandford, 2007). The Delphi method is appropriate for this research problem, as

it is an inductive, data-driven approach often used in studies for which little empirical

evidence exists (Paré, Cameron, Poba-Nzaou, & Templier, 2013). This chapter describes

the research method used for the study, including a description of procedures for

selecting participants, data collection, and data analysis.

The Delphi Method

The Delphi technique is a method for consensus-building among selected experts

(Day & Bobeva, 2005; Hsu & Sandford, 2007). Delphi is often employed for issue

identification and prioritization (Day & Bobeva, 2005; Okoli & Pawlowski, 2004) and is

widely accepted as a valuable research technique (von der Gracht, 2012). This technique

is distinct from other types of data collection and analysis because the feedback process

allows respondents to modify their ratings based on information from other experts (Hsu

& Sandford, 2007). After each survey round, the researcher summarizes the results and

provides those data to the respondents in the next round. This process encourages

respondents to consider peer input and reassess their positions. However, because

respondents are anonymous to one another, they are less likely to be influenced by group

dynamics like dominant individuals or group pressure for conformity (Hsu & Standford,

2007).

Common applications of the Delphi method include forecasting and issue

identification, issue prioritization, and framework development (Okoli & Pawlowski,

2004). The present study focused on issue identification and prioritization by asking

respondents to identify and rate teaching competencies on scales of importance and

difficulty. The results of the present study may be used by teacher education programs to

prioritize training time on the strategies deemed both important and difficult. Other studies have employed similar Delphi studies to inform priorities for education programs. For example, Streveler, Olds, and Miller (2003) conducted a Delphi study in which experts rated the difficulty and importance of fundamental concepts in thermal and transport sciences for engineering students. Similarly, Goldman et al. (2008) used a Delphi study to identify important and difficult topics in computing. The researchers stated that the results "can be used by instructors to identify what topics merit emphasis" (p. 256).

Participants

The Delphi Method does not rely on a statistical sample representative of a population. Rather, the method depends of the collective judgements of qualified experts. Therefore, careful selection of participants is critically important to the study's validity (Day & Bobeva, 2005; Hsu & Sandford, 2007; Okoli & Pawlowski, 2004).

Selection procedures. I followed Okoli and Pawlowski's (2004) process for selecting participants. Building on Delbecq et al.'s (1975) guidance for soliciting experts, Okoli and Pawlowski (2004) propose a detailed five-step process for selecting Delphi study participants including (a) preparing a *Knowledge Resource Nomination Worksheet*; (b) populating the worksheet with names; (c) nominating additional experts; (c) ranking experts; and (d) inviting experts.

The first step in selecting participants was to create a *Knowledge Resource Nomination Worksheet* (KRNW). The purpose of the KRNW was to identify classes of experts most relevant to the study. For each class of experts, the worksheet lists the key

organizations and literature likely to yield experts. The present study on beginning

teacher effectiveness included two major classes of experts: academic (faculty and

researchers in higher education) and practitioner (school, district, and policy groups). I

aimed to recruit approximately half academics and half practitioners. Table 9 is the

KRNW for the present study.

Table 9
Knowledge Resource Nomination Worksheet (KRNW)

Skills	Organizations	Related Literature and Resources
Academic	• U.S. News and World Report top-ranked teacher education programs • Research associations	• List of U.S. News and World Report top-ranked teacher education programs • American Educational Research Association (AERA) • Journal of Teacher Education • Review of Educational Research
Practitioner	• School districts with formal induction programs • Teacher preparation policy organizations • State departments of education	• District induction websites • Learning Policy Institute • The New Teacher Project • Colorado Department of Education • Public Education and Business Coalition (PEBC)

After I drafted the KRNW, I compiled a list of individual names from each of the

identified organizations and researchers identified in academic journals. I reviewed

organizational websites for relevant experts based on their professional title and

description of job duties. I also identified academic experts based upon the content of

their publications. Specifically, I prioritized expertise in new teacher development and

teacher preparation. I asked identified experts for recommendations for additional

participants. I identified a total of 90 potential participants.

Next, I rated experts based on the qualification criteria rubric in Appendix C. To ensure ratings were consistent and accurate, I established interrater reliability with dissertation committee member Dr. Jeanine Coleman. Dr. Coleman and I rated several experts together. We then rated experts separately and compared scores. Interrater reliability was considered adequate when our rating differences were no more than one point of six possible points. I ranked experts according to their ratings and invited participants beginning with the highest ranks. The target panel size was 10 academic experts and 10 practitioner experts for a total of 20 study participants. To account for attrition, I aimed to recruit participants 16 participants for each panel.

Recruitment procedures. I sent a recruitment letter to each identified expert (see Appendix D). The letter included a brief description of the research problems, the study purpose, and the study methodology. The recruitment letter displayed a link to a *Qualtrics^{TM}* questionnaire in which participants indicated their relevant expertise to determine eligibility. Two criteria were listed as necessary to participate in the study: (a) experience working with beginning teachers (those with fewer than three years of experience), and (b) experience in low-income school settings (at least 75% free/reduced lunch). After potential participants confirmed they met those two criteria, they identified themselves as either "academic" or "practitioner," selected relevant experience, and indicated informed consent (see Appendix F).

To reduce potential participant attrition, I sent a follow-up email to each participant to thank them for their participation, inform them of the study timelines, and to offer my assistance throughout the study. A link to survey round one was included in

the email. I maintained continuous personal contact with each participant, including personalized thank you emails after each round and a preview of upcoming rounds.

Participant profile. I contacted 90 potential participants. Of those, 31 confirmed their qualifications and agreed to participate in the study, including 15 academics and 16 practitioners. All participants scored four or higher on the rating criteria rubric (see Appendix C), indicating a group of experts with extensive expertise in beginning teacher development. The academic panel was comprised of faculty in colleges of education including: Deans (n=2), Professors (n=2), Associate Professors (n=3), Assistant Professors (n=4), Researchers (n=1), and Lecturers/Professors of the Practice (n=3). The practitioner panel included leaders in educational research organizations (n=1), leaders of educational management and policy groups (n=7), and school district-level personnel (n=8).

The participant eligibility survey prompted respondents to indicate the primary contexts in which they had worked with beginning teachers. Results indicated participants have extensive collective experience in pre-service and beginning teacher support and development (see Table 10).

Table 10
Summary of Participant Experience

Selection	Count (of 31)
Professional development	27
Education course instructor	26
Pre-service teacher supervision	25
New teacher mentor	21
Instructional coach	18

Induction support	12
School leader	10
Other*	5

*Teacher education program director; district leader; teacher residency leader; national researcher on pre-service clinical practice; manager and director of teacher residency program

Research Design

The Delphi study included three rounds, adapted from the recommendations by Hsu and Sandford (2007). While some Delphi studies continue survey rounds until the researcher declares consensus, I chose to stipulate the number of rounds in advance to provide participants with an accurate estimation of time required for the study. When survey rounds continue until consensus is reached, participants may artificially conform to facilitate the conclusion of the study. Stipulating the number of rounds in advance helps to avoid this possible artificial consensus (von der Gracht, 2012). Each step is described below and summarized in Table 11. Surveys were administered using *Qualtrics*^{TM} software. Participants had two weeks to complete each survey round, though the deadlines were extended upon participants' requests.

Pilot study. I conducted a pilot study by administering cognitive interviews and surveys to non-participants with expertise in beginning teacher education. First, I conducted in-person cognitive interviews with three pilot participants. I asked them to review the surveys for clarity. I recorded their comments and questions and made adjustments to the survey to improve clarity where needed (see Appendix E: Pilot Cognitive Interviews). Adjustments included clarifying directions, explaining the purpose of each round, and defining terms.

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Next, I administered the surveys to two pilot participants in *Qualtrics^TM* to allow

identification of any technical issues and to record average time for completion. No

technical issues were reported. Average completion time was sixteen minutes for round

one and seven minutes for round two. One pilot participant commented that "distance" on

the difficulty scale between "difficult" and "easy" seemed too large. In response to this

feedback, I modified the scale descriptors to: easy (1), less difficult (2), difficult (3), and

very difficult (4).

Survey round one. Hsu and Sandford (2007) recommend that respondents first

complete an open-ended questionnaire before ranking or rating items. However, the

authors note that it is "both an acceptable and a common modification of the Delphi

process format to use a structured questionnaire in round one that is based upon an

extensive review of the literature" (p. 2). For the present study, I began with a pre-

populated list of teaching competencies based on the existing meta-analyses and results

of the review of literature described in chapter two. To allow for the possibility that other

important competencies may not be represented in the pre-populated list, I invited

respondents to add additional competencies (see Appendix H: Round 1 Survey

Instrument).

To synthesize round one results, I compiled all participant comments for each

competency and revised competency language to reflect participants' suggestions.

Survey round two. I grouped the revised competencies into categories similar to

Denver Public School's LEAP framework including (a) learning environment: positive

classroom culture and climate, (b) learning environment: effective classroom

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management, (c) instruction: content delivery, (d) instruction: instructional strategies, and (e) professionalism. I asked respondents to rate each competency from the synthesized list on a 4-point rating scale for both importance and difficulty for beginning teachers and for beginning teachers in low-income schools (see Appendix M: Rounds 2 and 3 Survey Instrument). After collecting responses for round two, I calculated the percentage of responses along the scale and the interquartile range for each competency in each school setting.

I examined round two results to determine if ratings displayed sufficient variation in ratings. If the data were not sufficiently variable, I planned to modify the round three survey instrument to force a distribution by asking participants to rank competencies by importance and difficulty. I determined sufficient variability according to the following pre-determined criteria:

- Plan A: Results show adequate variation in ratings. Within each category (Learning Environment and Instruction) at least one competency does not reflect 75 percent or more of "very important" or "very difficult" ratings.

- Plan B: Results show insufficient variation in ratings. Within each category (Learning Environment and Instruction), all competencies reflect 75 percent or more of "very important" or "very difficult" ratings.

The data showed sufficient variability according to the criteria in plan A. Therefore, I structured round three such that participants rated each of the competencies. I also analyzed the round two data to determine which competencies displayed consensus

(interquartile range less than or equal to one). For the items on which consensus was not

reached, I contacted participants with outlier ratings to request justification.

Survey round three. I synthesized and included round two data into the round

three survey, including competency rating scale percentages, interquartile range, and

comments from outliers. In survey round three, I asked respondents to review the data

before rating competencies on importance and difficulty again. After collecting round

three responses, I recalculated the percentages and interquartile range for each

competency in each school setting. A summary of study procedures is reflected in Table

11.

Table 11
Summary of Procedures

Phase	Steps
Participant selection	• Recruit participants • Provide study information including purpose and definition of terms • Solicit informed consent
Pilot survey instruments	• Conduct pilot to ensure survey instrument clarity • Revise instruments based on pilot feedback

Survey round 1	• Administer survey round one (select competencies)
	• Analyze data and prepare survey instrument for round two
	    o Add additional competencies provided by participants
	    o Analyze qualitative comments and revise competency language

Survey round 2	• Administer survey round two (rate competencies) • Analyze data: summary statistics o Collect comments by email for outlier items • Prepare survey for round three
Survey round 3	• Administer survey round three o Include statistical and outlier comment feedback from survey round two • Analyze data: summary statistics and tests for differences

Follow-up	• Disseminate a summary of findings to participants

Data Analysis

The present study addressed the following research questions:

1. How important are various teaching competencies for beginning teacher effectiveness?

2. How difficult are various teacher competencies for beginning teachers to implement?

3. To what extent do academics and practitioners exhibit consensus on competency importance and difficulty?

4. Do the importance and difficulty of various teaching competencies for beginning teachers differ for those in low-income school settings?

To address these research questions, I analyzed survey data to calculate importance and difficulty ratings, indicators of consensus, and differences by school setting.

Importance. For the purposes of this study, importance was defined as the extent to which a teaching competency factors into the beginning teacher's developmental trajectory. Beginning teachers that master important competencies improve quickly and are more likely to become effective teachers. Less important competencies may be developmentally appropriate for more experienced teachers, but are not vital for the beginning teacher. Respondents rated each competency on a 4-point scale for importance (1 = not at all important, 2 = less important, 3 = important, 4 = very important). Percentages of responses in each scale category were tabulated.

Difficulty. For the purposes of this study, difficulty was defined as the amount of time and effort required to become proficient in a competency. Difficult competencies take more time and effort to learn and to implement in practice. Respondents rated each competency on a 4-point scale for difficulty (1 = easy, 2 = less difficult, 3 = difficult, 4 = very difficult). Percentages of responses in each scale category were tabulated.

Consensus. One purpose of a Delphi study is to investigate consensus among a group of experts. There is no general standard for measuring consensus in Delphi studies and, therefore, many different measures have been used (von der Gracht, 2012). For example, Delphi researchers have used percentages of responses on the scale, movement toward measures of central tendency, and statistical indicators of stability across survey rounds (Holey et al., 2007). I investigated consensus on individual competencies, consensus across participant panels, and stability across rounds.

Consensus on individual competencies. To investigate consensus on individual items, Delphi studies usually report a measure of central tendency in connection with a measure of dispersion. The appropriate measures depend on the level at which the variables are measured (von der Gracht, 2012). The data for the present study were ordinal ratings on a 4-point scale. Therefore, the most appropriate measure of central tendency was the mode. I tabulated the percentage of responses in each scale category, which signaled the mode (highest percentage) and prevalence of other responses along the scale. The most appropriate measure of dispersion for this data set is the interquartile range (IQR). IQR values less than or equal to one are a suitable consensus indicator on a 4-point scale (von der Gracht, 2012).

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I investigated the extent to which experts agreed on the importance and difficulty on individual teaching competencies. The goal of the study was not to develop consensus, but rather to investigate the extent to which consensus exists. Feedback from round two (mode, interquartile range, and outlier comments) were provided in round three to alert respondents to areas of consensus and dissention.

Consensus by participant panel. To investigate whether practitioners and academics converged on their ratings, I tested for differences between these subgroups using the chi square test for independence. This is a nonparametric test that is suitable for testing whether two independent samples have significant differences in responses (von der Gracht, 2012). In this case, the raters were different people, so the ratings were considered independent.

Stability across survey rounds. As mentioned above, the aim of the study was not to develop consensus, but to examine the extent to which consensus exits. Therefore, it is useful to test for consistency across rounds as an indicator of rating stability (von der Gracht, 2012). I tested for differences between rounds two and three using the Wilcoxon matched-pairs signed-ranks test. This is a nonparametric test that compares two dependent samples and is appropriate for ordinal-level data. Some researchers elect to continue survey rounds until analysis reveals a certain level of stability. However, the proposed study will stipulate the number of survey rounds (three) to avoid forcing artificial consensus. Therefore, stability across rounds data was used only to interpret consensus analyses.

Differences by school setting. As discussed in chapter one, this study did not aim to compare high and low poverty school settings, but rather to investigate whether teaching competencies are similar regardless of setting or if low-income schools require specialized teaching competencies. Therefore, experts rated competency importance and difficulty for unspecified school settings and again for low-income schools.

To investigate whether the importance or difficulty of competencies varies for beginning teachers in low-income schools, I tested for differences across school setting using the Wilcoxon matched-pairs signed-ranks test. In this case, the data were considered dependent, as the same participant is rating the same competency in two different settings (school type). Table 13 provides a summary of the research questions and associated data analysis.

Table 12
Summary of Data Analysis

Research Questions	Data Analysis
1. How important are various teaching competencies for beginning teacher effectiveness?	• Percentage of responses for each competency (highlighting mode) on 4-point importance scale
2. How difficult are various teacher competencies for beginning teachers to implement?	• Percentage of responses for each competency (highlighting mode) on 4-point difficulty scale
3. To what extent do experts exhibit consensus on competency importance and difficulty?	• Consensus by item: IQR • Difference between academics and practitioners: Chi square test for independence
4. Do the importance and difficulty of various teaching competencies for beginning teachers differ for those in low-income school settings?	• Wilcoxon matched-pairs signed-ranks test

Significance Testing and Type 1 Error

For each of the analyses, the critical level of significance was set at 0.05. Therefore, I rejected the null hypotheses when results indicated significance levels below 0.05. However, when multiple hypothesis tests are performed, the probability of a Type 1 error increases (Sedgwick, 2012).

One approach to reduce Type 1 error when conducting multiple tests is the Bonferroni correction. This correction involves adjusting the critical significance level by dividing it by the number of performed tests. For example, the Wilcoxon matched-pairs signed ranks test for difficulty differences across school settings included 25 tests (one for each competency). Therefore, the adjusted significance level would be $0.05 \div 25$, or 0.002. However, the Bonferroni correction is conservative and not recommended when conducting a large number of tests, as few tests will be significant after the correction is applied (Sedgwick, 2012). Therefore, I did not apply the correction. However, caution should be exercised in interpreting results due to increased probability of Type 1 errors.

Chapter Four: Results

This chapter presents results from all phases of data collection and analysis. The results from rounds one, two, and three are presented first, as findings from each round informed the subsequent round. Then, I present analyses of differences between academic and practitioner panels, differences across school settings, and stability across rounds.

Round One Results

The purpose of round one was to compile a comprehensive list of teaching competencies which would then be rated by participants in rounds two and three. I began with a list of 31 competencies based on the literature synthesis in chapter two. I asked participants to select the competencies they felt should be included in subsequent rounds and to make comments and suggestions related to clarity (see Appendix G: Email to Participants: Round 1 and Appendix H: Round 1 Survey Instrument). All thirty-one experts participated in round one. However, one participant experienced a technical problem and was unable to submit results in *Qualtrics*. This participant sent feedback by email, which was incorporated into the qualitative analysis. However, her competency selections were not captured. Therefore, the maximum number of selections for each competency was 30.

All 31 competencies were selected by multiple participants (see Appendix J: Round One Competency Selection). Therefore, missing one participant's selections did not affect findings and all competencies met the criteria to be included in subsequent rounds (selected by at least one participant). I compiled participants' qualitative comments for each competency and participants' suggestions for additional competencies.

Participant comments fell into three broad categories: requests for clarity, suggestions for revised wording, and recommendations to combine or separate competencies (see Appendix I: Round 1 Participant Comments). I synthesized participant suggestions by separating one competency into two, incorporating 11 competencies into existing competencies, and adding 4 additional competencies based on participant suggestions. Appendix K shows each of the revisions. Because all competencies were selected by at least 13 participants, none were removed. The resulting list of 25 revised competencies was coded by domain and used in rounds two and three (see Table 14).

Table 13

Revised Competencies and Codes

Code	Competency
Learning Environment	
LE1	Creates a student-centered learning environment by incorporating student voice and choice.
LE2	Builds and maintains positive teacher-student relationships.
LE3	Establishes a culturally responsive and inclusive learning environment by honoring diversity inside and outside of the classroom (e.g., ethnicity, language, ability, gender identity, etc.).
LE4	Creates a safe and organized physical environment with efficient access to learning materials.
LE5	Clearly and consistently implements guidelines for student behavior.
LE6	Recognizes student effort and provides positive reinforcement.
Instruction	

I1   Clearly and accurately presents content, including previewing, reviewing, and emphasizing main ideas.

I2   Differentiates content by providing challenging yet accessible learning opportunities (e.g., scaffolding, acceleration, and enrichment).

I3   Provides graphic and non-linguistic representations of content (e.g., concept-mapping).

I4   Provides rigorous learning experiences that allow all students to meet and exceed content standards.

I5   Designs lessons that are aligned to state standards and incorporate evidence-based instructional practices.

I6   Incorporates student interest and culture into lesson design.

I7   Uses clear and concise language to communicate lesson objectives and academic expectations.

I8   Provides rationale for lesson (i.e., real-world and/or practical connections).

I9   Engages students in generating questions and providing evidence to support or refute assertions (i.e., claims and evidence and inquiry-based instruction).

I10   Facilitates student critical thinking (e.g., analyzing, predicting, synthesizing, problem-solving, etc.).

I11   Models strategies and provides guided and independent practice (i.e., gradual release of responsibility).

I12   Actively engages students by employing strategies that deepen understanding of the content (e.g., hands-on materials, manipulatives, technology use).

I13   Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning.

I14   Frequently checks for understanding, provides timely and effective feedback, and uses data to inform instruction.

I15   Provides scaffolding for students in need of additional support (e.g., modified, small group or individualized instruction).

I16   Facilitates classroom discussion and poses critical questions.

I17   Promotes student collaboration and cooperation including small-group learning.

Professionalism

P1   Analyzes and continuously improves one's own instructional practice based on feedback and evidence of student learning.

P2   Effectively collaborates with colleagues, families, and other educational specialists.

Round Two Results

The primary purpose of round two was to investigate the extent of consensus among participants on each competency. Participants rated each competency for importance and difficulty for beginning teachers and for beginning teachers in low-income schools. All 31 participants completed round two.

I examined each competency's interquartile range to determine whether the item reached consensus (IQR ≤ 1). Of the 25 competencies, five showed a lack of consensus on at least one of the four scales for a total of 8 non-consensus items (see Table 15). For each of the non-consensus items, I examined the participants' ratings to identify outliers (ratings more than one scale point from the mode). I contacted each of the 21 outlier participants to request justification for the rating. For some of the non-consensus items, there were no outliers, as all ratings were within one scale point of the mode (see Appendix N). I compiled all participant rating justifications. Note: eight of the 21 participants did not respond to the request for rating justification. However, comments were collected from outliers on each of the non-consensus items (see Appendix N: Round Two Outlier Comments). One participant responded that they had made the rating in error and indicated their intended rating. When I corrected the error, the competency displayed consensus. I compiled the mode, IQR, and outlier comments for non-consensus items to send to participants in round three (see Appendix O: Round Three Email to Participants).

Table 14

Round 2 Results (n=31)

Learning Environment: Positive classroom culture and climate

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
LE1 Creates a student-centered learning environment by incorporating student voice and choice.	Beg Tchr	0.00%	22.58%	41.94%	35.48%	3	1	0.00%	22.58%	41.94%	35.48%	3	1
	Beg Tchr Low-inc	0.00%	22.58%	22.58%	54.84%	4	1	0.00%	22.58%	25.81%	51.61%	4	1
LE2 Builds and maintains positive teacher-student relationships.	Beg Tchr	0.00%	0.00%	16.13%	83.87%	4	0	6.45%	48.39%	32.26%	12.90%	2	1
	Beg Tchr Low-inc	0.00%	0.00%	12.90%	87.10%	4	0	0.00%	29.03%	48.39%	22.58%	3	1
LE3 Establishes a culturally responsive and inclusive learning environment by honoring diversity inside and outside of the classroom (e.g., ethnicity, language, ability, gender identity, etc.).	Beg Tchr	0.00%	3.23%	35.48%	61.29%	4	1	0.00%	12.90%	51.61%	35.48%	3	1
	Beg Tchr Low-inc	0.00%	3.23%	25.81%	70.97%	4	1	0.00%	9.68%	51.61%	38.71%	3	1

Learning Environment: Effective classroom management

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
LE4 Creates a safe and organized physical environment with efficient access to learning materials.	Beg Tchr	0.00%	9.68%	38.71%	51.61%	4	1	16.13%	41.94%	32.26%	9.68%	2	1
	Beg Tchr Low-inc	0.00%	9.68%	29.03%	61.29%	4	1	9.68%	41.94%	35.48%	12.90%	2	1
LE5 Clearly and consistently implements guidelines for student behavior.	Beg Tchr	0.00%	0.00%	25.81%	74.19%	4	1	3.23%	3.23%	51.61%	41.94%	3	1
	Beg Tchr Low-inc	0.00%	6.45%	16.13%	77.42%	4	0	0.00%	3.23%	38.71%	58.06%	4	1

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| LE6 Recognizes student effort and provides positive reinforcement. | Beg Tchr | 0.00% | 3.23% | 35.48% | 61.29% | 4 | 1 | 6.45% | 45.16% | 41.94% | 6.45% | 2 | 1 |
| | Beg Tchr Low-inc | 0.00% | 3.23% | 32.26% | 64.52% | 4 | 1 | 6.45% | 38.71% | 41.94% | 12.90% | 3 | 1 |

Instruction: Content delivery

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
I1 Clearly and accurately presents content, including previewing, reviewing, and emphasizing main ideas.	Beg Tchr	0.00%	0.00%	41.94%	58.06%	4	1	6.45%	25.81%	41.94%	25.81%	3	2
	Beg Tchr Low-inc	0.00%	0.00%	35.48%	64.52%	4	1	0.00%	29.03%	41.94%	29.03%	3	2
I2 Differentiates content by providing challenging yet accessible learning opportunities (e.g., scaffolding, acceleration, and enrichment).	Beg Tchr	0.00%	16.13%	29.03%	54.84%	4	1	0.00%	9.68%	32.26%	58.06%	4	1
	Beg Tchr Low-inc	0.00%	12.90%	25.81%	61.29%	4	1	0.00%	6.45%	29.03%	64.52%	4	1
I3 Provides graphic and non-linguistic representations of content (e.g., concept-mapping).	Beg Tchr	0.00%	32.26%	35.48%	32.26%	3	2	3.23%	54.84%	25.81%	16.13%	2	1
	Beg Tchr Low-inc	0.00%	19.35%	29.03%	51.61%	4	1	3.23%	48.39%	29.03%	19.35%	2	1
I4 Provides rigorous learning experiences that allow all students to meet and exceed content standards.	Beg Tchr	0.00%	0.00%	25.81%	74.19%	4	1	0.00%	6.45%	35.48%	58.06%	4	1
	Beg Tchr Low-inc	0.00%	0.00%	22.58%	77.42%	4	0	0.00%	9.68%	19.35%	70.97%	4	1
I5 Designs lessons that are aligned to state standards and incorporate evidence-based instructional practices.	Beg Tchr	0.00%	16.13%	19.35%	64.52%	4	1	6.45%	22.58%	41.94%	29.03%	3	2
	Beg Tchr Low-inc	0.00%	16.13%	22.58%	61.29%	4	1	0.00%	25.81%	38.71%	35.48%	3	2
I6 Incorporates student interest and culture into lesson design.	Beg Tchr	0.00%	22.58%	41.94%	35.48%	3	1	6.45%	35.48%	35.48%	22.58%	2/3	1
	Beg Tchr Low-inc	0.00%	16.13%	35.48%	48.39%	4	1	3.23%	35.48%	32.26%	29.03%	2	2

Instruction: Instructional strategies

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
I7 Uses clear and concise language to communicate lesson objectives and academic expectations.	Beg Tchr	0.00%	9.68%	41.94%	48.39%	4	1	3.23%	45.16%	35.48%	16.13%	2	1
	Beg Tchr Low-inc	0.00%	3.23%	48.39%	48.39%	3/4	1	3.23%	32.26%	45.16%	19.35%	3	1
I8 Provides rationale for lesson (i.e., real-world and/or practical connections).	Beg Tchr	0.00%	12.90%	45.16%	41.94%	3	1	9.68%	38.71%	48.39%	3.23%	3	1
	Beg Tchr Low-inc	0.00%	9.68%	48.39%	41.94%	3	1	9.68%	35.48%	38.71%	16.13%	3	1
I9 Engages students in generating questions and providing evidence to support or refute assertions (i.e., claims and evidence and inquiry-based instruction).	Beg Tchr	0.00%	9.68%	48.39%	41.94%	3	1	0.00%	16.13%	48.39%	35.48%	3	1
	Beg Tchr Low-inc	0.00%	9.68%	48.39%	41.94%	3	1	0.00%	12.90%	51.61%	35.48%	3	1
I10 Facilitates student critical thinking (e.g., analyzing, predicting, synthesizing, problem-solving, etc.).	Beg Tchr	0.00%	3.23%	35.48%	61.29%	4	1	0.00%	3.23%	29.03%	67.74%	4	1
	Beg Tchr Low-inc	0.00%	3.23%	29.03%	67.74%	4	1	0.00%	3.23%	22.58%	74.19%	4	1
I11 Models strategies and provides guided and independent practice (i.e., gradual release of responsibility).	Beg Tchr	0.00%	6.45%	41.94%	51.61%	4	1	3.23%	12.90%	64.52%	19.35%	3	0
	Beg Tchr Low-inc	0.00%	3.23%	45.16%	51.61%	3	1	3.23%	16.13%	54.84%	25.81%	3	1
I12 Actively engages students by employing strategies that deepen understanding of the content (e.g., hands-on materials, manipulatives, technology use).	Beg Tchr	0.00%	12.90%	48.39%	38.71%	3	1	0.00%	22.58%	51.61%	25.81%	3	1
	Beg Tchr Low-inc	0.00%	12.90%	45.16%	41.94%	3	1	0.00%	19.35%	48.39%	32.26%	3	1

Item	Group												
I13 Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning.	Beg Tchr	0.00%	19.35%	48.39%	32.26%	3	1	3.23%	19.35%	32.26%	45.16%	4	1
	Beg Tchr Low-inc	0.00%	19.35%	35.48%	45.16%	4	1	3.23%	19.35%	25.81%	51.61%	4	1
I14 Frequently checks for understanding, provides timely and effective feedback, and uses data to inform instruction.	Beg Tchr	0.00%	6.45%	25.81%	67.74%	4	1	0.00%	19.35%	35.48%	45.16%	4	1
	Beg Tchr Low-inc	0.00%	3.23%	22.58%	74.19%	4	1	3.23%	12.90%	35.48%	48.39%	4	1
I15 Provides scaffolding for students in need of additional support (e.g., modified, small group or individualized instruction).	Beg Tchr	0.00%	3.23%	35.48%	61.29%	4	1	0.00%	6.45%	45.16%	48.39%	4	1
	Beg Tchr Low-inc	0.00%	0.00%	32.26%	67.74%	4	1	0.00%	6.45%	35.48%	58.06%	4	1
I16 Facilitates classroom discussion and poses critical questions.	Beg Tchr	0.00%	6.45%	45.16%	48.39%	4	1	3.23%	19.35%	48.39%	29.03%	3	1
	Beg Tchr Low-inc	0.00%	6.45%	45.16%	48.39%	4	1	3.23%	16.13%	48.39%	32.26%	3	1
I17 Promotes student collaboration and cooperation including small-group learning.	Beg Tchr	0.00%	22.58%	25.81%	51.61%	4	1	0.00%	25.81%	35.48%	38.71%	4	1
	Beg Tchr Low-inc	0.00%	22.58%	29.03%	48.39%	4	1	0.00%	22.58%	29.03%	48.39%	4	1

Professionalism

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
P1 Analyzes and continuously improves one's own instructional practice based on feedback and evidence of student learning.	Beg Tchr	0.00%	0.00%	19.35%	80.65%	4	0	0.00%	19.35%	48.39%	32.26%	3	1
	Beg Tchr Low-inc	0.00%	0.00%	19.35%	80.65%	4	0	0.00%	19.35%	41.94%	38.71%	3	1
P2 Effectively collaborates with colleagues, families, and other educational specialists.	Beg Tchr	0.00%	9.68%	22.58%	67.74%	4	1	3.23%	35.48%	35.48%	25.81%	2/3	2
	Beg Tchr Low-inc	0.00%	9.68%	19.35%	70.97%	4	1	3.23%	29.03%	41.94%	25.81%	3	2

Beg Tchr = Beginning Teacher, *Beg Tchr Low-inc* = Beginning Teacher in low-income school, *IQR* = Interquartile range

Round Three Results

The purpose of round three was to gather final importance and difficulty ratings after providing participants a summary of round two data. One of the 31 participants, one did not complete round three, therefore, the total number of participants in round three was 30. I examined round three descriptive data and conducted statistical analyses to test for differences between academic and practitioner panels and differences across school settings.

Descriptive statistics. Competency modes ranged from two to four (see Table 17). Of the 50 possible importance and difficulty combinations (25 competencies for beginning teachers and 25 competencies for beginning teachers in low-income schools), four were rated important, but less difficult. Forty-six were rated both important and difficult. Of those, 13 were rated both very difficult and very important (see Figure 4). Note: the number of items with a mode of two decreased from eight in round two (and two additional two/three ties) to four in round three. The mode for all importance items in round three was either three or four. The four items with modes of two were all related to difficulty.

	Not Important (1)	Less Important (2)	Important (3)	Very Important (4)
Very Difficult (4)			❖ I16 • I17	❖ LE1 • I14 ❖ LE5 ❖ I14 • I2 • I15 ❖ I2 ❖ I15 • I4 ❖ I17 ❖ I4 • I10 ❖ I10
Difficult (3)			• LE1* • I12 • I3 • I13 ❖ I3 ❖ I13 • I7 • I16* ❖ I8 • I9 ❖ I9	❖ LE2 • I6 ❖ LE2* ❖ I6 ❖ LE3 ❖ I7 ❖ LE3 • I11 • LE5 ❖ I11 ❖ LE6 ❖ I12 • I1* • PI ❖ I1* ❖ P1 • I5 • P2 ❖ I5* ❖ P2*
Less Difficult (2)			• I8	• LE4 ❖ LE4 • LE6
Easy (1)				

Difficulty (Y-axis) — *Importance* (X-axis)

- Beginning teachers
- ❖ Beginning teachers in low-income schools
- * Non-consensus

Figure 4. Competency Importance and Difficulty

The number of non-consensus items (IQR>1) decreased from eight of 100 in round two to seven of 100 in round three, though some items shifted from consensus to non-consensus and vice-versa (see Table 16). In total, 93 of 100 the items displayed consensus in round three.

Table 15

Non-consensus Items in Rounds 2 and 3

Item	Round 2 IQR	Round 3 IQR
LE1 Importance	1	2
LE2 Difficulty low-income	1	1.25
I1 Difficulty	2	1.25
I1 Difficulty low-income	2	2
I3 Importance	2	0.25
I5 Difficulty	2	1
I5 Difficulty low-income	2	1.25
I6 Difficulty low-income	2	1
I16 Difficulty	1	2
P2 Difficulty	2	1
P2 Difficulty low-income	2	1.25

Table 16

Round 3 Results (n=30)

Learning Environment: Positive classroom culture and climate

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
LE1 Creates a student-centered learning environment by incorporating student voice and choice.	Beg Tchr	0.00%	30.00%	40.00%	30.00%	3	2	0.00%	16.67%	50.00%	33.33%	3	1
	Beg Tchr Low-inc	0.00%	20.00%	36.67%	43.33%	4	1	0.00%	13.33%	40.00%	46.67%	4	1
LE2 Builds and maintains positive teacher-student relationships.	Beg Tchr	0.00%	0.00%	6.67%	93.33%	4	0	3.33%	36.67%	56.67%	3.33%	3	1
	Beg Tchr Low-inc	0.00%	0.00%	6.67%	93.33%	4	0	3.33%	23.33%	50.00%	23.33%	3	1.25
LE3 Establishes a culturally responsive and inclusive learning environment by honoring diversity inside and outside of the classroom (e.g., ethnicity, language, ability, gender identity, etc.).	Beg Tchr	0.00%	0.00%	20.00%	80.00%	4	0	0.00%	13.33%	56.67%	30.00%	3	1
	Beg Tchr Low-inc	0.00%	0.00%	20.00%	80.00%	4	0	0.00%	6.67%	53.33%	40.00%	3	1

Learning Environment: Effective classroom management

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
LE4 Creates a safe and organized physical environment with efficient access to learning materials.	Beg Tchr	0.00%	6.67%	40.00%	53.33%	4	1	13.33%	53.33%	26.67%	6.67%	2	1
	Beg Tchr Low-inc	0.00%	6.67%	33.33%	60.00%	4	1	10.00%	46.67%	23.33%	20.00%	2	1
LE5 Clearly and consistently implements guidelines for student behavior.	Beg Tchr	0.00%	0.00%	40.00%	60.00%	4	1	3.33%	13.33%	50.00%	33.33%	3	1
	Beg Tchr Low-inc	0.00%	0.00%	26.67%	73.33%	4	1	3.33%	6.67%	40.00%	50.00%	4	1

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		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
LE6 Recognizes student effort and provides positive reinforcement.	Beg Tchr	0.00%	6.67%	30.00%	63.33%	4	1	10.00%	46.67%	40.00%	3.33%	2	1
	Beg Tchr Low-inc	0.00%	3.33%	26.67%	70.00%	4	1	6.67%	36.67%	43.33%	13.33%	3	1

Instruction: Content delivery

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
I1 Clearly and accurately presents content, including previewing, reviewing, and emphasizing main ideas.	Beg Tchr	0.00%	6.67%	40.00%	53.33%	4	1	3.33%	23.33%	50.00%	23.33%	3	1.25
	Beg Tchr Low-inc	0.00%	10.00%	23.33%	66.67%	4	1	3.33%	23.33%	46.67%	26.67%	3	2
I2 Differentiates content by providing challenging yet accessible learning opportunities (e.g., scaffolding, acceleration, and enrichment).	Beg Tchr	0.00%	13.33%	33.33%	53.33%	4	1	0.00%	0.00%	40.00%	60.00%	4	1
	Beg Tchr Low-inc	0.00%	13.33%	20.00%	66.67%	4	1	0.00%	0.00%	20.00%	80.00%	4	0
I3 Provides graphic and non-linguistic representations of content (e.g., concept-mapping).	Beg Tchr	0.00%	23.33%	56.67%	20.00%	3	0.25	3.33%	33.33%	56.67%	6.67%	3	1
	Beg Tchr Low-inc	0.00%	13.33%	50.00%	36.67%	3	1	0.00%	33.33%	56.67%	10.00%	3	1
I4 Provides rigorous learning experiences that allow all students to meet and exceed content standards.	Beg Tchr	0.00%	0.00%	33.33%	66.67%	4	1	0.00%	10.00%	36.67%	53.33%	4	1
	Beg Tchr Low-inc	0.00%	0.00%	26.67%	73.33%	4	1	0.00%	6.67%	30.00%	63.33%	4	1
I5 Designs lessons that are aligned to state standards and incorporate evidence-based instructional practices.	Beg Tchr	0.00%	6.67%	33.33%	60.00%	4	1	3.33%	33.33%	43.33%	20.00%	3	1
	Beg Tchr Low-inc	0.00%	6.67%	36.67%	56.67%	4	1	3.33%	30.00%	43.33%	23.33%	3	1.25
I6 Incorporates student interest and culture into lesson design.	Beg Tchr	0.00%	20.00%	30.00%	50.00%	4	1	3.33%	23.33%	53.33%	20.00%	3	1
	Beg Tchr Low-inc	0.00%	13.33%	30.00%	56.67%	4	1	3.33%	16.67%	53.33%	26.67%	3	1

Instruction: Instructional strategies

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
I7 Uses clear and concise language to communicate lesson objectives and academic expectations.	Beg Tchr	0.00%	6.67%	46.67%	46.67%	3/4	1	0.00%	40.00%	43.33%	16.67%	3	1
	Beg Tchr Low-inc	0.00%	6.67%	40.00%	53.33%	4	1	0.00%	30.00%	50.00%	20.00%	3	1
I8 Provides rationale for lesson (i.e., real-world and/or practical connections).	Beg Tchr	0.00%	13.33%	63.33%	23.33%	3	0.25	3.33%	46.67%	43.33%	6.67%	2	1
	Beg Tchr Low-inc	0.00%	10.00%	50.00%	40.00%	3	1	3.33%	36.67%	50.00%	10.00%	3	1
I9 Engages students in generating questions and providing evidence to support or refute assertions (i.e., claims and evidence and inquiry-based instruction).	Beg Tchr	0.00%	0.00%	60.00%	40.00%	3	1	0.00%	6.67%	56.67%	36.67%	3	1
	Beg Tchr Low-inc	0.00%	0.00%	56.67%	43.33%	3	1	0.00%	3.33%	56.67%	40.00%	3	1
I10 Facilitates student critical thinking (e.g., analyzing, predicting, synthesizing, problem-solving, etc.).	Beg Tchr	0.00%	0.00%	26.67%	73.33%	4	1	0.00%	3.33%	33.33%	63.33%	4	1
	Beg Tchr Low-inc	0.00%	0.00%	30.00%	70.00%	4	1	0.00%	3.33%	26.67%	70.00%	4	1
I11 Models strategies and provides guided and independent practice (i.e., gradual release of responsibility).	Beg Tchr	0.00%	0.00%	40.00%	60.00%	4	1	0.00%	20.00%	60.00%	20.00%	3	0
	Beg Tchr Low-inc	0.00%	0.00%	33.33%	66.67%	4	1	0.00%	13.33%	56.67%	30.00%	3	1
I12 Actively engages students by employing strategies that deepen understanding of the content (e.g., hands-on materials, manipulatives, technology use).	Beg Tchr	0.00%	3.33%	56.67%	40.00%	3	1	0.00%	20.00%	53.33%	26.67%	3	1
	Beg Tchr Low-inc	0.00%	3.33%	43.33%	53.33%	4	1	0.00%	16.67%	46.67%	36.67%	3	1
I13 Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning.	Beg Tchr	0.00%	20.00%	40.00%	40.00%	3/4	1	3.33%	6.67%	50.00%	40.00%	3	1
	Beg Tchr Low-inc	0.00%	16.67%	40.00%	43.33%	3	1	3.33%	6.67%	50.00%	40.00%	3	1

Item	Group												
I14 Frequently checks for understanding, provides timely and effective feedback, and uses data to inform instruction.	Beg Tchr	0.00%	0.00%	30.00%	70.00%	4	1	0.00%	13.33%	36.67%	50.00%	4	1
	Beg Tchr Low-inc	0.00%	0.00%	30.00%	70.00%	4	1	0.00%	13.33%	36.67%	50.00%	4	1
I15 Provides scaffolding for students in need of additional support (e.g., modified, small group or individualized instruction).	Beg Tchr	0.00%	0.00%	33.33%	66.67%	4	1	0.00%	3.33%	43.33%	53.33%	4	1
	Beg Tchr Low-inc	0.00%	0.00%	30.00%	70.00%	4	1	0.00%	3.33%	30.00%	66.67%	4	1
I16 Facilitates classroom discussion and poses critical questions.	Beg Tchr	0.00%	0.00%	60.00%	40.00%	3	1	0.00%	26.67%	40.00%	33.33%	3	2
	Beg Tchr Low-inc	0.00%	0.00%	53.33%	46.67%	3	1	0.00%	16.67%	40.00%	43.33%	4	1
I17 Promotes student collaboration and cooperation including small-group learning.	Beg Tchr	0.00%	6.67%	50.00%	43.33%	3	1	0.00%	20.00%	33.33%	46.67%	4	1
	Beg Tchr Low-inc	0.00%	10.00%	43.33%	46.67%	4	1	0.00%	16.67%	36.67%	46.67%	4	1

Professionalism

		Importance						Difficulty					
		Not important (1)	Less important (2)	Important (3)	Very important (4)	Mode	IQR	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Mode	IQR
P1 Analyzes and continuously improves one's own instructional practice based on feedback and evidence of student learning.	Beg Tchr	0.00%	0.00%	20.00%	80.00%	4	0	0.00%	13.33%	66.67%	20.00%	3	0
	Beg Tchr Low-inc	0.00%	0.00%	20.00%	80.00%	4	0	0.00%	13.33%	56.67%	30.00%	3	1
P2 Effectively collaborates with colleagues, families, and other educational specialists.	Beg Tchr	0.00%	0.00%	43.33%	56.67%	4	1	10.00%	20.00%	53.33%	16.67%	3	1
	Beg Tchr Low-inc	0.00%	0.00%	30.00%	70.00%	4	1	3.33%	20.00%	46.67%	30.00%	3	1.25

Beg Tchr = Beginning Teacher, *Beg Tchr Low-inc* = Beginning Teacher in low-income school, *IQR* = Interquartile range

Differences between participant panels. Because the data were ordinal, the most appropriate test for differences between academic and practitioner panels was the chi-square test of independence (Gliner, Morgan, & Harmon, 2002). The typical significance statistic for this test is Pearson's chi-square. However, one of the underlying assumptions of Pearson's chi-square is that no more than 20% of the cells have an expected count less than five. That assumption was often violated in this data set. For the instances in which the assumption was violated, I used Fisher's Exact Test for 2x2 contingency tables and the Likelihood Ratio for 2x3 and 2x4 contingency tables (McHugh, 2013).

Table 18 shows the significance values and notes which statistic is reported for each item. The values of these significance indicators can be interpreted similarly; values less than .05 signify statistically significant differences between academic and practitioner panels. Four of the 100 tests showed statistically significant differences between panels; the remaining 96 items showed no significant differences. Table 18 also shows the effect size for each item, as calculated by Cramer's V. Cramer's V values can be interpreted as follows: <.10: trivial; .10 - .30: small to medium; .30 - .50: medium to large; >.50: large to very large (Cohen, 1992). Three of the statistically significant items had medium to large effect sizes and one displayed a large to very large effect size.

Table 17

Results of Chi-square Test for Differences between Academic and Practitioner Panels

Competency	Importance		Difficulty		Importance Low-income		Difficulty Low-income	
	L/P/F	Cramer's V	L/P/F	Cramer's V	L/P/F	Cramer's V	L/P/F	Cramer's V
LE1	.895 (L)	.086	.031* (L)	.471	.919 (L)	.075	.069 (L)	.414
LE2	.483 (F)	.267	.404 (L)	.268	1.00 (F)	.000	.628 (L)	.212
LE3	.651 (F)	.167	.045* (L)	.393	.651 (F)	.167	.221 (L)	.274
LE4	.066 (L)	.418	.185 (L)	.365	.053 (L)	.432	.694 (L)	.218
LE5	1.00 (P)	.000	.475 (L)	.262	1.00 (F)	.000	.693 (L)	.189
LE6	.474 (L)	.222	.503 (L)	.255	.316 (L)	.254	.983 (L)	.075
I1	.066 (L)	.418	.403 (L)	.288	.290 (L)	.284	.391 (L)	.293
I2	.230 (L)	.308	.710 (P)	.136	.006* (L)	.510	.651 (F)	.167
I3	.166 (L)	.334	.165 (L)	.362	.379 (L)	.251	.529 (L)	.205
I4	1.00 (F)	.000	.806 (L)	.119	.682 (F)	.151	.921 (L)	.074
I5	.098 (L)	.357	.220 (L)	.373	.160 (L)	.310	.092 (L)	.441
I6	.915 (L)	.077	.142 (L)	.400	.460 (L)	.226	.112 (L)	.426
I7	.121 (L)	.338	.019* (L)	.448	.211 (L)	.279	.163 (L)	.336
I8	.907 (L)	.081	.145 (L)	.375	.816 (L)	.115	.454 (L)	.272
I9	.264 (F)	.272	.928 (L)	.071	.462 (F)	.202	.486 (L)	.188
I10	1.00 (F)	.000	.487 (L)	.187	1.00 (F)	.073	.313 (L)	.254
I11	.710 (F)	.136	.149 (L)	.344	.700 (F)	.141	.544 (L)	.197
I12	.324 (L)	.249	.685 (L)	.158	.481 (L)	.189	.518 (L)	.208
I13	.167 (L)	.189	.508 (L)	.254	.269 (L)	.288	.508 (L)	.254
I14	1.00 (F)	.073	.924 (L)	.072	1.00 (F)	.073	.924 (L)	.072
I15	1.00 (P)	.000	.481 (L)	.189	1.00 (F)	.073	.428 (L)	.209
I16	1.00 (P)	.000	1.00 (L)	.000	1.00 (F)	.000	.736 (L)	.141
I17	.521 (L)	.208	.617 (L)	.178	.176 (L)	.337	.749 (L)	.139
P1	1.00 (F)	.000	.536 (L)	.200	.651 (F)	.167	.557 (L)	.197
P2	1.00 (F)	.067	.748 (L)	.200	1.00 (F)	.073	.338 (L)	.314

*statistically significant   L=Likelihood Ratio   P=Pearson's Coefficient   F=Fisher's exact test

Table 19 shows the expected and observed counts for the four statistically significant items. One competency that showed significant differences in importance for beginning teachers in low-income schools was differentiating content (I2). Practitioners tended to rate this item as more important than academics. For the other three significant items, practitioners tended to rate the items as more difficult. These three items included creating a student-centered learning environment (LE1), establishing a culturally

responsive learning environment (LE3) and clearly communicating lesson objectives and

academic expectations (I7).

Table 18

*Differences across Panels: Expected and Observed Counts for Statistically Significant
Items*

LE1 Difficulty for Beginning Teachers					
	Less difficult (2)		Difficult (3)		Very difficult (4)	
Academic	Count	4	Count	4	Count	7
	Expected Count	2.5	Expected Count	7.5	Expected Count	5
Practitioner	Count	1	Count	11	Count	3
	Expected Count	2.5	Expected Count	7.5	Expected Count	5

I2 Importance for Beginning Teachers in Low-Income Schools					
	Less important (2)		Important (3)		Very important (4)	
Academic	Count	1	Count	6	Count	8
	Expected Count	2	Expected Count	3	Expected Count	10
Practitioner	Count	3	Count	0	Count	12
	Expected Count	2	Expected Count	3	Expected Count	10

LE3 Difficulty for Beginning Teachers					
	Less difficult (2)		Difficult (3)		Very difficult (4)	
Academic	Count	4	Count	7	Count	4
	Expected Count	2	Expected Count	8.5	Expected Count	4.5
Practitioner	Count	0	Count	10	Count	5
	Expected Count	2	Expected Count	8.5	Expected Count	4.5

I7 Difficulty for Beginning Teachers					
	Less difficult (2)		Difficult (3)		Very difficult (4)	
Academic	Count	7	Count	8	Count	0
	Expected Count	6	Expected Count	6.5	Expected Count	2.5
Practitioner	Count	5	Count	5	Count	5
	Expected Count	6	Expected Count	6.5	Expected Count	2.5

Differences across school setting. Because the same participants rated

competencies for both school settings, the data were considered dependent. Therefore, I

used the Wilcoxon Signed Ranks Test to analyze difference in participant ratings across

school settings (beginning teachers versus beginning teachers in low-income schools).

Table 20 displays results including differences in ranks (z, 2-tailed), statistical

significance of the differences (*p*), and effect size (*r*). Z values reflect beginning teachers

compared to beginning teachers in low income schools. Therefore, positive z values

indicate more important or more difficult ranks for beginning teachers. Negative ranks

indicate more important or difficult ranks for beginning teachers in low-income schools.

Of 50 total items, 20 showed statistically significant differences across school

setting. All of the significant items showed higher ratings in low-income schools. That is,

the items were rated more important or more difficult in low-income schools. I calculated

effect size using Pearson's correlation: $r = z/\sqrt{N}$, where N is the number of cases (30

participants * two scales=60 cases). The absolute value of r can be interpreted as follows:

<.10: trivial; .10 - .30: small to medium; .30 - .50: medium to large; >.50: large to very

large (Cohen, 1992). Of the 20 statistically significant items, 13 had small to medium

effect sizes and 7 had medium to large effect sizes.

Table 19

Results of Wilcoxon Signed Ranks Test for Differences across School Setting

Competency	Importance			Difficulty		
	z	p	r	z	p	r
LE1	-2.070	.038*	-0.267	-1.890	.059	-0.244
LE2	0.000	1.00	0.000	-2.887	.004*	-0.373
LE3	0.000	1.00	0.000	-1.667	.096	-0.215
LE4	-1.414	.157	-0.183	-2.271	.023*	-0.293
LE5	-2.000	.046*	-0.258	-2.333	.020*	-0.301
LE6	-1.342	.180	-0.173	-2.828	.005*	-0.365
I1	-1.342	.180	-0.173	-1.000	.317	-0.129
I2	-2.000	.046*	-0.258	-2.449	.014*	-0.316
I3	-2.530	.011*	-0.327	-1.342	.180	-0.173
I4	-1.414	.157	-0.183	-2.000	.046*	-0.258
I5	-1.000	.317	-0.129	-1.414	.157	-0.183
I6	-2.000	.046*	-0.258	-2.000	.046*	-0.258
I7	-1.414	.157	-0.183	-2.000	.046*	-0.258
I8	-2.449	.014*	-0.316	-1.633	.102	-0.211
I9	-1.000	.317	-0.129	-1.414	.157	-0.183
I10	-1.000	.317	-0.129	-1.414	.157	-0.183
I11	-1.414	.157	-0.183	-2.236	.025*	-0.289
I12	-2.000	.046*	-0.258	-1.633	.102	-0.211
I13	-1.414	.157	-0.183	.000	1.000	0.000
I14	0.000	1.00	0.000	.000	1.000	0.000
I15	-1.000	.317	-0.129	-2.000	.046*	-0.258
I16	-1.414	.157	-0.183	-2.449	.014*	-0.316
I17	-1.000	1.00	-0.129	-1.000	.317	-0.129
P1	0.000	1.00	0.000	-1.732	.083	-0.224
P2	-2.000	.046*	-0.258	-2.060	.039*	-0.266

*statistically significant at p≤.05, Z=difference in ranks (2-tailed), p=statistical significance,
r= Pearson's correlation (effect size)

Stability across Rounds

I tested for stability from round two to round three using the Wilcoxon Signed Ranks Test which is appropriate for testing for differences using ordinal-level dependent data (von der Gracht, 2012). I matched each item from round two with the same item from round 3. Table 21 displays each item's difference in rank (z), statistical significance (p), and effect size (r). Negative z values reflect lower importance and difficulty ratings in round two compared to round three. That is, negative values signify and item became more important or more difficult as rounds progressed. Of the 100 total items (25 competencies across four scales), four items showed significant change from round two to round three. Therefore, 96% of the items showed stability across rounds.

I calculated effect size using Pearson's correlation: $r = z/\sqrt{N}$, where N is the number of cases (30 participants * 4 scales=120 cases). The absolute value of r can be interpreted as follows: <.10: trivial; .10 - .30: small to medium; .30 - .50: medium to large; >.50: large to very large (Cohen, 1992). All four of the statistically significant items had small to medium effect sizes.

Of the four items that displayed instability from rounds two to three, two of the items (LE3 and I2) showed decreased IQR in round three, suggesting that participants moved further toward consensus on those items in round three. The other two items (LE5 and I11) retained the same IQR in round two and round three, though the mode for one item shifted from three to four (see Table 21). Overall, results indicate high levels of stability from round two to three, with only two items showing instability unrelated to

increased consensus. Table 22 provides results for stability across rounds two and three,

as determined by the Wilcoxon Signed Ranks Test.

Table 20
Mode and IQR Comparisons for Unstable Items from Round 2 to Round 3

Item	Round 2		Round 3	
	Mode	IQR	Mode	IQR
LE3 Importance for Beginning Teachers	4	1	4	0
LE5 Importance for Beginning Teachers	4	1	4	1
I2 Difficulty for Beginning Teachers in Low-income Schools	4	1	4	0
I11 Importance for Beginning Teachers in Low-income Schools	3	1	4	1

Table 21

Results of Wilcoxon Signed Ranks Test for Stability across Rounds

Competency	Importance			Difficulty			Importance low-income			Difficulty low-income		
	z	*p*	*r*	*z*	*p*	*r*	*z*	*p*	*r*	*z*	*p*	*r*
LE1	-.808	.419	-0.074	-.258	.796	-0.024	-.500	.617	-0.046	-.333	.739	-0.030
LE2	-1.342	.180	-0.123	-.440	.660	-0.040	-1.000	.317	-0.091	.000	1.000	0.000
LE3	-2.333	.020*	-0.213	-.471	.637	-0.043	-1.633	.102	-0.149	-.535	.593	-0.049
LE4	-.258	.796	-0.024	-.714	.475	-0.065	.000	1.000	0.000	.000	1.000	0.000
LE5	-2.000	.046*	-0.183	-1.213	.225	-0.111	-.414	.679	-0.038	-1.213	.225	-0.111
LE6	.000	1.000	0.000	-.894	.371	-0.082	-.632	.527	-0.058	.000	1.000	0.000
I1	-1.633	.102	-0.149	-.486	.627	-0.044	-.707	.480	-0.065	-.237	.813	-0.022
I2	-.284	.776	-0.026	-1.265	.206	-0.115	-.632	.527	-0.058	-2.333	.020*	-0.213
I3	-.165	.869	-0.015	-1.000	.317	-0.091	-.775	.439	-0.071	-.943	.346	-0.086
I4	-.816	.414	-0.074	-.500	.617	-0.046	-.447	.655	-0.041	-.302	.763	-0.028
I5	-.535	.593	-0.049	-.943	.346	-0.086	-.500	.617	-0.046	-1.470	.142	-0.134
I6	-1.387	.166	-0.127	-.728	.467	-0.066	-1.55	.248	-0.141	-.915	.360	-0.084
I7	-.277	.782	-0.025	-1.091	.275	-0.100	-.258	.796	-0.024	-.816	.414	-0.074
I8	-1.387	.166	-0.127	-.243	.808	-0.022	.000	1.000	0.000	.000	1.000	0.000
I9	-.905	.366	-0.083	-.500	.617	-0.046	-1.155	.248	-0.105	-1.069	.285	-0.098
I10	-.905	.366	-0.083	-.237	.813	-0.022	-.707	.480	-0.065	-.237	.813	-0.022
I11	-1.508	.132	-0.138	.000	1.000	0.000	-2.121	.034*	-0.194	-.943	.346	-0.086
I12	-.775	.439	-0.071	-.024	.981	-0.002	-1.500	.134	-0.137	-.229	.819	-0.021
I13	-.660	.509	-0.060	-.246	.806	-0.022	-.247	.805	-0.023	-.028	.978	-0.003
I14	-.905	.366	-0.083	-.423	.672	-0.039	.000	1.000	0.000	-.250	.802	-0.023
I15	-.707	.480	-0.065	-.417	.637	-0.038	-.378	.705	-0.035	-.915	.360	-0.084
I16	.000	1.000	0.000	-.243	.808	-0.022	-.707	.480	-0.065	-1.057	.290	-0.096
I17	-.645	.519	-0.059	-.206	.837	-0.019	-.915	.360	-0.084	-.025	.980	-0.002
P1	.000	1.000	0.000	-.474	.635	-0.043	.000	1.000	0.000	-.034	.973	-0.003
P2	.000	1.000	0.000	-.246	.806	-0.022	-.246	.806	-0.022	-1.155	.248	-0.105

*statistically significant at p≤.05, *z*=difference in ranks (2-tailed), *p*=statistical significance, *r*= Pearson's correlation (effect size)

Summary of Results

In round one, I presented participants with a list of 31 teaching competencies drawn from literature linking observable teaching strategies with student outcomes. I synthesized participant selections, comments, and suggestions from round one into a list of 25 teaching competencies grouped into three domains. In round two, participants rated each competency for importance and difficulty for beginning teachers and for beginning teachers in low-income schools. Modes in each of the domains ranged from two to four. Eight of the items in round two showed a lack of consensus among participants. I contacted participants that submitted outlier ratings for non-consensus items to request justification. I presented summary data and outlier justifications to participants and they rated competencies again in round three.

Results from round three showed a general increase in importance and difficulty ratings compared to round two. The mode for all importance items in round three was either three or four. Four of the 50 difficulty items had modes of two; all others had modes of three or four. Thirteen of 50 items were rated both very important (mode=4) and very difficult (mode=4). Seven items showed a lack of consensus among participants. Of those, six were related to competency difficulty.

Four items showed significant differences across academic and practitioner panels. Of those, one was rated more important by practitioners and three were rated more difficult by practitioners. Twenty of 50 items displayed significant differences across school setting. Nine of 25 competencies were rated more important in low-income settings and 11 of 25 were rated more difficulty in low-income settings. Of 100 total

98

items, four showed significant differences from round two to round three. Two of those

shifted toward greater participant consensus.

Chapter Five: Discussion

This study was designed to investigate the importance and difficulty of various teaching competencies for beginning teachers and the extent of consensus among experts in the field. The following research questions guided the investigation.

1. How important are various teaching competencies for beginning teacher effectiveness?

2. How difficult are various teacher competencies for beginning teachers to implement?

3. To what extent do experts exhibit consensus on competency importance and difficulty?

4. Do the importance and difficulty of various teaching competencies for beginning teachers differ for those in low-income school settings?

In this final chapter, I return to these research questions to discuss the study findings within the broader context of the extant literature and the theoretical framework presented in Chapter One. I then discuss the implications of the findings for teacher preparation and training, the limitations of the study, and possible directions for future research.

The 25 Competencies

In round one, participants selected the competencies they felt should be included in rounds two and three. In this round, I directed participants to select competencies that were important for all teachers, not just beginning teachers. These competencies were drawn from quantitative and qualitative literature that linked observable teaching strategies to student outcomes (see Chapter Two). Therefore, it could be argued that the list of pre-populated competencies had already demonstrated importance through research. Indeed, all competencies were selected by at least 13 participants, suggesting they largely concurred with the existing research. However, participants made recommendations for revising wording, combining or separating competencies, and adding additional competencies.

To ensure the list of revised competencies used in rounds two and three was research-based, it is important to examine the three participant-added competencies for alignment to literature. One of the three additional competencies, I5, was related to designing lessons aligned to state standards and incorporating evidence-based instructional practices. It is difficult to determine whether alignment to state-standards is associated with student outcomes because state standards vary. However, 41 of 50 states have adopted Common Core standards and research suggests that improvement in student achievement is linked to the implementation of Common Core standards (Xu, 2015). Further, the second component of the statement is clearly supported by research. When teachers use evidence-based instructional strategies, student outcomes improve (Hattie, 2012).

The other two recommended additions were similar to those found in the "professionalism" domain of DPS's LEAP framework (see Appendix B). In my synthesis of literature, I focused on observable teaching strategies only, as those have been found to be strongly linked to student outcomes (Creemers & Kyriakides, 2006; Muijs & Reynolds, 2010). Therefore, the pre-populated list of competencies in round one did not include the types of competencies found in this domain. When revising competencies for round two, I chose to honor participants' additions and added a professionalism domain with two new competencies based on a synthesis of participant suggestions: (a) effectively collaborates with colleagues, families, and other educational specialists; and (b) analyzes and continuously improves one's own instructional practice based on feedback and evidence of student learning. These competencies did not meet the parameters of my original literature search; I discuss this issue in more detail in the limitations section below.

While it is debatable whether these two professionalism competencies are observable, their effects on student outcomes appear to be supported by research. For example, a systematic review of research on teacher collaboration (Vangrieken et al., 2015) suggests that teacher collaboration is related to student outcomes. Similarly, a study on teachers' use of student data found "collecting and documenting evidence on student performance has a positive influence on student achievement" (Joseph et al., 2014, p. 86). Therefore, the result of round one is a list of 25 research-based teaching competencies refined by a group of experts.

Competency Importance and Difficulty

In rounds two and three, participants were tasked with rating the competencies for importance and difficulty for beginning teachers and for beginning teachers in low-income schools. The resulting importance and difficulty ratings help construct the developmental zones theorized by Vygotsky (1978). Importance ratings represent the objective zone for beginning teachers, or the "institutionalized demands and expectations that developed historically in a particular societal tradition of practice" (Kozulin, 2003, p. 49). The corresponding difficulty ratings help construct the Zone of Proximal Development (ZPD) by approximating the distance between the developmental readiness of a typical beginning teacher (subjective zone) and the expected competency (objective zone).

The findings from round three show the importance ratings for all 50 items (25 competencies in two school settings) was either "important" or "very important." As noted above, the 25 competencies that emerged from round one were not specific to beginning teachers. It was possible, then, that some competencies deemed important for all teachers would be rated less important for the beginning teacher's developmental trajectory. That was not the case. These findings suggest that all listed teaching competencies are important for the beginning teacher. That is, the objective zone of development for the beginning teacher may be similar to that of the more experienced teacher. Difficulty ratings were similar, with 46 of 50 items rated either "difficult" or "very difficult," suggesting there is a substantial distance between the subjective and objective zones of development for most competencies.

While most items were rated both important and difficult, a subset of eight competencies was rated both "very important" and "very difficult" (see Table 23). Of this subset, the competencies from the learning environment domain were specific to low-income schools. These findings suggest these elements of the learning environment are especially important and difficult in low-income schools. By contrast, five of the six competencies from the instruction domain were rated very important and very difficult in both school settings.

Table 22

Competencies Rated Very Important and Very Difficult for Beginning Teachers

Code	Competency
LE1	Creates a student-centered learning environment by incorporating student voice and choice.*
LE5	Clearly and consistently implements guidelines for student behavior.*
I2	Differentiates content by providing challenging yet accessible learning opportunities (e.g., scaffolding, acceleration, and enrichment).
I4	Provides rigorous learning experiences that allow all students to meet and exceed content standards.
I10	Facilitates student critical thinking (e.g., analyzing, predicting, synthesizing, problem-solving, etc.).
I14	Frequently checks for understanding, provides timely and effective feedback, and uses data to inform instruction.
I15	Provides scaffolding for students in need of additional support (e.g., modified, small group or individualized instruction).
I17	Promotes student collaboration and cooperation including small-group learning.*

*In low-income schools

Ninety-three of 100 items displayed consensus among participants in round three. These findings suggest experts agree, in large part, about the importance and difficulty of teaching competencies for beginning teachers. Interestingly, experts showed consensus on all items that were rated both very important and very difficult. Of the seven non-consensus items, six were difficulty ratings, suggesting areas of expert disagreement were largely related to competency difficulty (see Table 24).

Table 23

Non-Consensus Items

Code	Scale(s)	Competency
LE1	Importance	Creates a student-centered learning environment by incorporating student voice and choice.
LE2	Difficulty in low-income schools	Builds and maintains positive teacher-student relationships.
I1	Difficulty across both school settings	Clearly and accurately presents content, including previewing, reviewing, and emphasizing main ideas.
I5	Difficulty in low-income schools	Designs lessons that are aligned to state standards and incorporate evidence-based instructional practices.
I16	Difficulty	Facilitates classroom discussion and poses critical questions.
P2	Difficulty	Effectively collaborates with colleagues, families, and other educational specialists.

Consensus by Participant Panel

Ninety-six percent of the items showed no differences across participant panels, suggesting agreement among academics and practitioners on most competencies. Of the four items that showed differences across panels, one was rated as more important by academics and three were rated more difficult by practitioners (see table 25).

Table 24

Differences across Participant Panels: Statistically Significant Items

Code	Rating Difference	Competency	Effect Size
LE1	Rated more difficult by practitioners	Creates a student-centered learning environment by incorporating student voice and choice.	.471
LE3	Rated more difficult by practitioners	Establishes a culturally responsive and inclusive learning environment by honoring diversity inside and outside of the classroom (e.g., ethnicity, language, ability, gender identity, etc.).	.393
I2	Rated more important by practitioners*	Differentiates content by providing challenging yet accessible learning opportunities (e.g., scaffolding, acceleration, and enrichment).	.510
I7	Rated more difficult by practitioners	Uses clear and concise language to communicate lesson objectives and academic expectations.	.448

*In low-income schools

Effect size: <.10: trivial; .10 - .30: small to medium; .30 - .50: medium to large; >.50: large to very large (Cohen, 1992)

The competency related to differentiating content (I2) was rated more important in low-income schools by practitioners. It is unclear why practitioners would find this more important than academics. On the other three significant items, practitioners tended to rate the items as more difficult. Again, it is unclear why practitioners rated these items as more difficult. While there was a wide range of expertise across both panels, the academics tended to hold positions in higher education (many working with pre-service teachers) while the many of the practitioners worked in school districts (see table 10). Perhaps these items represent what Levine (2006) called the "chasm between theory and practice" (p. 4) within teacher education programs that leads to beginning teachers being ill-prepared for the practical demands of the classroom. A difference in perception among academics and practitioners about competency difficulty may contribute to this theory-practice gap.

Differences across School Settings

Of 50 total items, 20 showed statistically significant differences ($p < .05$) across school setting. Nine of the 25 competencies were rated more important in low-income schools and 11 of 25 were rated more difficult in low-income schools (see Table 26). Interpreted through Vygotsky's theoretical framework, the importance findings suggest that the objective zone development for beginning teachers differs, at least in part, by school setting.

Table 25

Differences across School Settings

Code	Competency	Rating Difference	Effect Size
LE1	Creates a student-centered learning environment by incorporating student voice and choice.	More important in low-income schools	.267
LE2	Builds and maintains positive teacher-student relationships.	More difficult in low-income schools	.373
LE4	Creates a safe and organized physical environment with efficient access to learning materials.	More difficult in low-income schools	.293
LE5	Clearly and consistently implements guidelines for student behavior.	More important and more difficult in low-income schools	Imp: .258 Diff: .301
LE6	Recognizes student effort and provides positive reinforcement.	More difficult in low-income schools	.365
I2	Differentiates content by providing challenging yet accessible learning opportunities (e.g., scaffolding, acceleration, and enrichment).	More important and more difficult in low-income schools	Imp: .258 Diff: .316
I3	Provides graphic and non-linguistic representations of content (e.g., concept-mapping).	More important in low-income schools	.327
I4	Provides rigorous learning experiences that allow all students to meet and exceed content standards.	More difficult in low-income schools	.258
I6	Incorporates student interest and culture into lesson design.	More important and more difficult in low-income schools	Imp: .258 Diff: .258
I7	Uses clear and concise language to communicate lesson objectives and academic expectations.	More difficult in low-income schools	.258
I8	Provides rationale for lesson (i.e., real-world and/or practical connections).	More important in low-income schools	.316
I11	Models strategies and provides guided and independent practice (i.e., gradual release of responsibility).	More difficult in low-income schools	.289
I12	Actively engages students by employing strategies that deepen understanding of the content (e.g., hands-on materials, manipulatives, technology use).	More important in low-income schools	.258
I15	Provides scaffolding for students in need of additional support (e.g., modified, small group or individualized instruction).	More difficult in low-income schools	.258
I16	Facilitates classroom discussion and poses critical questions.	More difficult in low-income schools	.316
P2	Effectively collaborates with colleagues, families, and other educational specialists.	More important and more difficult in low-income schools	Imp: .258 Diff: .266

Imp=importance, Diff=difficulty

Effect size: <.10: trivial; .10 - .30: small to medium; .30 - .50: medium to large; >.50: large to very large (Cohen, 1992)

The competencies rated more important in low-income schools largely concur with the body of scholarship related to culturally responsive teaching. For example, scholars emphasize the importance of high academic expectations with scaffolding (Ladson-Billings, 2009), cultural competence (Evans & Gunn, 2012; McGee Banks & Banks, 1995), culturally relevant curricula (Delpit, 2012; Ladson-Billings, 2009), and relationships with students and their families (Delpit, 2012; Ladson-Billings, 2009; McGee Banks & Banks, 1995). It is important to note that these competencies were also rated important or very important for all beginning teachers. Therefore, the findings do not suggest that these competencies are important *only* for beginning teachers in low-income schools, but rather that they are *especially* important for beginning teachers in low-income settings.

Differences in difficulty ratings across school context warrant careful analysis. Why do experts consider almost half of teaching competencies (11 of 25) to be more difficult in low-income schools? We know from prior studies that teachers in low-income schools tend to be less effective (Sass et al., 2012; Xu, Ozek, & Hansen, 2015), but there could be several explanations for this trend. Is the school setting different? If so, why? Or do less-effective teachers tend to work in low-income schools?

Some participants grappled with the distinction between "beginning teachers" and "beginning teachers in low-income schools." For example, one participant commented by email that she wasn't sure why there should be any difference in ratings unless participants have perceptions about children tied to race or income. However, differences could also be due to perceived differences in support structures or working conditions

within schools. As discussed in chapter one, some research indicates that low-income schools tend to be less supportive environments for teachers (Johnson, Kraft, and Papay, 2011). Regarding the competency related to teacher collaboration (P2), one participant commented,

> I wonder whether there are too many contextual factors related to the particular school and the employees where a new teacher is hired to actually completely consider it a competency… I heard from [a number of beginning teachers] that they felt disconnected and found it hard to get anyone to pay attention to their basic needs.

In Vygoskian terms, these findings indicate the ZPD, or the distance between the objective and subjective zones of development for a typical beginning teacher, is greater in low-income schools. As discussed above, the objective zone of development in low-income schools may be slightly different than for other beginning teachers because some competencies are especially important in those low-income settings. Those differences may push the objective zone a bit further from the subjective zone, widening the ZPD. If we expect more of teachers in low-income schools, this would help explain increased difficulty in those settings.

However, it is also possible that the subjective zone varies by school setting. In other words, the beginning teachers that teach in low-income schools could to be generally less effective than their counterparts at higher-income schools (due to lower quality preparation, personal characteristics, or other factors). This would push the subjective zone further from the objective zone, also widening the ZPD (see figure 5). In

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round one, a participant commented on the learning environment competencies: "Difficulty very much depends on the characteristics of the teacher." This statement supports the notion that ZPD for these competencies is influenced heavily by the subjective zone of development.
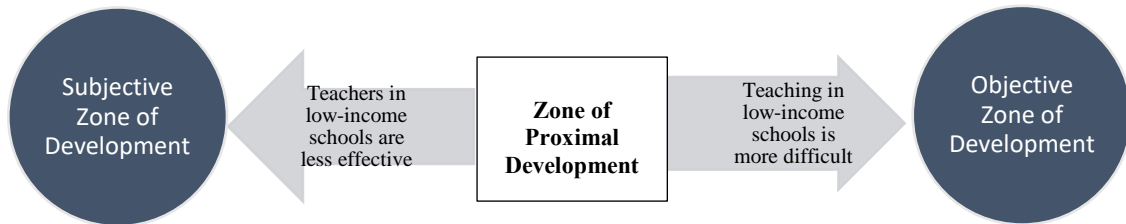
Figure 5. Theoretical Model: Possible Causes for Increased Difficulty Ratings in Low-Income Schools

It is unclear from the findings why difficulty ratings varied by school setting. Based on participant comments, it is possible that several factors contributed to the differences or that participants themselves were not fully cognizant of why their ratings differed. For example, one participant commented by email,

I have been reflecting on the survey questions. In many cases it was hard to answer whether or not something is more difficult in a [low-income] school because it depends SO MUCH on the person. The kids themselves are not harder to teach, but it can be a more stressful culture to operate in. What I am thinking about is how teaching in a [low-income] school is harder because of the secondary stress and PTSD teachers face from dealing with the difficult issues in

their students' lives..... but I still cannot put my finger on being able to describe or

provide evidence for what makes it so different.

While academics and practitioners displayed broad consensus on competency

importance and difficulty, the areas on which their ratings differed may lend context to

the differences across school setting. For example, the competency related to

differentiating content (I2) was rated significantly more important and more difficult in

low-income schools when analyzing results from all participants. However, practitioners

rated this competency significantly more difficult in low-income schools than academics.

Conversely, the competency related to communicating lesson objectives (I7) was rated

more difficult in low-income schools across all participants. However, academics tended

to rate this competency as less difficult than practitioners in the unspecified school

setting. These findings suggest the differences between academics and practitioners may

have contributed to the differences in ratings across school settings for these two

competencies.

Implications

Findings from this study may help to inform teacher preparation and training

programs in curriculum development and promote consensus among academics and

practitioners. This section discusses possible implications.

Prioritizing important and difficult competencies. While most competencies

were rated both important and difficult, the expert participants in this study agreed that a

subset of eight competencies was both very important and very difficult for beginning

teachers (see Table 23). These eight competencies may warrant emphasis in teacher

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preparation and training programs. Of this subset, three were specific to low-income school settings, suggesting teacher training programs should emphasize why these competencies are so important in low-income settings and focus on implementing them effectively.

The five most important and difficult competencies across school settings are related to some technical aspects of high-quality teaching, including differentiating content, scaffolding, using data to inform instruction, and incorporating student critical thinking. These concepts likely require additional time in coursework and guided practice in the field during teacher preparation and additional support for beginning teachers.

The competencies rated most important and difficult specific to low-income were creating a student-centered learning environment, implementing guidelines for student behavior, and promoting student collaboration. Literature and research on teaching culturally and linguistically diverse (and disproportionately low-income) students may be especially useful in addressing these competencies. For example, Weinstein et al. (2004) propose a set of principles for culturally response classroom management including recognizing one's own ethnocentrism, knowledge of student's cultural backgrounds, understanding the broader social context, implementation of culturally responsive management strategies, and committing to building caring classrooms. Haynes and Zacarian (2010) note that student collaboration and small group work is especially important for English Language Learners. The authors provide theory and practical strategies for guiding student collaboration.

Because all competencies were rated important, teacher training programs should not focus solely on those deemed most important and difficult. However, there are several possible ways to emphasize these competencies. First, teacher training programs could allot more coursework time to the most important and difficult skills – perhaps returning to these concepts over several courses throughout the training program. Second, programs could require that teacher candidates demonstrate proficiency on these competencies to graduate (perhaps while allowing partial proficiency on less-important skills). Finally, policymakers and administrators could modify teacher evaluation systems such that the most important competencies are weighted more heavily than those that are less-important. Further research in this area is needed to determine which approach is warranted.

Building consensus. Findings demonstrated consensus among experts on the vast majority of competencies. However, the areas on which experts did not reach consensus could have important consequences for beginning teachers. The non-consensus items (among all participants and across panels) were largely related to competency difficulty. This could be related to wide variation in beginning teacher preparation. In this interpretation, the rationale for lower ratings may be: *this should not be difficult*, while higher ratings reflect the reality of inadequately-prepared beginning teachers. For example, for one non-consensus competency (I1), a participant commented,

I'm assuming in my response here that candidates go through a program that is reputable and that includes clinical practice. If neither of those is true, then my

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rating is off. But then that's not a challenge for the beginning teacher; it's a challenge for the preparation system in my view.

Overall, the findings reinforce a central theme: beginning teaching is difficult. Producing effective beginning teachers requires sustained communication between teacher preparation programs and the school districts in which their graduates go on to work. Differences in perceptions about which competencies are important and difficult may lead to misalignment between teacher preparation curricula and in-service professional development and induction support. Systematic and iterative feedback between institutions of higher education and school districts may help facilitate a smooth transition from pre-service to in-service teaching and, ultimately, improve outcomes for students.

Limitations

As with any research study, there are limitations that should be addressed in interpreting this study's findings. The strengths and limitations of the Delphi method are discussed in chapter one. This section primarily focuses on the analytic limitations of this study. First, the list of competencies modified and rated by participants was drawn from literature linking observable teaching strategies to student outcomes. Therefore, the competencies were limited to those that met the literature search criteria outlined in chapter two. However, in round one participants "wrote in" competencies that did not meet those criteria and I included those competencies in rounds two and three. It is possible that additional competencies, had they met the search criteria, would have been

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rated important by participants. In other words, the "professionalism" domain may be incomplete.

Next, the 4-point rating scales on the survey instruments may have limited the data analysis. I chose 4-point scales to "force" responses into important or difficult categories. Also, because participants had to rate each competency on four scales, fewer scale points was more feasible logistically. While the data from round two showed sufficient variability, 46 of 50 items were rated both important and difficult (modes 3 or 4) in round three. A broader scale may have shown more variability in the data. Finally, as mentioned in Chapter 4, caution should be exercised in interpreting statistical significance because the large number of tests increases the potential for Type 1 error.

Directions for Future Research

This study's findings illuminate the teaching strategies most important and difficult for beginning teachers according to national experts. Subsequent studies could add to these findings by quantitatively determining which beginning teacher competencies best predict success in future years. The widespread adoption of systematic teacher evaluation systems makes these analyses possible. Further, more research is needed on how to best prioritize the most important and difficulty competencies during teacher preparation and induction programs. Finally, and perhaps most importantly, subsequent studies should attempt to address the question: Why is beginning teaching in low-income schools more difficult? Several possibilities have been raised in prior literature, but comments from this study's participants and a lack of consensus on specific indicators suggest more information is needed to address this issue. Qualitative or mixed-

methods studies may be particularly useful to better understand how the experience of a beginning teacher in a low-income school differs from a similarly-prepared counterpart in a lower poverty setting.

Summary

Research suggests teacher quality is a significant factor predicting student achievement, especially for low-income students. The purpose of this Delphi study was to investigate consensus among expert educators on the importance and difficulty of teaching competencies for beginning teachers, and whether the importance and difficulty of those competencies differ in low-income school settings.

Findings suggest most teaching competencies are both important and difficult for beginning teachers, with a subset rated both very important and very difficult. Experts rated many of the competencies as more important and more difficult for beginning teachers in low-income schools. Results indicate broad consensus among experts, however, consensus was not reached on several items, mostly related to differences in competency difficulty.

This study's findings may help teacher preparation and training programs prioritize the most important and most difficulty competencies to produce more effective beginning teachers. Non-consensus competencies warrant improved communication among experts and stronger alignment between academics and practitioners. Further research is needed to better understand why beginning teaching in low-income schools is considered more difficult.

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Definitions of Terms

- Beginning teachers: those who have been teaching for less than three complete school years (U.S. Department of Education, 2018).

- Competency difficulty: the amount of time and effort required to become proficient in this competency. Difficult competencies take more time and effort to learn and to implement in practice.

- Competency importance: the extent to which a teaching competency factors into the beginning teacher's developmental trajectory. Beginning teachers that master important competencies improve quickly and are more likely to become effective teachers. Less important competencies may be developmentally appropriate for more experienced teachers, but are not vital for the beginning teacher.

- Consensus: the extent to which agreement is reached on the importance and difficulty on individual competencies, indicated by interquartile range less than or equal to one.

- Effective teacher: a teacher who demonstrates better than average impact on student outcomes.

- Low-income school: at least 75% of students are eligible for free or reduced-price lunch (Snyder & Musu-Gillette, 2015).

- Student outcomes: broadly defined measures of student success, including, but not limited to, student engagement, student achievement, and teacher-reported student success (Aaronson & Laughter, 2016).

- Teaching competencies: observable teacher behaviors and teaching strategies.

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Appendix A: Hattie's Influences on Student Achievement
Excerpt of Hattie's (2009) influences on achievement:
Observable teacher competencies above "hinge point," 0.40 effect size

Influence	Effect Size
Self-reported grades/ Student expectations	1.44
Teacher credibility	0.90
Providing formative evaluation	0.90
Classroom discussion	0.82
Reciprocal teaching	0.74
Teacher clarity	0.75
Feedback	0.75
Acceleration	0.68
Classroom Behavior	0.63
Self-verbalization and self-questioning	0.64
Problem-solving teaching	0.61
Not labeling students	0.61
Concept mapping	0.60
Cooperative vs. individualistic learning	0.59
Direct instruction	0.59
Mastery learning	0.58
Worked examples	0.57
Peer tutoring	0.55
Cooperative vs competitive learning	0.54
Student-centered teaching	0.54
Classroom cohesion	0.53
Classroom management	0.52
Goals	0.50
Small-group learning	0.49
Questioning	0.48
Motivation	0.48
Teacher expectations	0.44
Cooperative learning	0.42

Appendix B: Denver Public Schools LEAP Framework

Domain	Expectation	Indicator	
Learning Environment	Positive Classroom Culture and Climate	LE.1	Demonstrates knowledge of, interest in and respect for diverse students' communities and cultures in a manner that increases equity
		LE.2	Fosters a motivational and respectful classroom environment
	Effective Classroom Management	LE.3	Implements high, clear expectations for students' behavior and routines
		LE.4	Classroom resources and physical environment support students and their learning
Instruction	Masterful Content Delivery	I.1	Clearly communicates the standards-based content-language objective(s) for the lesson, connecting to larger rationale(s)
		I.2	Provides rigorous tasks that require critical thinking with appropriate digital and other supports to ensure student success
		I.3	Intentionally uses instructional methods and pacing to teach the content-language objective(s)
		I.4	Ensures all students' active and appropriate use of academic language
	High-Impact Instructional Moves	I.5	Checks for understanding of content-language objective(s)
		I.6	Provides differentiation that addresses students' instructional needs and supports mastery of content-language objective(s)
		I.7	Provides students with academically-focused descriptive feedback aligned to content-language objective(s)
		I.8	Promotes students' communication and collaboration utilizing appropriate digital and other resources
Professionalism	Essential Knowledge of Students and Use of Data	P.1	Demonstrates and applies knowledge of students' developments, needs, interests and cultures to promote equity
		P.2	Uses students' work and data to plan, adjust and differentiate instruction
	Effective Collaboration and Engagement	P.3	Collaborates with school teams to positively impact students' outcomes
		P.4	Advocates for and engages students, families and the community in support of improved students' achievement
	Thoughtful Reflection, Learning and Development	P.5	Demonstrates self-awareness, reflects on practice with self and others and acts on feedback
		P.6	Pursues opportunities for professional growth and contributes to a culture of inquiry
	Masterful Teacher Leadership	P.7	Builds capacity among colleagues and demonstrates service to students, school, district and the profession

Appendix C: Rating Criteria for Participant Selection

Prerequisites: (a) experience working with beginning teachers; (b) experience working in low-income schools

Academics

	3	2	1
Research Focus and Expertise	• Primary research focus on teacher effectiveness or teacher education **and** educational equity/diversity	• Primary research focus on teacher effectiveness, teacher education **or** educational equity	• Primary research focus on general educational practices or related field (e.g., literacy)
Experience and position	• Tenured/tenure-track (or equivalent) faculty position in teacher education	• Clinical or other non-tenure track faculty position in teacher education or tenure/tenure-track in other education-related fields	• Adjunct faculty in teacher education

Practitioners

	3	2	1
Expertise	• Expertise in beginning teacher effectiveness **and** educational equity/ diversity	• Expertise in beginning teacher effectiveness **or** educational equity	• Expertise in general educational practices or related field (e.g., literacy)
Position and Seniority	• National, state, or district administrative leadership position in education organization	• School-level senior administrative leadership position (e.g. principal)	• School-level leadership position (e.g. instructional coach)

Appendix D: Participant Recruitment Email

Dear _____,

My name is Jessica Lerner and I am the Director of Teacher Education at the University of Denver. As a part of my doctoral dissertation, I am conducting a research study about the competencies important for beginning teachers. I am investigating the following research questions: What does it mean to be a good beginning teacher? How can we best prepare teachers to work in diverse school settings? The research design for this study is the Delphi technique, which is a process for investigating consensus through a series of surveys. Therefore, I am seeking experts in teacher education, teacher induction, and beginning teacher training who meet the following criteria: (a) experience working with beginning teachers (those with fewer than three years of experience), and (b) experience in low-income school settings (at least 75% free/reduced lunch).

My colleagues and I have identified people who meet this qualification and we believe your insights would greatly support this study. If you decide to participate, your participation would involve answering three rounds of short online questionnaires over a three-month period. In each survey round, you would rate competencies according to their difficulty and importance. Each survey round should take no longer than 20 minutes to complete. Responses from each round will be analyzed and represented to respondents to investigate consensus and dissention. Individual responses will be confidential.

If you are interested in learning more about the study, or if you have questions, please contact me at Jessica.Lerner@du.edu.

If you are able to participate in the study, please use the link below to complete a brief demographic survey and to indicate consent to participate in the study.

Participant Expertise Survey Consent

Do you know someone else that would be a good fit for this study? Please send me their name and I will contact them.

Thank you for your time and consideration.

Sincerely,

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Appendix E: Pilot Cognitive Interviews

Pilot Participant #1, Betsy 7-26-18
Round 1
- It's unclear how to select the competency. Is there any other way to select?
- There are too many competencies to make comments. Explain at the beginning the length of the survey.
- Language is technical. Classroom teachers may not understand.
- Explain the purpose of this round.

Round 2
- Highlight importance and difficulty in intro
- It's difficult to remember the scale for all four
- Once I get going, it's easier

Pilot Participant #2, Dan 8-7-18

Round 1
- Where is the survey link?
- Explanatory email clear
- Highlight directions
- Move comments directions earlier
- Student outcomes is a little muddy; some are indirectly linked to outcomes
- Should they be grouped so that it's easier to see what's missing.
- Add teacher well-being.

Round 2
- Define terms in email.
- Survey preview – change to "for example"
- Directions are clear otherwise
- Thinking about the foundational skills
- It's hard to rate things as less important
- It's easier to rate things as less difficult
- The first verb is important – e.g. setting up vs. maintaining.
- Similarities and differences
- Purpose is clear. Layout is easy to follow. Definitions are helpful.

Pilot Participant #3, Kim 8-16-18

Round 1

- Skills might be different depending on context – not just poverty, but ethnicity/culture
- Are the right competencies? Change to "would you include these on a comprehensive list of teaching strategies? What is missing? Are they worded clearly?
- Change: "selected competencies will be displayed in red" to "when you select..."
- Put language on survey: "from literature review, below are 32…"
- Clarify similarities and differences
- Builds and maintains student relationships

Round 2
- Hard to keep focus across all 4 scales
- Put definitions of importance and difficulty in the email also

Appendix F: Participant Eligibility and Expertise

The following questions are intended to assess your eligibility to participate in the Delphi Study, gather information about your expertise, and document informed consent.

For the purposes of this study, the following definitions apply:
Beginning teacher: fewer than three years of teaching experience
Low-income school: at least 75% of families qualify for free or reduced-price lunch

Please enter your name.

_____

Which of the following best describes your professional role?

○ Academic (current or former university faculty; researcher)

○ Practitioner (leader in school, district, or state organization; educational nonprofit or policy organization)

Please enter your professional title and affiliated institution.

○ Title _____

○ Institution _____

Do you have experience working with beginning teachers?

○ Yes

○ No

Skip To: Q11 If Do you have experience working with beginning teachers? = No

---

Display This Question:

If Do you have experience working with beginning teachers? = Yes

In what context have you worked with beginning teachers? Select all that apply.

☐ Instructional coach

☐ New teacher mentor

☐ School leader

☐ Induction support

☐ Professional development

☐ Education course instructor

☐ Pre-service teacher supervision

☐ Other, please describe _____

Do you have experience working in low-income schools?

◯ Yes

◯ No

Skip To: Q11 If Do you have experience working in low-income schools? = No

Informed Consent
Researcher: Jessica Lerner, EdS, University of Denver
Dissertation Advisor: Garrett Roberts, PhD, University of Denver

The purpose of this research study is to investigate consensus among expert educators on the competencies important for beginning teachers. If you participate in this research study, you will be asked to complete a series of three short surveys over the course of three months. The surveys ask respondents to select and/or rate competency importance and difficulty for new teachers and for teachers in low-income schools. In addition, the researcher may contact you to request clarification on item ratings.

Participation in this research is completely voluntary and you may withdraw from the study at any time. The research will contribute to the body of knowledge related to beginning teacher training and development. Results of the study will be provided to you upon the study's completion. Study findings may be published in scholarly journals and/or publicly presented. Your ratings will be known only to the researcher and stored on a password-protected computer and your identity will be kept private with information is presented or published about this study.

If you have any questions about this project, please contact Jessica Lerner: Jessica.Lerner@du.edu

 If you have any questions or concerns about your research participation or rights as a participant, you may contact the DU Human Research Protections Program by emailing IRBAdmin@du.edu or calling (303) 871-2121 to speak to

someone other than the researcher.

Do you agree to participate in this research study?

○ Yes, I agree to participate in this research study.

○ No, I decline to participate in this research study.

This study includes a series of three online surveys. Participants will have two weeks to complete each survey round. Please indicate below if there is a two-week period between August 2018 and December 2018 during which you will be unable to complete a survey. Note: surveys may be completed on mobile devices and should each take less than 20 minutes to complete.

○ I am available. There is not a two-week period during which I am unable to complete a survey.

○ I am unable to complete a survey during the following two-week period:
_____

Please enter your preferred email address:

_____

Thank you for taking the time to complete this questionnaire. You have indicated that you do not have experience working with beginning teachers and/or working in low-income schools. Therefore, you are not eligible to participate in this study. If you know someone that may be a good fit, please send his/her name to Jessica.Lerner@du.edu

Dear - ,

Thank you for participating in this research study. Below, you will find the link to survey round one. Here is some information to help orient you to the survey.

Round One Purpose
The purpose of this round is to compile a comprehensive list of teaching competencies. In rounds two and three, you will be rating selected competencies for difficulty and importance for beginning teachers. In short, round one is asking: *Are these the right competencies?*

Round One Directions
When you click the survey link, you will find a list of 32 teaching competencies based on relevant research. If you agree the competency should be included, please click on the competency. Select all that apply. Selected competencies will be displayed in red. At the end of the list, you may enter up to five additional competencies. You may also include comments below the competency (optional). Comments may include requests for clarification or suggestions. For example:

Other, please describe

Other, please describe

Other, please describe

Round one survey link:
https://udenver.qualtrics.com/jfe/form/SV_b89W7q11zCIVurH

Appendix H: Round 1 Survey Instrument

Please enter your name_____

In round one, consider competencies important for all teachers, not just beginning teachers.

In round one, I am asking:
Should we include these on our list? What is missing? Are they worded clearly?

If you agree the competency should be included, please click on the competency. When you select a competency, it will be displayed in red. Select all that apply. At the end of the list, you may enter up to five additional competencies. You may also include comments below the competency (optional).

Select all that apply.
Communicates clearly and effectively with students

_____
Reinforces student effort and provides recognition

_____
Engages students in generating and testing hypotheses (i.e., claims and evidence)

_____
Demonstrates value for diversity

_____
Creates safe physical environment with access to learning materials

_____
Provides rationale for lesson (i.e., real-world connections)

_____
Differentiates content by providing scaffolding and acceleration

_____
Prompts students to identify similarities and differences (e.g., Venn diagrams)

_____
Supports student autonomy (i.e., student voice and choice)

_____
Provides clear explanation of content and expectations

_____
Models problem solving and provides guided and independent practice (i.e., gradual release of responsibility) _____
Builds and maintains positive teacher-student relationships

_____
Facilitates student synthesis of information through summarizing and note-taking

_____
Previews and reviews content, emphasizing main ideas

_____

Creates student-centered learning environment

_____

Provides graphic and non-linguistic representations of content (e.g., concept-mapping)

_____

Creates and sustains a positive learning environment

_____

Uses technology for instructional purposes

_____

Communicates high expectations for student learning

_____

Demonstrates content knowledge

_____

Incorporates hands-on materials and manipulatives

_____

Connects content to student interests and culture

_____

Provides and enforces rules and guidelines for student behavior

_____

Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning _____

Conducts formative assessment

_____

Communicates lesson objectives

_____

Efficiently organizes and manages classroom environment

_____

Provides feedback _____

Facilitates classroom discussion and poses critical questions

_____

Promotes student collaboration and cooperation including small-group learning

_____

Facilitates inquiry-based instruction

_____

Other, please describe _____

Other, please describe _____

Other, please describe _____

Other, please describe _____

Other, please describe _____

Appendix I: Round 1 Participant Comments

Round 1 Participant Comments

Competency	Participant Comments
Communicates clearly and effectively with students	• Communicates what? Learning targets? Behavioral expectations? feedback? • Clarity is specific enough to be observable, but am wondering a bit about what you mean when you say 'effectively' since that could look like a lot of different things. • I think this should be worded: Uses clear and concise language. • Communicates clearly and effectively with all members of the school community - students, colleagues, families
Reinforces student effort and provides recognition	• "Recognition" to me signals affirming the intrinsic worth of the student's effort, and I agree. "Reinforces" suggests possibility of extrinsic rewards and other such behaviorist responses. I do not concur with this. • Also important: reinforces correct answers/thinking processes and provides corrective feedback when students err • Positively reinforces
Engages students in generating and testing hypotheses (i.e., claims and evidence)	• applicable to a narrow content area as worded... perhaps "generating questions and finding evidence to support or refute"
Demonstrates value for diversity	• Wondering if this could be more specific? What does it look like to 'value diversity'? In a culturally responsive way that leads to both inclusivity in the classroom for all students *and* gives kids a window to diversity outside the classroom? • value *of* • Diversity of ideas? Ethnic, racial, SES diversity? Clarify. • Awkwardly expressed. • Demonstrates value for diversity, equity and inclusion
Creates safe physical environment with access to learning materials	• Should be a building goal, or administration, but maybe not in top priorities of things to measure at the pre-service teacher level
Provides rationale for lesson (i.e., real-world connections	• With caveats: 1) "real world connections" are only one possible rationale, 2) "providing rationale" need not be automatic, pro forma, etc. There should be room for a little intrigue, and also for the development of trust. • I believe it's more important to build lesson from a relevant concrete situation
Differentiates content by providing scaffolding and acceleration	• Hard to disagree with this, but how much substance is there really to this criterion? • Of course every teacher should be able to teach well for a wide range of exceptionalities, but the phrasing we often use (as above) strikes me as requiring teachers to plan 20-30 individualized lessons

	for each day. That won't happen, I'm afraid we know. So if it's possible, shifting this concept a bit to drawing on the strengths of learners to design challenging yet accessible learning opportunities?
	• I am not sure about the word acceleration. I think there are other ways to differentiate for more advanced learners...maybe try "acceleration or enrichment"
	• Uses formative data to differentiate content...
Prompts students to identify similarities and differences (e.g., Venn diagrams)	• Perhaps a broader "critical thinking" category where this falls under it?
Supports student autonomy (i.e., student voice and choice)	• This could be important, but it's also used as code for individualized computer learning, which does NOT facilitate a democratic society, in my opinion, if it is the main framing for schooling. So I would not include this as necessary for all teachers.
	• Yes, but can you clarify further?
Provides clear explanation of content and expectations	• Probably sits under #1
	• It almost seems, though, as this might be covered under "communicates clearly and effectively with students"
	• similar to first standard listed above
	• I think these are not a single item. Clearly explaining content could (and should, sometimes) happen without any specific expectations, and expectations could be separate from content. So I'm not sure what this one is trying to get at so would not include it unless it's distinct from the other two that address content and expectations. If this is intended to be about the kind of "you will get xyz from this lesson" idea, I definitely would NOT include it, as constrictructivism, and, indeed, how the brain works, would say that more open-ended learning is more effective.
	• Content and expectations seem like their own two separate concepts here, and you've covered expectations in the first component, right? I wonder if content *accuracy* could be emphasized here, instead of clarity?
	• These are two different things
	• Provides clear and relevant purpose of the learning, including key content and learning outcomes
Models problem solving and provides guided and independent practice (i.e., gradual release of responsibility)	• Again, though I completely agree with these elements, the idea of modeling problem solving--and perhaps more importantly questioning--is crucial. But that might not be the same thing as scaffolding practice.
	• Wondering if modeling problem solving and providing gradual release of responsibility go in the same statement? I'm thinking a teacher could easily be doing one and not the other?
	• instead of problem solving should this be models "content or strategies"

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Builds and maintains positive teacher-student relationships	*No comments submitted*
Facilitates student synthesis of information through summarizing and note-taking	• The wording confuses me on this one. • This seems very specific--are there ways besides summarizing and note-taking we could see students synthesizing information (e.g. through a culminating performance task)
Previews and reviews content, emphasizing main ideas	*No comments submitted*
Creates student-centered learning environment	• "student-centered" probably means different things to different people • I'm not entirely sure what the above means and thus I'm not certain as to the importance of this competency! • this is a current, trendy buzzword... perhaps explain a bit more what this looks like • I don't think this one should be selected but the survey said I had to select it to make a comment...I don't know what student-centered means to you... • It could be that "Creates student centered learning environment" could be merged with "supports student autonomy" • Student-centered means different things to different folks
Provides graphic and non-linguistic representations of content (e.g., concept-mapping)	• I think this is particularly important for teachers of students with language delays and students who are learning the language of instruction. • How is this different that venn diagrams?
Creates and sustains a positive learning environment	• add "for all learners" • Wondering if this could be more specifically defined? Or if maybe some of the other statements you've listed here get at this concept?
Uses technology for instructional purposes	• I think this should not be about "instruction" but rather about learning. I literally could use an overhead to bore students to death-- same with PowerPoint, etc. What all educators need to be able to do is to stay connected with technology in ways that enhance the learning environment for students. • Yes, though I think use of concrete materials in general to support learning is important
Communicates high expectations for student learning	• Another one I want to comment on, I would rather that the learning experiences provided students an opportunity to meet and exceed standards rather than communicating high expectations. I wouldn't want the teacher to communicate high expectations rather than enact high expectations. • Sure. But, as with some others, this is so widely used and praised that it is in danger of having no particular meaning.

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	• Communicates positive belief and high expectations for student engagement and learning
Demonstrates content knowledge	• I think this is important, but I would think this would come in lesson design or in the scaffolding of qs and responses from the T. I think this is a lever that allows a teacher to plan and implement an effective lesson, so it would be situated underneath another competency. • Maybe this one could be combined with the content accuracy statement?
Incorporates hands-on materials and manipulatives	• (...when useful in achieving a given teaching objective) • This concept should be broader--something like enhances active, engaged learning by incorporating a range of instructional materials, including hands-on materials that allow students to construct deeper understanding of the content
Connects content to student interests and culture	• In some case this will fit. I think the broader teacher competency may be "Supports student motivation by making connections to student interests and culture" • Yes. When possible, start with student interests and culture to build lesson • Duplication with real world connections, above.
Provides and enforces rules and guidelines for student behavior	• I like the expectations here, but I think the way this competency is worded is problematic. • add something with regards to clarity and consistency • Cultivates a classroom community that values safety and learning
Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning	*No comments submitted*
Conducts formative assessment	• ...that guides following lessons and feedback • Perhaps: Conducts formative assessments for the purpose of guiding instruction • Teacher frequently checks for understanding, provides immediate corrective feedback, and uses assessments to inform instructional process
Communicates lesson objectives	*No comments submitted*
Efficiently organizes and manages classroom environment	• Conveys clear purpose and relevance of the learning objectives
Provides feedback	• It might be interesting to say more about the type of feedback good teachers provide, but I know this can get complicated. • target-specific

	• just providing feedback is not enough...consider something like "provides effective feedback" • Think this could get at the idea that teachers should be responding to the formative assessment they're doing, both during class and between classes, but maybe it could be its own separate item, too. • Provides affirmative or corrective feedback
Facilitates classroom discussion and poses critical questions	*No comments submitted*
Promotes student collaboration and cooperation including small-group learning	*No comments submitted*
Facilitates inquiry-based instruction	• I didn't want to select this one either, but the survey requires me to select item to add comment. A lot of these practices make sense for some academic goals and do not make sense for other academic goals. • Notices and centralizes student ideas in instruction
Other (text entry)	• Analyzing one's own instructional practice for the purpose of improving it. • conducts own inquiry, into own teaching, into student thinking, and perhaps into subject matter too • Elicits and interprets student thinking • Engages in a continuous teaching and learning cycle, promoting continuous growth • Engages students with interdisciplinary learning opportunities • Employs diverse instructional strategies and practices that are proven to lead to increased learning. • Teachers are aware of practices that are evidence-based • Something about responding to student learning/formative data collection in the moment seems important, but maybe it goes with feedback (above) • Uses engagement strategies to provide all students with multiple opportunities to respond and holds them accountable for learni • Create standard-aligned, grade level appropriate lessons • Collaborate with other professionals • Demonstrates ability to collaborate with and provide mutual support to workplace peers. • Teacher instruction is well-aligned to current state standards • Break down complex skills and strategies into smaller instructional units (scaffolding) • engage in evidence-based practice as a process • Teachers understand how to scaffold whole-class instruction and intensify small-group instruction for students who require additional supports • Incorporate evidence-based literacy practices into instruction

General comment (by email)	• Basically, I noted there seem to be 2 'levels' of descriptors: Macro and micro~ The micro descriptors 'might '*live within*' the macro descriptors, for ex.: Creating and sustaining positive relationships with students, respecting and attending to diversity, providing encouragement, etc. (micro) might be A PART OF developing a positive and sustaining classroom environment (macro)- • All of the HLPs & specific strategies/pedagogies (i.e. leading conversations, students to compare/contrast, summarize, teacher & student metacognition) might be sub-parts of teachers' deep content knowledge resulting in communicating clearly, creating relevance, providing high quality feedback, etc. • So, in summary, it seems that identifying the macro. descriptors and then 'filling' in the micro-sub-categories might be more practical than having a long laundry-list that contains descriptors that overlap and/or repeat features of one another….make sense?

Appendix J: Round One Competency Selection

Competency	Number of Selections (n=30)
Demonstrates value for diversity	30
Models problem solving and provides guided and independent practice (i.e., gradual release of responsibility)	30
Communicates clearly and effectively with students	29
Builds and maintains positive teacher-student relationships	29
Communicates high expectations for student learning	29
Conducts formative assessment	29
Provides clear explanation of content and expectations	28
Creates and sustains a positive learning environment	28
Connects content to student interests and culture	28
Differentiates content by providing scaffolding and acceleration	27
Demonstrates content knowledge	27
Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning	27
Promotes student collaboration and cooperation including small-group learning	26
Provides rationale for lesson (i.e., real-world connections)	25
Creates student-centered learning environment	25
Provides feedback	25
Facilitates classroom discussion and poses critical questions	25
Creates safe physical environment with access to learning materials	24
Facilitates inquiry-based instruction	24
Reinforces student effort and provides recognition	23
Supports student autonomy (i.e., student voice and choice)	23
Efficiently organizes and manages classroom environment	23
Communicates lesson objectives	21
Engages students in generating and testing hypotheses (i.e., claims and evidence)	20
Provides graphic and non-linguistic representations of content (e.g., concept-mapping)	20

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Provides and enforces rules and guidelines for student behavior	20
Incorporates hands-on materials and manipulatives	18
Previews and reviews content, emphasizing main ideas	17
Facilitates student synthesis of information through summarizing and note-taking	15
Uses technology for instructional purposes	15
Prompts students to identify similarities and differences (e.g., Venn diagrams)	13

Appendix K: Round One Competency Revisions

Round 1 Competency	Revised Competency
Communicates clearly and effectively with students	Uses clear and concise language to communicate lesson objectives and academic expectations. Clearly and accurately presents content, including previewing, reviewing, and emphasizing main ideas.
Reinforces student effort and provides recognition	Recognizes student effort and provides positive reinforcement.
Engages students in generating and testing hypotheses (i.e., claims and evidence)	Engages students in generating questions and providing evidence to support or refute assertions (i.e., claims and evidence and inquiry-based instruction).
Demonstrates value for diversity	Establishes a culturally responsive and inclusive learning environment by honoring diversity inside and outside of the classroom (e.g., ethnicity, language, ability, gender identity, etc.).
Creates safe physical environment with access to learning materials	Creates a safe and organized physical environment with efficient access to learning materials.
Provides rationale for lesson (i.e., real-world connections)	Provides rationale for lesson (i.e., real-world and/or practical connections).
Differentiates content by providing scaffolding and acceleration	Differentiates content by providing challenging yet accessible learning opportunities (e.g., scaffolding, acceleration, and enrichment). Provides scaffolding for students in need of additional support (e.g., modified, small group or individualized instruction).
Prompts students to identify similarities and differences (e.g., Venn diagrams)	Facilitates student critical thinking (e.g., analyzing, predicting, synthesizing, problem-solving, etc.).
Supports student autonomy (i.e., student voice and choice)	Creates a student-centered learning environment by incorporating student voice and choice.
Provides clear explanation of content and expectations	*removed; incorporated into another competency*
Models problem solving and provides guided and independent practice (i.e., gradual release of responsibility)	Models strategies and provides guided and independent practice (i.e., gradual release of responsibility).
Builds and maintains positive teacher-student relationships	Builds and maintains positive teacher-student relationships.

Facilitates student synthesis of information through summarizing and note-taking.	*removed; incorporated into another competency*
Previews and reviews content, emphasizing main ideas	*removed; incorporated into another competency*
Creates student-centered learning environment	*removed; incorporated into another competency*
Provides graphic and non-linguistic representations of content (e.g., concept-mapping)	Provides graphic and non-linguistic representations of content (e.g., concept-mapping).
Creates and sustains a positive learning environment	*removed; incorporated into another competency*
Uses technology for instructional purposes	*removed; incorporated into another competency*
Communicates high expectations for student learning	Provides rigorous learning experiences that allow all students to meet and exceed content standards.
Demonstrates content knowledge	*removed; incorporated into another competency*
Incorporates hands-on materials and manipulatives	Actively engages students by employing strategies that deepen understanding of the content (e.g., hands-on materials, manipulatives, movement, technology use).
Connects content to student interests and culture	Incorporates student interest and culture into lesson design.
Provides and enforces rules and guidelines for student behavior	Clearly and consistently implements guidelines for student behavior.
Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning	Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning.
Conducts formative assessment	Frequently checks for understanding, provides timely and effective feedback, and uses data to inform instruction.
Communicates lesson objectives	*removed; incorporated into another competency*
Efficiently organizes and manages classroom environment	*removed; incorporated into another competency*
Provides feedback	*removed; incorporated into another competency*
Facilitates classroom discussion and poses critical questions	Facilitates classroom discussion and poses critical questions.
Promotes student collaboration and cooperation including small-group learning	Promotes student collaboration and cooperation including small-group learning.
Facilitates inquiry-based instruction	*removed; incorporated into another competency*

Other	Designs lessons that are aligned to state standards and incorporates evidence-based instructional practices.
Other	Analyzes and continuously improves one's own instructional practice based on feedback and evidence of student learning.
Other	Effectively collaborates with colleagues, families, and other educational specialists.

Appendix L: Letter to Participants: Round 2

Dear

Thank you for completing survey round one. I have compiled the results of round one and the selected competencies are included here in round two. The link for survey round two is at the bottom of this email. Here is some information to get you oriented to survey round two.

Purpose: The purpose of round two is to investigate competency difficulty and importance for beginning teachers and for beginning teachers in low-income schools. The competencies rated both important and difficult may warrant emphasis in teacher training programs.

Definitions:
- Beginning teachers: those who have been teaching for less than three complete school years.
- Competency difficulty: the amount of time and effort required to become proficient in this competency. Difficult competencies take more time and effort to learn and to implement in practice.
- Competency importance: the extent to which a teaching competency factors into the beginning teacher's developmental trajectory. Beginning teachers who master important competencies improve quickly and are more likely to become effective teachers. Less important competencies may be developmentally appropriate for more experienced teachers, but are not vital for the beginning teacher.
- Low-income school: at least 75% of students are eligible for free or reduced-price lunch

Directions: When you click the survey link below, you will find a list of 25 competencies. Please rate each competency on four scales: (1) importance for beginning teachers, (2) difficulty for beginning teachers, (3) importance for beginning teachers in low-income schools, and (4) difficulty for beginning teachers in low-income schools. You may include comments under each competency (optional).

Survey preview:

Survey link:
[Round 2](#)

Please do not hesitate to contact me if you have questions.

Jessica

Appendix M: Rounds 2 and 3 Survey Instrument

Please enter your name.

_____

The purpose of this round is to investigate competency difficulty and importance for beginning teachers and for beginning teachers in low-income schools. The competencies rated both important and difficult may warrant emphasis in teacher training programs.

Definitions:

- Beginning teachers: those who have been teaching for less than three complete school years.
- Competency difficulty: the amount of time and effort required to become proficient in this competency. Difficult competencies take more time and effort to learn and to implement in practice.
- Competency importance: the extent to which a teaching competency factors into the beginning teacher's developmental trajectory. Beginning teachers who master important competencies improve quickly and are more likely to become effective teachers. Less important competencies may be developmentally appropriate for more experienced teachers, but are not vital for the beginning teacher.
- Low-income school: at least 75% of students are eligible for free or reduced-price lunch

Learning Environment: Positive classroom culture and climate
Rate each teaching strategy for importance and difficulty for beginning teachers and for beginning teachers in low-income schools.

	Importance for beginning teachers				Difficulty for beginning teachers				Importance for beginning teachers in low-income schools				Difficulty for beginning teachers in low-income schools			
	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)
Creates a student-centered learning environment by incorporating student voice and choice.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Builds and maintains positive teacher-student relationships.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Establishes a culturally responsive and inclusive learning environment by honoring diversity inside and outside of the classroom (e.g., ethnicity, language, ability, gender identity, etc.).	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Learning Environment: Effective classroom management
Rate each teaching strategy for importance and difficulty for beginning teachers and for beginning teachers in low-income schools.

	Importance for beginning teachers				Difficulty for beginning teachers				Importance for beginning teachers in low-income schools				Difficulty for beginning teachers in low-income schools			
	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)
Creates a safe and organized physical environment with efficient access to learning materials.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Clearly and consistently implements guidelines for student behavior.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Recognizes student effort and provides positive reinforcement.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Instruction: Content delivery
Rate each teaching strategy for importance and difficulty for beginning teachers and for beginning teachers in low-income schools.

	Importance for beginning teachers				Difficulty for beginning teachers				Importance for beginning teachers in low-income schools				Difficulty for beginning teachers in low-income schools			
	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Not important at all (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)
Clearly and accurately presents content, including previewing, reviewing, and emphasizing main ideas.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Differentiates content by providing challenging yet accessible learning opportunities (e.g., scaffolding, acceleration, and enrichment).	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Provides graphic and non-linguistic representations of content (e.g., concept-mapping).	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Provides rigorous learning experiences that allow all students to meet and exceed content standards.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Designs lessons that are aligned to state standards and incorporate evidence-based instructional practices.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Incorporates student interest and culture into lesson design.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Instruction: Instructional Strategies

Rate each teaching strategy for importance and difficulty for beginning teachers and for beginning teachers in low-income schools.

	Importance for beginning teachers				Difficulty for beginning teachers				Importance for beginning teachers in low-income schools				Difficulty for beginning teachers in low-income schools			
	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)
Uses clear and concise language to communicate lesson objectives and academic expectations.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Provides rationale for lesson (i.e., real-world and/or practical connections).	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Engages students in generating questions and providing evidence to support or refute assertions (i.e., claims and evidence and inquiry-based instruction).	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Facilitates student critical thinking (e.g., analyzing, predicting, synthesizing, problem-solving, etc.).	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Models strategies and provides guided and independent practice (i.e., gradual release of responsibility).	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Instruction: Instructional Strategies, cont.

Rate each teaching strategy for importance and difficulty for beginning teachers and for beginning teachers in low-income schools.

	Importance for beginning teachers				Difficulty for beginning teachers				Importance for beginning teachers in low-income schools				Difficulty for beginning teachers in low-income schools			
	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)
Actively engages students by employing strategies that deepen understanding of the content (e.g., hands-on materials, manipulatives, technology use).	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Frequently checks for understanding, provides timely and effective feedback, and uses data to inform instruction.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Provides scaffolding for students in need of additional support (e.g., modified, small group or individualized instruction).	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Facilitates classroom discussion and poses critical questions.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Promotes student collaboration and cooperation including small-group learning.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Professionalism

Rate each teaching strategy for importance and difficulty for beginning teachers and for beginning teachers in low-income schools.

	Importance for beginning teachers				Difficulty for beginning teachers				Importance for beginning teachers in low-income schools				Difficulty for beginning teachers in low-income schools			
	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)	Not important (1)	Less important (2)	Important (3)	Very important (4)	Easy (1)	Less difficult (2)	Difficult (3)	Very difficult (4)
Analyzes and continuously improves one's own instructional practice based on feedback and evidence of student learning.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Effectively collaborates with colleagues, families, and other educational specialists.	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

Appendix N: Round Two Outlier Comments

Item code	Item	Participant Code	Mode	Rating	Explanation
7b	Difficulty for beginning teachers: Clearly and accurately presents content, including previewing, reviewing, and emphasizing main ideas.	6	3	1	If courses are thorough in covering the importance of big understandings and essential questions, candidates are more likely to keep the main ideas of the content in mind as they create lesson plans. Especially for secondary candidates, content knowledge is generally less an issue than developing practical skills such as classroom management. If admission standards include academic standards, the content of elementary subjects should not be an issue for elementary candidates.
		12	3	1	I'm assuming in my response here that candidates go through a program that is reputable and that includes clinical practice. If neither of those is true, then my rating is off. But then that's not a challenge for the beginning teacher; it's a challenge for the preparation system in my view. So if my assumption holds true, then the amount of focus on lesson planning and all the modeling of pre-planned curricula, etc. should make this kind of very rote content presentation one of the easiest things to do. It's the most basic "teaching" side of the "teaching and learning" duo. I should also say that if a beginning teacher can only do this thing, I personally do not believe that the outcomes for children will be aligned with what we need. This is very much an example of an emphasis on the banking model of education, where teachers put stuff into children's brains. There is no evidence that this, alone, is indicative of good teaching. It's necessary, yes, but should be the very, very basic skill set of a teacher and should be easy. If this is difficult, I can't imagine what we think the really complex work is.
7d	Difficulty for beginning teachers in low-income schools:	Mode: 3 No outliers (all scores 2, 3, or 4)			

Item code	Item	Participant Code	Mode	Rating	Explanation
	Clearly and accurately presents content, including previewing, reviewing, and emphasizing main ideas.				
9a	Importance for beginning teachers: Provides graphic and non-linguistic representations of content (e.g., concept-mapping).	Mode: 3 No outliers (all scores 2, 3, or 4)			
11b	Difficulty for beginning teachers: Designs lessons that are aligned to state standards and incorporate evidence-based instructional practices.	6	3	1	If courses are thorough about covering these aspects through lesson planning, candidates will find this easier than other competencies that require a great deal of practice, such as classroom management.
		12	3	1	Same assumption about program and clinical practice. There are SO many resources that model lesson designs that link to state standards and "evidence-based" instructional practices. If novice teachers have not learned what their local resources are, then programs are not doing their jobs. It might take novice teachers a lot of TIME to do this work, but it's not intellectually demanding if they have come to understand lesson design in their programs--which they should have.
11d	Difficulty for beginning teachers in low-income schools: Designs lessons that are aligned to state standards and incorporate evidence-based instructional practices.	Mode: 3 No outliers (all scores 2, 3, or 4)			

Item code	Item	Participant Code	Mode	Rating	Explanation
12d	Difficulty for beginning teachers in low-income schools: Incorporates student interest and culture into lesson design.	Mode: 3 No outliers (all scores 2, 3, or 4)			
23b	Difficulty for beginning teachers: Promotes student collaboration and cooperation including small-group learning.	27	4	2	I am not aware of quantitative research that suggests that promoting collaboration amongst students in as difficult as other practices. Conversely, the other items included on your scale are much more challenging for teachers according to research. For instance, considerable exploratory research in the area of reading comprehension suggests that teachers have the most difficulty with providing strategy instruction, modeling effective learning strategies, and with providing evidence-based instruction. Some helpful examples you will want to review are Klingner et al., 2010, Swanson, Solis, Ciullo, & McKenna, 2012, Walker & Stevens 2016, and numerous others. All of these exploratory studies indicate that teachers (of all ranges of experience) struggle the most with implementing effective practices. Further, promoting student collaboration including small group work is less challenging. See the observation study by Swanson and colleagues in Reading-Writing Quarterly. ELA and Social studies teachers (of all years of experience) were observed providing extensive partner and peer reading arrangements.
		15	4	2	*(no comment submitted)*
		17	4	2	I believe conducting cooperative learning is a mainstay in most teacher preparation programs, so new teachers should have plenty of experience with implementing this strategy.
		3	4	2	*(no comment submitted)*

Item code	Item	Participant Code	Mode	Rating	Explanation
		31	4	2 Changed to 4	Oops. That should have been a "more difficult" response. I've experienced over the years that beginning teachers have a hard time giving up control of the class. Sorry about that!*
		20	4	2	I often see pre-service teachers given opportunities in their clinical experiences to work with small groups of students or facilitate group assignments. Teacher-educators often model this practice for candidates, with group assignments and presentations being perhaps the most common learning modality in many programs. As a result, beginning teachers often enter the profession having had more experience thinking about and setting up small-group learning relative to the experience they have had with other practices or strategies. This does not mean that beginning teachers promote collaboration and cooperation particularly well. It just means they find it less difficult relative to other competencies.
		18	4	2	*(no comment submitted)*
		9	4	2	*(no comment submitted)*
25b	Difficulty for beginning teachers:

Effectively collaborates with colleagues, families, and other educational specialists. | 10 | 2/3 | 4 | What I am noticing is that new teachers are not prepared for the level and amount of collaboration that is expected of them. They can get frustrated by the number of meetings, expectations for co-planning, PLC's etc. They have a vision of being more in control of their day and their time and their planning, but our practices have shifted and we no longer see it as a job of isolation. So they are burdened by the number of people they feel are pulling on them- parents, colleagues, leaders, etc., and they struggle to see that this IS A HUGE PART of the daily work, not a distraction from it or additional duty. We also are needing to teach millennial some skills for communication and |

Item code	Item	Participant Code	Mode	Rating	Explanation
					advocacy on their teams. We want them to be change agents- to come in with huge ideas and advocate for them. However, they do not understand the need to "earn the right to be heard" or listen to and respect their veteran colleagues and their experience. Often, our new teachers DO have a better way to do it, but they get frustrated if their older colleagues don't catch on quickly, OR they feel dismissed, shut down and give up. They can be perceived as arrogant, but really our veterans are experiencing a huge change process when they have a novice teacher as a colleague- perhaps just as much adjustment as the new teacher! So there is a need for empathy from both sides.
		24	2/3	4	I believe my rating for this item is based on my experiences of observing beginning teachers struggle to appropriately address the many things that they must balance early in their careers. I think it can be especially difficult for beginning teachers to collaborate with colleagues and/or other educational specialists simply because of the many things they must do on a daily basis (create lesson plans for the first time, create and carry out an effective classroom management plan, communicate with parents, etc.). Collaborating with parents can be difficult for all teachers, but may even be more difficult for beginning teachers who have to learn how to be effective communicators and may be hesitant to communicate with parents for a variety of reasons.
		15	2/3	4	*(no comment submitted)*
		5	2/3	4	I have found that beginning teachers find it extremely challenging to collaborate effectively at their new schools. While there are meetings, parent nights, etc. that require participation and collaboration, beginning teachers struggle with planning and "keeping their heads above water." Even when

Item code	Item	Participant Code	Mode	Rating	Explanation
					the beginning teachers are assigned a mentor, they don't always meet frequently enough to be helpful with supporting their collaboration with others at the school and families.
		28	2/3	4	*(no comment submitted)*
		29	2/3	4	*(no comment submitted)*
		12	2/3	4	It's likely that my score here is an outlier because of the word "effectively." I have no doubt that beginning teachers are, by and large, accommodating in their interactions, but that does not necessarily mean collaboration. If I'm going to collaborate with colleagues and/or other education specialists as a beginning teacher, I'm going to have to focus on some goals outside of my own particular classroom--something that I don't think most beginning teachers have time to do. I certainly hear over and over (and have no reason to doubt it) that new teachers who are not of the communities of the children they serve are not very good at working with families; they are often patronizing is what I hear most frequently.
		18	2/3	4	*(no comment submitted)*
25d	Difficulty for beginning teachers in low-income schools: Effectively collaborates with colleagues, families, and other educational specialists.	6	3	1	This competency is oftentimes highly dependent on the disposition of the teacher. The enthusiasm that new teachers bring to the school context can create unique forms of collaboration with families and educational personnel.

*Changing participant rating from 2 to 4 decreased the IQR to 1.

Appendix O: Round Three Email to Participants

Last round! Thank you so much for sticking with it; this is the last task! The round three survey is exactly like round two. The only difference is that I have provided results from round two for your consideration below. Think of it like a virtual, asynchronous focus group with the top national experts in teacher training.

Below, you'll find a summary of the data collected in round two, including each item's mode, interquartile range (IQR), and participant comments from outliers. One of my research questions investigates the level of consensus among experts. Therefore, the data are provided to alert you to areas of consensus and dissention. This is not intended to force consensus where it does not exist. Areas of dissention are just as interesting as areas of consensus.

Each column displays the competency's mode on the 4-point scale and the item's Inter Quartile Range (IQR). IQR values less than or equal to one indicate consensus. IQR values greater than one indicate ==dissention.== I collected comments from participants whose rating was at least two points outside of the mode on non-consensus items (outliers). Note: for some non-consensus items, there were no statistical outliers, so you won't see any comments.

After you have reviewed the data, please click here to complete round three.

Round 2 Data Summary

Learning Environment: Positive classroom culture and climate				
Teaching Competency	Importance Mode (IQR)	Difficulty Mode (IQR)	Importance Low Income Mode (IQR)	Difficulty Low Income Mode (IQR)
Creates a student-centered learning environment by incorporating student voice and choice.	3 (1)	3 (1)	4 (1)	4 (1)
Builds and maintains positive teacher-student relationships	4 (0)	2 (1)	4 (0)	3 (1)
Establishes a culturally responsive and inclusive learning environment by honoring diversity inside and outside of the classroom (e.g., ethnicity, language, ability, gender identity, etc.).	4 (1)	3 (1)	4 (1)	3 (1)
Learning Environment: Effective classroom management				
Teaching Competency	Importance Mode (IQR)	Difficulty	Importance Low Income	Difficulty Low Income Mode (IQR)

		Mode (IQR)	Mode (IQR)	
Creates a safe and organized physical environment with efficient access to learning materials.	4 (1)	2 (1)	4 (1)	2 (1)
Clearly and consistently implements guidelines for student behavior.	4 (1)	3 (1)	4 (0)	4 (1)
Recognizes student effort and provides positive reinforcement.	4 (1)	2 (1)	4 (1)	3 (1)

Instruction: Content delivery

Teaching Competency	Importance Mode (IQR)	Difficulty Mode (IQR)	Importance Low Income Mode (IQR)	Difficulty Low Income Mode (IQR)
Clearly and accurately presents content, including previewing, reviewing, and emphasizing main ideas.	4 (1)	3 (2)	4 (1)	3 (2)

Outlier Comments:

Difficulty for Beginning Teachers Rating: 1 If courses are thorough in covering the importance of big understandings and essential questions, candidates are more likely to keep the main ideas of the content in mind as they create lesson plans. Especially for secondary candidates, content knowledge is generally less an issue than developing practical skills such as classroom management. If admission standards include academic standards, the content of elementary subjects should not be an issue for elementary candidates.

Difficulty for Beginning Teachers Rating: 1 I'm assuming in my response here that candidates go through a program that is reputable and that includes clinical practice. If neither of those is true, then my rating is off. But then that's not a challenge for the beginning teacher; it's a challenge for the preparation system in my view. So if my assumption holds true, then the amount of focus on lesson planning and all the modeling of pre-planned curricula, etc. should make this kind of very rote content presentation one of the easiest things to do. It's the most basic "teaching" side of the "teaching and learning" duo. I should also say that if a beginning teacher can only do this thing, I personally do not believe that the outcomes for children will be aligned with what we need. This is very much an example of an emphasis on the banking model of education, where teachers put stuff into children's brains. There is no evidence that this, alone, is indicative of good teaching. It's necessary, yes, but should be the very, very basic skill set of a teacher and should be easy. If this is difficult, I can't imagine what we think the really complex work is.

Differentiates content by providing challenging yet accessible learning opportunities (e.g., scaffolding, acceleration, and enrichment).	4 (1)	4 (1)	4 (1)	4 (1)
Provides graphic and non-linguistic representations of content (e.g., concept-mapping).	3 (2)	2 (1)	4 (1)	2 (1)
Provides rigorous learning experiences that allow all students to meet and exceed content standards.	4 (1)	4 (1)	4 (0)	4 (1)

Designs lessons that are aligned to state standards and incorporate evidence-based instructional practices.	4 (1)	3 (2)	4 (1)	3 (2)
Outlier Comments: Difficulty for Beginning Teachers Rating: 1 If courses are thorough about covering these aspects through lesson planning, candidates will find this easier than other competencies that require a great deal of practice, such as classroom management. Difficulty for Beginning Teachers Rating: 1 Same assumption about program and clinical practice. There are SO many resources that model lesson designs that link to state standards and "evidence-based" instructional practices. If novice teachers have not learned what their local resources are, then programs are not doing their jobs. It might take novice teachers a lot of TIME to do this work, but it's not intellectually demanding if they have come to understand lesson design in their programs--which they should have.				
Incorporates student interest and culture into lesson design.	3 (1)	2/3 (1)	4 (1)	2 (2)
Instruction: Instructional strategies				
Teaching Competency	Importance Mode (IQR)	Difficulty Mode (IQR)	Importance Low Income Mode (IQR)	Difficulty Low Income Mode (IQR)
Uses clear and concise language to communicate lesson objectives and academic expectations.	4 (1)	2 (1)	3/4 (1)	3 (1)
Provides rationale for lesson (i.e., real-world and/or practical connections).	3 (1)	3 (1)	3 (1)	3 (1)
Engages students in generating questions and providing evidence to support or refute assertions (i.e., claims and evidence and inquiry-based instruction).	3 (1)	3 (1)	3 (1)	3 (1)
Facilitates student critical thinking (e.g., analyzing, predicting, synthesizing, problem-solving, etc.).	4 (1)	4 (1)	4 (1)	4 (1)
Models strategies and provides guided and independent practice (i.e., gradual release of responsibility).	4 (1)	3 (0)	4 (1)	3 (1)
Actively engages students by employing strategies that deepen understanding of the content (e.g., hands-on materials, manipulatives, movement, technology use).	3 (1)	3 (1)	3 (1)	3 (1)
Facilitates student meta-cognition through self-assessment, goal-setting, and reflection on learning.	3 (1)	4 (1)	4 (1)	4 (1)
Frequently checks for understanding, provides timely and effective feedback, and uses data to inform instruction.	4 (1)	4 (1)	4 (1)	4 (1)

Provides scaffolding for students in need of additional support (e.g., modified, small group or individualized instruction).	4 (1)	4 (1)	4 (1)	4 (1)
Facilitates classroom discussion and poses critical questions.	4 (1)	3 (1)	4 (1)	3 (1)
Promotes student collaboration and cooperation including small-group learning.	4 (1)	4 (1)	4 (1)	4 (1)
Professionalism				
Indicator	Importance Mode (IQR)	Difficulty Mode (IQR)	Importance Low Income Mode (IQR)	Difficulty Low Income Mode (IQR)
Analyzes and continuously improves one's own instructional practice based on feedback and evidence of student learning.	4 (0)	3 (1)	4 (0)	3 (1)
Effectively collaborates with colleagues, families, and other educational specialists.	4 (1)	2/3 (2)	4 (1)	3 (2)

Outlier Comments:

Difficulty for Beginning Teachers Rating: 4 What I am noticing is that new teachers are not prepared for the level and amount of collaboration that is expected of them. They can get frustrated by the number of meetings, expectations for co-planning, PLC's etc. They have a vision of being more in control of their day and their time and their planning, but our practices have shifted and we no longer see it as a job of isolation. So they are burdened by the number of people they feel are pulling on them- parents, colleagues, leaders, etc., and they struggle to see that this IS A HUGE PART of the daily work, not a distraction from it or additional duty. We also are needing to teach millennial some skills for communication and advocacy on their teams. We want them to be change agents- to come in with huge ideas and advocate for them. However, they do not understand the need to "earn the right to be heard" or listen to and respect their veteran colleagues and their experience. Often, our new teachers DO have a better way to do it, but they get frustrated if their older colleagues don't catch on quickly, OR they feel dismissed, shut down and give up. They can be perceived as arrogant, but really our veterans are experiencing a huge change process when they have a novice teacher as a colleague- perhaps just as much adjustment as the new teacher! So there is a need for empathy from both sides.

Difficulty for Beginning Teachers Rating: 4 I believe my rating for this item is based on my experiences of observing beginning teachers struggle to appropriately address the many things that they must balance early in their careers. I think it can be especially difficult for beginning teachers to collaborate with colleagues and/or other educational specialists simply because of the many things they must do on a daily basis (create lesson plans for the first time, create and carry out an effective classroom management plan, communicate with parents, etc.). Collaborating with parents can be difficult for all teachers, but may even be more difficult for beginning teachers who have to learn how to be effective communicators and may be hesitant to communicate with parents for a variety of reasons.

Difficulty for Beginning Teachers Rating: 4 I have found that beginning teachers find it extremely challenging to collaborate effectively at their new schools. While there are meetings, parent nights, etc. that require participation and collaboration, beginning teachers struggle with planning and "keeping their heads above water." Even when the beginning teachers are assigned a mentor, they don't always meet frequently enough to be helpful with supporting their collaboration with others at the school and families.

Difficulty for Beginning Teachers Rating: 4 It's likely that my score here is an outlier because of the word "effectively." I have no doubt that beginning teachers are, by and large, accommodating in their interactions, but that does not necessarily mean collaboration. If I'm going to collaborate with colleagues and/or other education specialists as a beginning teacher, I'm going to have to focus on some goals outside of my own particular classroom--something that I don't think most beginning teachers have time to do. I certainly hear over and over (and have no reason to doubt it) that new teachers who are not of the communities of the children they serve are not very good at working with families; they are often patronizing is what I hear most frequently.

Difficulty for Beginning Teachers in Low-Income Schools Rating: 1 This competency is oftentimes highly dependent on the disposition of the teacher. The enthusiasm that new teachers bring to the school context can create unique forms of collaboration with families and educational personnel.