APPLYING DESIGN-BASED RESEARCH TO MEASURE THE KNOWLEDGE OF

PHONICS AMONG PRESERVICE TEACHERS WITHIN THE TEACHER

PREPARATION PROGRAM OF A LARGE URBAN UNIVERSITY

A Dissertation for Degree
Doctor of Philosophy

By

Misty Paul Black

December 2018

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An Abstract
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Abstract

Background: As the value of public education is widely disputed, it is generally

understood that reading is fundamental for long-term student success, regardless of the

educational setting. Therefore, teacher education programs should prepare all future

teachers to master the knowledge and skills needed to teach reading to students of all

ages and reading achievement levels. Current research indicates that phonics is a critical

component of a strong literacy program but that many preservice teachers do not possess

the knowledge of fundamental phonics principles needed for effective reading

instruction. **Purpose:** This study was designed to assess the development of phonics-

based knowledge within an introductory course of elementary reading and phonics taught

in a large urban university. **Methods:** Archival data were used from forty students

enrolled in the introductory course of elementary reading and phonics taught by this

researcher in spring of 2018 using the method of design-based research (DBR). DBR was

chosen due to the precise context of this study within an authentic classroom setting. This

course was planned and implemented with the collaboration with the University-School

Partnerships for the Renewal of Educator Preparation (US PREP). The iterative nature of

DBR provided a systematic method for developing sequential instructional modules

based on the following course objectives: preservice teachers would be able to (1)

demonstrate an understanding of foundational principles of reading, including phonics as

a component of language and literacy instruction, and (2) analyze specific reading and

spelling behaviors of EC-6 students. These objectives were deliberately selected to align

with the state English Language Arts and Reading Generalist EC-6 Standards as well as the state-mandated expectations of student knowledge and skills. Pre-assessments, post-assessments, and summative assessments were administered to measure prior knowledge, progression, and final mastery of standards-based phonics knowledge. Data from these assessments were quantitatively measured according to individual student scores and measurements of total objective scores. Raw scores and percentage scores were analyzed and reported based on changes from pre-assessments to post-assessments, and final summative assessments for two modules of instruction. All reporting of data was completed in accordance with the procedures implemented by US PREP. All archival data examined in this report is derived only from the course of the author of this study.

Results: Descriptive statistics were used to illustrate data which revealed notable growth from the pre-assessments, post-assessments, and summative assessments in individual student scores as well as assessment objectives when measured as a group. The most compelling growth occurred in the layers of orthography which improved by 85 percentage points from the pre-assessment to the summative assessment, followed by phonemic awareness which improved by 80 percentage points. When evaluated by individual students, retention of singular objectives students varied widely. Evaluations by objectives demonstrated the need for improvement in the areas of syllabication patterns in single and multi-syllable words. Findings may be used to inform instructional practices, promote continuous improvement, and refine the design of future course iterations. **Conclusion:** The purpose of this study was to evaluate the use of design-based research to measure the continuous development of phonics-based knowledge within the specific context of an introductory reading instruction and phonics course. Data-driven

measurements indicated objectives that suggest both areas of strength and those which may benefit from instructional adjustments. Use of multiple assessments throughout the course identified both favorable outcomes as well as objectives demonstrating the need for additional instructional support. It is recommended that the use of design-based research and the use of multiple assessments be considered both to promote continuous instructional improvement in the course while it is being taught and to inform and refine the design of future course iterations.

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Chapter 1: Introduction

"We believe that literacy is the key that unlocks an individual's ability to learn. Learning is important to protect and preserve our democratic republic and improve the community's quality of life" (Acuna, 2015). As president and CEO of the Literacy Council Gulf Coast, Susan Acuna summarized my own philosophy concerning the empowerment that is a direct result of reading. My personal experiences have led me to understand the fundamental value of literacy.

As a student who did not enjoy reading, I did not willingly participate in classroom literacy activities in my early school years. Fortunately, I had the benefit of committed teachers and a supportive family who did not allow me to disregard reading entirely. Although I was capable of reading, I did not enjoy it. This aversion led to a lack of confidence, which negatively affected my overall academic success. In spite of considerable self-doubts, I enrolled in college where I was exposed to a wide variety of literature that captured my interest. I discovered true pleasure in reading, and I immersed myself in literature that was entertaining, thought-provoking, and relevant to my everyday life.

I am fortunate that I had the support, encouragement, and opportunity to find joy in reading. I discovered new worlds, connected with the diverse experiences of others, and felt empowered to become a knowledgeable and active citizen. Realizing the necessity of reading as an avenue to personal empowerment, I built a career as both a reading teacher and a literacy facilitator. Within these roles, I became keenly aware of the numerous students who struggle as they learn to read.

While there are a multitude of issues that cause students to experience reading difficulties, one reason is the instruction inexperience of many primary teachers. Research indicates that many teachers simply do not possess the fundamental knowledge needed to effectively teach early literacy skills. It is the role of teacher educators to ensure that beginning teachers are equipped to enter the classroom fully prepared to teach reading.

Even as I have matured as an educator, I readily acknowledge that I am always discovering new strategies and skills. As a teacher and a learner, I have a heart for both struggling readers as well as the teachers who have difficulty reaching these students. I see myself in them. I also know that these obstacles can be overcome.

Problem Statement

Literacy for all must begin with the most foundational skills of reading. Although a variety of instructional theories abound concerning the best methods of teaching students to read, an abundance of current research indicates that the inclusion of phonics-based instruction is a critical component of learning to read for students of all ages and levels. The understanding of phonics allows readers to decode individual words through the alphabetic principle of letter to sound relationships, which is the first step to reading for comprehension.

Phonics is an integral facet of reading, but it should be recognized that basic decoding is not the goal of reading. Snowling and Hulme clearly summarized this belief when they wrote, "The first step to reading comprehension is decoding. Beyond decoding, reading comprehension requires access to the meanings of words and higher-level processes such as sentence integration, inferencing, and comprehension" (2012, p.

595). Phonics is based on the awareness that decoding is the first step to accessing text in order to develop instant word recognition, fluency, and comprehension in reading.

While phonics is widely accepted as a crucial component of effective reading instruction, Walsh, Glasser, and Wilcox (2006) reported that many teachers who become certified lack sufficient phonics-based knowledge to teach early reading. Therefore, it is imperative that teacher preparation programs should prepare all future teachers to master the foundational knowledge and skills to teach phonics as an important element of reading instruction for students of all ages and levels.

Purpose of Research

This study was designed to analyze the application of design-based research to measure the knowledge of phonics among a class of preservice teachers enrolled in an introductory course of reading instruction and phonics at a large urban university. The intent of this study was to identify how the use of multiple assessments measured student progress, informed current instructional practices, promoted continuous improvement, and could be used to refine the design of future course iterations.

The development of this reading course, Elementary Reading and Phonics Instruction, was grounded in the principles of design-based research (DBR). The foundations of course planning began with the purposeful selection of objectives drawn from the English Language Arts and Reading Generalist EC-6 Standards published by the Texas State Board for Educator Certification in 2008 (see Appendix A for more information on the standards) (Texas State Board for Educator Certification, 2008).

As the course was devised, these standards were foundational to the composition of the instructional modules. Two modules of instruction were developed based on these

standards which aligned these standards to the pre-assessments, post-assessments, and summative assessments administered throughout the semester. The results of the assessments were used to measure student progress and provide evidence-based data to inform and adjust instruction as needed.

The purpose of this study was to analyze and evaluate the comprehensive results of the data collected from this course to determine how multiple assessments could be used to measure the development of phonics-based knowledge among preservice teachers. Additionally, the study aimed to identify ways that this data could be used to promote continuous improvement within the course and in the design of future course iterations.

Significance of Study

The study of phonics-based knowledge among preservice teachers is important to be certain that first-year teachers are fully ready to enter the classroom equipped to teach essential reading skills. Previous research findings have indicated that many novice teachers who have entered the professional field of literacy education lack fundamental knowledge of phonics-based instruction (Cheesman, McGuire, Shankweiler, & Coyne, 2009). Darling-Hammond (2000) reported that the reading achievement of students has been positively correlated to the mastery of the teachers' understanding of structural analysis concerning word study and literacy development.

Much of the research currently available is dated and addresses large-scale studies throughout broad portions of the United States. While these studies are important for establishing the significance of historical and national trends, instructional practices change over time. Additionally, learning standards often fluctuate based on the

philosophical ideology of educational leaders and policy-makers. In spite of this, a preponderance of research stresses the role of phonics-based principles embedded within literacy instruction. Therefore, there is value conducting a case study measuring the knowledge of phonics among preservice teachers in the specific context of a university-based teacher preparation program.

Research Questions

This study is guided by one primary research question and one sub question.

• How can multiple assessments be utilized to measure the development of phonics-based knowledge among preservice teachers within the context of an introductory reading instruction and phonics course at a large urban university?

- How can the results of pre-assessments, post-assessments, and summative assessments be analyzed and applied to promote continuous improvement within the course and in the design of future course iterations?

Key Terms

This key terms and descriptions used in this study are consistent with research and theory and are provided to clarify the manner in which each is used throughout the study.

Alphabetic principle. This refers to the letters and letter patterns represent the sounds of spoken language. Learning that there are predictable relationships between sounds (Blevins, 2001).

Balanced literacy. Balanced literacy is a philosophic orientation that promotes the use of a child-centered literacy approach that integrates the concepts of oral language, reading, and writing. Balanced literacy aims to use the

strongest portions of both whole language and phonics instruction (Fountas & Pinnell, 1996).

Cueing system. This refers to the use of semantic, syntactic, and grapho-phonemic cues to construct meaning from text (Goodman, 1993).

Decoding. This refers to the basic use of the phonics-based principle of using sound and letter relationships and patterns to construct words when reading. This is commonly associated with the concept of code-based instruction (Shanker & Ekwall, 2003).

Grapho-phonemic knowledge. This is the knowledge of relationship patterns between the oral sounds of language, letters, and letter patterns, particularly used in the phonetic study of spelling (Fountas & Pinnell, 1998).

Morphemic analysis. This refers to the use and understanding of morphemes (word parts related to syntax and meaning) in the reading and spelling of words (Bear, Invernizzi, Templeton, & Johnson, 2008).

Orthography. This refers to the understanding of language through layers of meaning associated with the alphabetic principles, spelling patterns within words, and the use of morphemic and structural analysis used within a written spelling system of language (Bear et al., 2008).

Phonemic awareness. The ability to hear, speak, and manipulate the smallest units of sound (phonemes) that make up spoken words is referred to as phonemic awareness (Shanker & Ekwall, 2003).

Phonological knowledge. This is the auditory knowledge and understanding of speech sounds such as individual phonemes, rhymes, syllables that are used in language (Fountas & Pinnell, 1998).

Phonics-based knowledge. Phonics knowledge is understood as a body of knowledge about how the alphabet works as related to sound to access individual words within text. Phonics-based knowledge includes a wide span of knowledge ranging from early concepts of phonological and phonemic manipulation through advanced concepts of syllabication and structural analysis of words. Phonics-based knowledge may be used in both reading and writing instruction. Systematic and structured phonics programs focus on the exclusive of phonics in literacy instruction (Department for Education, 2010).

Structural analysis. This refers to the use of words parts, including syllables and morphemes to determine the pronunciation and/or meaning of words (Bear et al., 2008).

Syllabication. This refers to the awareness of generalized syllable patterns to construct and deconstruct words in reading and spelling (Fountas & Pinnell, 1998).

Word study. This refers to a learner-centered integrated approach to instruction that includes a combination of phonics, spelling, structural analysis, and vocabulary when identifying individual words (Bear et al., 2008).

Organizational Overview

This study consists of five chapters, including an Introduction, a Review of Literature, Methodology, Findings, and Summary, which will be followed by References and Appendices. The introduction considers the nature of the study measuring the knowledge of phonics among preservice teachers within a locally-based setting. The problem of practice and the significance of the study are considered, followed by the research questions and key terms included within the study.

The review of literature briefly summarizes the role of phonics within the historical background and trends of reading instruction. This is followed by an investigation concerning the value of phonics within a comprehensive literacy program. The importance of phonics-based instruction for diverse learners will be addressed, followed by the status and implications of phonics-based knowledge among preservice teachers.

The methodology and theoretical approach of the research will be detailed in chapter three. The research approach of design-based research will be discussed as well as the unique association with the University-School Partnerships for the Renewal of Educator Preparation (US PREP). Additionally, the archival data of participants and the method of data analysis will be outlined. Chapter three will conclude with considerations regarding the validity, reliability, and potential limitations of the study design.

Chapter four will explore the research, the formation, and the results of the study. The process of the study will lead to the quantitative analysis of measurement results concerning the knowledge of phonics among the preservice teachers in this case study.

Chapter five will conclude the study with a discussion of the considerations of the study design and results, implications for practice, and suggestions for future research opportunities.

Chapter 2: Review of Literature

The National Institute of Literacy stated "Reading is a gateway to future success… in school and in life" (2009, p. 1). Literacy is an essential skill to maintain the structures and survival of modern societies (Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001). A grave concern exists regarding the perceived low literacy rates within the United States among both children and adults. According to the adult literacy advocacy group, ProLiteracy, more than 36 million adults in the United States cannot read or write above a third-grade level (2016). Illiteracy creates multiple problems, not just for individuals, but for society as a whole. A study completed by the RAND Corporation found that 75% of state prison inmates did not complete high school or could be characterized as functionally illiterate (Davis, Bozick, Steele, Saunders, & Miles, 2013). Low levels of literacy also influence issues of public health. It has been estimated that between 106 and 238 billion dollars have been spent because over one-third of Americans cannot read well enough to comprehend basic health information (Vernon, Trujillo, Rosenbaum, & DeBuono, 2007).

The National Institute of Child Health and Human Development considered illiteracy to be both an educational and a public health problem (Lyon, 1998). The severity of the problems associated with low literacy levels of makes it imperative that teacher preparation programs equip future teachers to include phonics as a component of effective reading and writing instruction.

This study explores the measurement of the knowledge about phonics components in reading instruction among preservice teachers in a teacher preparation program of a

large urban university. The proficiency of the preservice teachers' knowledge of phonics will promote the later application of phonics within an authentic setting.

This review of literature briefly explores the historical trends of phonics in reading instruction, the crucial role of phonics within a comprehensive literacy plan, and the need for phonics instruction for diverse learners. The literacy review culminates with an investigation into the necessity and ability of preservice and novice teachers to use their phonics knowledge and apply it in the implementation of phonics-based instruction.

The Trends of Phonics in the History of Reading in the United States

Just as the history of reading instruction in the United States has varied both in purposes and methods, so has the role of phonics. N. B. Smith wrote *American Reading Instruction* (1965) which provides an extensive account of literacy instruction. Smith reported that reading instruction through to the early 18th century was considered a religious and moral matter. Methods of instruction introduced basic alphabetic principles and moved quickly to the rote memorization of Bible verses to promote word recognition. Religious primers were soon introduced such as *The New England Primer* which was used well into the 1700s. This early text included structured and rote knowledge of the alphabet and very basic phonics principles such as the introduction of phonograms.

Over the next 100 years, literacy instruction became more diverse, with the inclusion of oral reading, introduction to syllabication, and attention to spelling instruction. Noah Webster was particularly influential in the 1800s due to his authorship of *The American Spelling Book* and a comprehensive dictionary published in 1828. Structured phonics was used primarily for reading and spelling instruction.

The pendulum swung in the early 20th century moving away from basic, structured phonics towards a philosophy stressing a more authentic literature-based introduction to reading. Whole word recognition was prioritized as an efficient method of reading. In 1936, Edward Dolch published "A Basic Sight Vocabulary" consisting of 220 high utility words and a separate list of 95 nouns (Dolch, 1936). However, another reading method was gaining popularity: the language experience approach. This student-centered approach encouraged students to generate their own ideas and problem-solving skills to encourage personalized reading experiences. During this time the Fernald technique was introduced which added multi-sensory features to reading. A wide variety of creative techniques were used in the first half of the 20th century, but change was just around the corner.

The book *Why Johnny Can't Read and What You Can Do About It* by Rudolf Flesch shook the literacy world when it was published in 1955. This book, which was addressed specifically to parents, condemned educators for what he considered to be a crisis in the reading abilities of children. The adversarial tone was clear as he declared, "the teaching of reading is too important to be left to the educators" (p. xiii). Flesch promoted the sole use of phonics over the prevalent language experience and whole word approaches to reading. The use of structured basal readers became prevalent. They used a highly structured phonics approach presenting stories with limited and controlled vocabulary words. Many critics have condemned basal readers as dull and insensitive due to their minimal attention to the diversity represented in the students using these readers (Heilman, 1977).

The issue of phonetic reading was reiterated when Jeanne Chall wrote *Learning to Read: The Great Debate* (1967). The very title of this book evoked a divisive tone as she argued in favor of a rigorous and structured approach to phonics. Her work brought to light the polarization and conflict focused on the fundamental differences in instructional approaches to reading education. This dispute became commonly known as the "reading wars," which pitted supporters of whole language methods against the proponents of structured phonics approaches.

Whole language, advocated by Kenneth Goodman (1986), claimed that children would unconsciously acquire patterns of written language in the same way they naturally learned oral language. Advocates of the whole language approach explicitly rejected the inclusion of phonics in this instructional approach. Conversely, proponents of structured phonics maintained that reading mastery could only be achieved through leveled phonics programs.

The "reading wars" have continued for the past 50 years. In 1983, The National Commission on Excellence in Education released the report, *A Nation at Risk,* which increased public anxiety by claiming there was a national crisis due to the failing school system. The report claimed that 23 million adults were functionally illiterate, unable to complete everyday literacy tasks. With such claims making headlines, reading instruction became a politically charged issue. In a particularly provoking speech on the Senate floor in 1989, Senator William Armstrong of Colorado declared:

> For too long, we have been unwilling to deal with the root cause of the problem of illiteracy in America: the flawed methods we have used to teach our children to read. Research shows phonics is the most effective way to teach people to read.

It's the way most of us have learned to read. But it fell out of use in the last 20

years, with disastrous consequences (as cited in Goodman, 1993, p. 1).

Interestingly, Goodman, a strong supporter of whole language, accepted the notion that

English is a language based in alphabetic and phonics generalizations. He derided the

political intrusion into the debate about reading instruction methods claiming that it had

complicated the true nature of phonics among the public as well as among educators.

Although he rejected the implementation of explicit phonics instruction, he

acknowledged the role of phonics when he wrote, "phonics can be learned only in the

context of using it in real language" (1993, p. 30).

While the proponents of different instructional approaches to reading, ranging

from whole language to structured phonics, are often passionate and uncompromising

about their beliefs, a preponderance of research has suggested that a balanced approach,

incorporating features of whole language, language experience, whole word, and phonics

instruction is the most successful way of teaching the majority of students.

Bond and Dykstra (1967) composed the seminal study, *The Cooperative Research

Program in First-Grade Reading Instruction*, as an extensive study that analyzed five

instructional approaches to reading instruction among 27 different school programs. This

study considered multiple variables such as teacher and student demographics and used

multiple measures of data analysis. The findings of this study concluded that

combinations of methods were far superior to any single approach. Furthermore, no

reading program is effective in all situations or for all students. However, Bond and

Dykstra strongly maintained that phonics must be emphasized and taught systemically

within all instructional reading approaches to achieve the maximum impact. Although

this study is dated, the results of this study are considered well-respected and relevant. The positive use of the recommendations of the report has stood the test of time.

Integrating Phonics into a Comprehensive Literacy Plan

The inclusion of phonics is essential within a well-designed literacy framework. The integration of phonics into a multi-faceted literacy plan includes a wide range of phonics-based skills. Phonics may be classified into two categories: synthetic phonics and analytic phonics. Synthetic phonics refers to the construction of words from the smallest units, while analytic phonics refers to the breaking down of words into their component parts (Hempenstall, 2001). Both categories are equally important as students learn to read and spell. While many people consider phonics as a simple process of letter to sound relationships, the range of phonics-based skills in a comprehensive literacy program is much more extensive, including: phonology, phonemic awareness, the alphabetic principle, generalizations of phonetic patterns, generalizations of syllabication, structural and morphemic analysis, orthographic layers of language, and developmental spelling stages.

It is important to understand that phonics is essential to literacy, but a robust literacy plan should not be limited to phonics. Knowledge of phonics-based principles assists students as they learn to access text. However, in a comprehensive literacy framework, phonics is only one of the key skills that contribute to the primary goal of reading which is comprehension. A balanced approach to reading instruction requires many methods. This approach does not rely on any one method to reach *all* learners but enables the instructor to differentiate instruction to reach *each* learner.

Emphasizing the benefits of blended reading instruction, The International Reading Association (IRA), which changed its name in 2015 to The International Literacy Association (ILA), and the National Association for the Education of Young Children (NAEYC) collaborated to compose a position paper, *Learning to Read and Write: Developmentally Appropriate Practices for Young Children* (1998). This document indicated that children need extensive access to a variety of texts because "learning to read and write is a complex, multifaceted process that requires a wide variety of instructional approaches" (p. 206). This multifaceted process includes phonics, as evidenced by the inclusion of the statement, "approaches that favor some type of systematic code instruction along with meaningful connected reading report children's superior progress in reading" (p. 205). The National Reading Panel (2000) listed five essential areas of reading instruction: phonemic awareness, phonics, fluency, vocabulary, and comprehension. Lyon emphatically wrote in a position paper to the National Institute of Child Health and Human Development, "phonics, while NECESSARY is not SUFFICIENT" (1998, p. 8).

The Southwest Educational Development Society, now an affiliate of the American Institutes of Research, published the *Cognitive Foundations of Learning to Read: A Framework* in 2000, which demonstrated the multiple skills critical to the process of learning to read. It is notable that phonics-based skills were prominent throughout the framework as the skills progressed to the purpose of comprehension (see Figure 1).
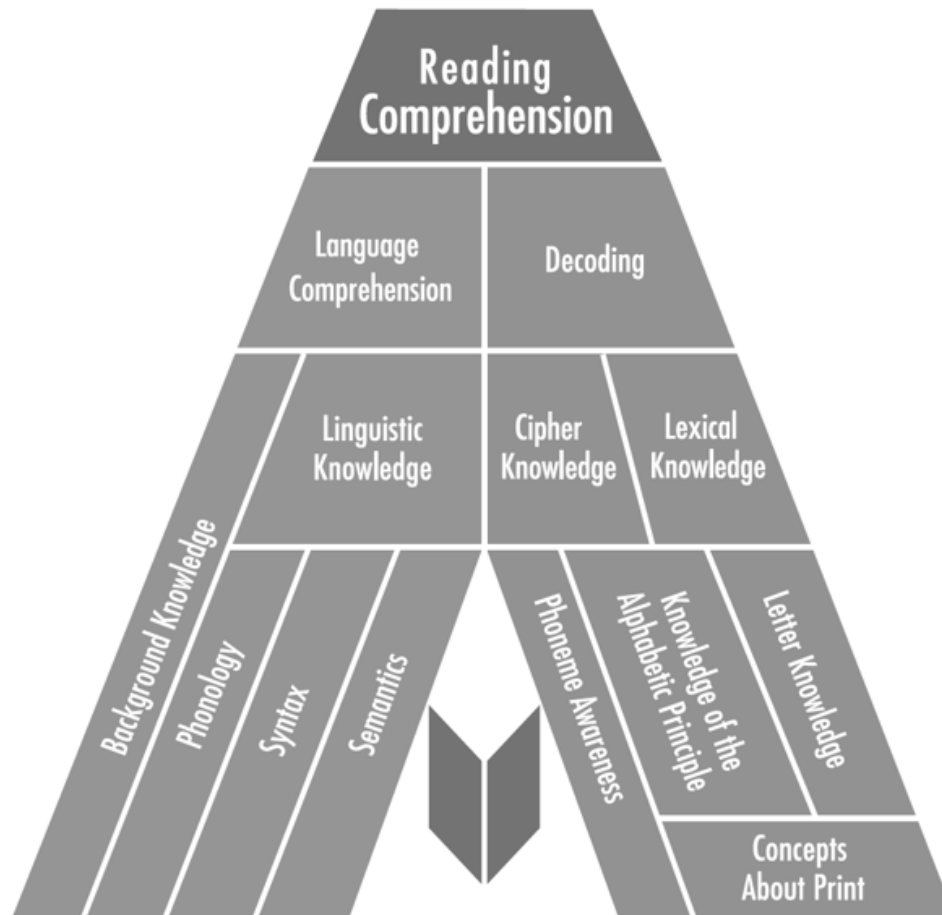
Figure 1: Cognitive Foundations of Learning to Read: A Framework
S. Wren. Copyright 2001 by Southwest Educational Development Laboratory

Phonics and Literacy Instruction Within the Context of Sociocultural Diversity

Student diversity takes many forms, including students from linguistically and culturally diverse backgrounds, students from low socioeconomic situations, and students who exhibit symptoms of reading difficulties and disabilities. These students are often labeled *at-risk* according to federal, state, and local policy. It is imperative that educators understand the specific characteristics of diverse students. Only in doing so will teachers be prepared to provide meaningful reading instruction for all students.

In *Learning to Read and Write: Developmentally Appropriate Practices for Young Children*, the ILA and NAEYC (1998), addressed the diverse needs of developing readers and writers. This report showed the necessity of recognizing the multiple social factors that affect literacy learning, emphasizing. "Human development and learning occur in and are influenced by social and cultural contexts. Language, reading, and writing are strongly shaped by culture… To teach in developmentally appropriate ways, teachers must understand both the continuum of reading and writing development and children's individual and cultural variations" (p. 208). Pinnell and Fountas (2007) clearly described a full continuum which included multiple characteristics and approaches to developmental literacy learning. Phonics, as a feature of word study, was a pivotal focus throughout the continuum.

In addition to the knowledge of developmental literacy levels, Spear-Swerling identified three patterns common among students exhibiting symptoms of reading difficulties: (1) specific word reading difficulties, (2) specific reading comprehension difficulties, and (3) mixed reading difficulties (2016, p. 514). It is important to identify a category because each pattern required different interventions.

According to McCormick, several common factors may contribute to reading difficulties, including but not limited to, English language acquisition, socioeconomic factors, differences in learning styles, inadequate instruction, and issues of constitutional origin such as dyslexia. McCormick wisely reiterated the well-known research concept: correlation is not analogous to causation (1995, p. 31).

Assumptions of causation cannot be made for classifications of students. Every student must be recognized as an individual with unique strengths and needs. Not every

student will need remedial intervention. Many students who exhibit signs of reading difficulties are disproportionately placed in remedial special education programs. Teachers must "recognize when reading difficulties are within the typical range of diverse learners and regard such considerations to determine the appropriateness of referring a student for formal, intensive intervention programs" (ILA & NAEYC, 1998, p. 211).

A substantial portion of diverse students include readers with learning difficulties and disabilities. Two frames of reference have been noted in the identification of reading problems. One focuses on the reading problem itself, while the other considers the complex dimensions and cognitive factors that impede reading achievement (Morris, et al., 1998) While these classifications differ in nature and severity, it is essential that students receive the interventions that are appropriate to their individual needs.

Many struggling readers simply have differences in developmental levels or learning styles. These students will exhibit a range of levels of severity. These difficulties may be related to a number of factors such as the lack of prior experiences, limited oral or auditory language skills, limited vocabulary, differences in learning styles, or simple maturity and readiness. The possible factors are extensive, but most students with reading difficulties do not have disabilities. These students are capable of advancing to grade level expectations if they receive appropriate, focused, and timely interventions. The earlier the interventions take place, the more likely they are to be effective.

The urgency of early intervention was accentuated by Keith Stanovich (1986) who described the "Matthew Effect," based on the biblical reference from the book of Matthew, which is often paraphrased as "the rich get richer and the poor get poorer."

Stanovich stressed that students who are below grade level in the early elementary years will struggle to catch up to their peers if interventions do not take place early. Without appropriate interventions, struggling students fall further behind each year which results in an ever-increasing achievement gap between the struggling student and other children of the same age and grade.

Many studies point to the benefits of phonics-based instruction for struggling readers. Rayner et al., noted the efficacy of phonics instruction when he wrote, "methods that teach this principle [phonics] directly are more effective than those that do not (especially for children who are at risk in some way for having difficulty learning to read)" (2001, p. 1). The National Reading Panel (2000) claimed that purposeful instruction in phonemic awareness had been proven to improve students reading levels not only in early elementary students but also older students who have been described as having reading difficulties. Lyon (1998) suggested that for 90% to 95% of struggling readers, early interventions, provided by skilled educators, which included phonemic awareness and phonics could increase students' reading skills to an average level. Moats (1994) maintained that skillfully implemented phonics instruction is particularly successful for struggling readers.

The benefits of phonics were corroborated in a controlled experimental study conducted by Gittelman and Feingold. In this study, the phonetic content of the Daniels and Diack Standard Reading Test was administered to students exhibiting reading difficulties. This test showed consistent, statistically significant differences favoring children who received intensive phonetic instruction. Furthermore, the results were

sustained for up to eight months after interventions were complete, which was notably better than students in the control group (1983, p. 182).

In addition to readers who experience learning difficulties, there are other students who exhibit characteristics associated with specific reading disabilities such as dyslexia. The International Dyslexia Association offers this definition of dyslexia:

> Dyslexia is a specific learning disability that is neurobiological in origin. It is characterized by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge. (2002)

Learning to read is particularly difficult for students with dyslexia because these students do not benefit from approaches that are effective for most students such as Balanced Literacy. By definition, students with dyslexia show difficulties which are unexpected in relation to effective classroom instruction and cognitive abilities. Dyslexia is generally a result of phonological deficits which are neurological in nature. Students with dyslexia require a structured approach to phonics-based decoding skills. Because dyslexia is not a result of cognitive deficits, these students typically show great progress when appropriate instruction is provided.

The International Dyslexia Association recommends the approach of structured literacy which uses an explicit and systematic process to decode words. While this

approach helps students with dyslexia, there is evidence that it is also effective for students not identified with dyslexia, but for whom other methods of intervention have proven to be ineffective. Structured literacy instruction, as indicated by the International Dyslexia Association, is marked by several essential phonics-based features:

- Phonology

- Sound-Symbol Association

- Syllable Instruction

- Morphology

- Syntax

- Semantics

There is a wide range of diverse reading difficulties not limited to those explored in this review of literature. Additionally, there are a multitude of potential factors which may contribute to literacy problems.

Knowing that all beginning teachers will have classes that include individuals with differences in language, culture, economic status, and reading abilities, it is incumbent on teacher educators to sufficiently prepare preservice teachers for the realities of their future students. For these preservice teachers, the knowledge of phonics is essential if they are going to help their students learn to read. As Lyon said, "There is no way to bypass the decoding and word recognition stage of reading" (1998, p. 11).

Preservice Teachers: Phonetic Knowledge and Instruction

Fundamental knowledge of the phonics-based principles and word study will improve planning and teaching as preservice teachers learn about the most appropriate instructional interventions for their future students, based on individual learner's

developmental levels and needs. Indeed, in the case of phonics instruction among preservice teachers, a foundational knowledge must be acquired before phonics-based instruction can be provided in the elementary classroom. The readiness of preservice teachers to apply knowledge and skills is essential. Because of the research-based evidence that phonics-based principles are fundamental to successful reading programs, the current study will focus on the phonics-based knowledge of preservice teachers within the context of a teacher preparation program.

Without a doubt, the preparation of preservice reading teachers is crucial. Darling-Hammond (2000) reported that student reading achievement has been positively and strongly linked to teacher knowledge about the comprehensive nature of language structure. Furthermore, teacher preparation in the knowledge and skills of content is a better predictor of student achievement than class size, overall spending, or teacher salaries. According to Cheesman et al., successful teacher preparation is responsible for up to 60% of student achievement variance even after considering demographic diversity (2009, p. 272).

With such strong evidence of the powerful influence of teachers, it is imperative that they are adequately prepared to teach reading. Moats questioned whether most teachers have a sufficient command of language structure and knowledge of phoneme-grapheme correspondence for them to effectively teach struggling readers, suggesting that many teachers are improperly prepared (1994, p. 86). Moats asserted that research findings showed a lack of knowledge in fundamental phonics-based concepts ranging from terminology to basic phonological and phonemic awareness. If the knowledge of

fundamental ideas was insufficient, advanced concepts such as structural and morphemic analysis would also be lacking.

In a study conducted by Cheesman et al., the Survey of Teacher Phonemic Awareness, Knowledge, and Skills (TPHAKS) was administered to 223 first year teachers. The results of this 15-item multiple choice assessment showed that only 18% of these teachers scored 80% or above (2009, p. 281). The authors of this study concluded that first-year teachers have an inadequate knowledge and understanding of the most basic phonics concepts. Consistent with this study, Carreker, Joshi, and Boulware-Gooden (2010) conducted a phoneme counting assessment in which teachers answered only 57% of the test items correctly. It has been suggested that the low performance on such rudimentary tasks may be traced back to ineffective teacher education programs (Binks-Cantrell, Washburn, Joshi, & Hougen, 2012; Moats, 2014).

Lyon (1998) reported that there is a common assumption that university-based teacher preparation programs do not provide adequate training for future teachers to plan and implement informed and appropriate instruction. A study by Walsh, Glaser, and Wilcox (2006) studied the syllabi of elementary reading instruction courses from 72 universities. They found that only 15% of the objectives included in the syllabi aligned with current research demonstrating phonics as an essential component of reading. This is a serious concern for teacher educators who are committed to providing preservice teachers with instruction based on the latest research findings, particularly in a discipline as essential as reading.

Moats contended that teacher educators should emphasize the significance of well-designed and systematic code-based instruction for the preservice teachers in their

instruction concerning knowledge of phonics and word structure. This instruction must be explicit (2014). Brady and Moats (1997) further argued that intensifying the preparation of preservice teachers in phonics is the most beneficial way to enable future teachers to impact the reading achievement of their future students. Ehri and Flugman studied a successful program of intensive phonics instruction and voiced the sentiment, "we would hope that preservice instruction could be equally successful in providing teachers with the linguistic knowledge and instructional practices along with a systematic, research-based phonics curriculum to teach phonics to beginning readers" (2018, p. 452). Concerning the explicit instruction in teacher preparation courses, Moats stated:

> Contrary to expectation, teachers do not display fully explicit awareness of spoken language structure and its relationship to writing just because they themselves are literate… In fact, learning to appreciate and articulate the structure of spoken language challenges many adults despite (or perhaps because of) their own reading skill (1994, p. 88)

Simply being a fully literate adult does not ensure the deeper understanding of language skills. If preservice teachers have not received phonics-based instruction, teaching phonics as a component of reading and orthographic literacy instruction would understandably present a challenge. Gündogmus (2018) maintained that attitudes and initial conceptions of teacher candidates studying reading instruction are shaped by their own experiences as elementary students. Cheesman et al., (2009) shared this idea, suggesting that teaching phonics to preservice teachers can be problematic as prior experiences impact the readiness to develop these skills.

Knowledge is accrued through instruction and experience. Moats concurred that such knowledge is only developed through time and effort (1994). In order to assure that preservice teachers develop phonics-knowledge and teaching skills, teacher educators must ensure that preservice teachers receive excellent instruction combined with real-world experience. Darling-Hammond and Baratz-Snowden underscored the important role of teacher preparation programs, when they wrote, "Without doubt, preservice teachers must be equipped to plan and deliver reading instruction and interventions that are individualized for each student to reach the goal of literacy for all students" (2007, p. 112).

The significance of phonics-based instruction warrants further investigation in the preparation of preservice teachers. Design-based research (DBR) will be used to explore the use of multiple assessments to measure the acquisition of phonics-based knowledge among preservice teachers in an introductory course of reading instruction and phonics. The following chapter will describe the nature of this research.

Chapter 3: Methodology

The purpose of the study is to explore the phonics-based knowledge of preservice teachers in the specific setting of an introductory reading and phonics course taught at a large urban university. In the design of this study, archival data was used from an introductory reading course, Elementary Reading and Phonics Instruction, taught by this researcher in a previous semester. This course was developed using the design-based research (DBR) research process in cooperation with the University-School Partnership for the Renewal of Education Preparation (US PREP). The particular milieu of this study lends itself to the action-oriented method of DBR. This chapter will detail the epistemological orientation of DBR, the context of the study, the archival participant data collection, the methods of data collection, and analysis. The chapter will conclude by addressing issues of validity and reliability.

Research Questions

This study is guided by one primary research question and one sub question.

- How can multiple assessments be utilized to measure the development of phonics-based knowledge among preservice teachers within the context of an introductory reading instruction and phonics course at a large urban university?
    - How can the results of pre-assessments, post-assessments, and summative assessments be analyzed and applied to promote continuous improvement within the course and in the design of future course iterations?

Research Design

As an emerging research methodology, the primary purpose of DBR is to "improve, not to prove" instructional practice (Reeves, 1999, p. 18). DBR is defined by Barab and Squire (2004) as "a series of approaches, with the aim of producing new theories and practices that potentially impact learning and teaching in naturalistic settings" (p. 108). DBR cannot be described as purely positivist nor interpretivist because it draws from a wide variety of research methodologies (Abdallah & Wegerif, 2014, p. 2). As in grounded theory research, the researcher does not begin with a theory, but begins with a model of study and allows the results to emerge over time (Strauss & Corbin, 1990, p. 23). As a theory building approach, it stresses the need for the development of design principles that guide, inform, and improve both practice and research in educational contexts (Anderson & Shattuck, 2012, p. 16). Designed-based research is often perceived as analogous to action-oriented research due to similar epistemological, ontological, and methodological features. Cole, Purao, Rossi, and Sein (2005) asserted that action-oriented research and DBR share a common foundation of pragmatism.

DBR is similar to action research Reeves agreed that DBR cannot be conducted in isolation from practice (2006). The goal is to conduct research in an authentic context to improve practice. DBR is a methodology designed by and for educators that seeks to increase the impact, transfer, and translation of education research into improved practice. The DBR process must be coordinated with practice. It is designed to improve instruction, resulting in the flexibility of interventions and timely instructional adjustments to address the needs of the students.

Herrington, McKenney, Reeves, and Oliver suggest that DBR is not a
methodology as much as it is a flexible research approach (2007, p. 4094). Maxcy (2002)
contended that it is logical for researchers to choose and utilize multiple methods as they
determine the most fitting approach to enable them to apply findings that are practical
and transferable to similar contexts. The goal is to use formative evaluation in an iterative
manner to inform and improve practice. In the research conducted by Herrington et al.,
(2007) Reeves contributed a chart created in 2006, which outlined the iterative steps of
DBR (see Figure 2).

Design-Based Research

| Analysis of Practical Problems by Researchers and Practitioners in Collaboration | Development of Solutions Informed by Existing Design Principles and Technological Innovations | Iterative Cycles of Testing and Refinement of Solutions in Practice | Reflection to Produce "Design Principles" and Enhance Solution Implementation |

Refinement of Problems, Solutions, Methods, and Design Principles

Figure 2: Design-Based Research flow chart
Design-based research approaches in (Reeves, 2006, p. 4090)

Context for Research

Site. This study was conducted within the teacher preparation program of a large, urban
university. In 2017, the student enrollment in the College of Education included 979
students (see Figure 4).

College of Education Demographic Breakdown - 2017
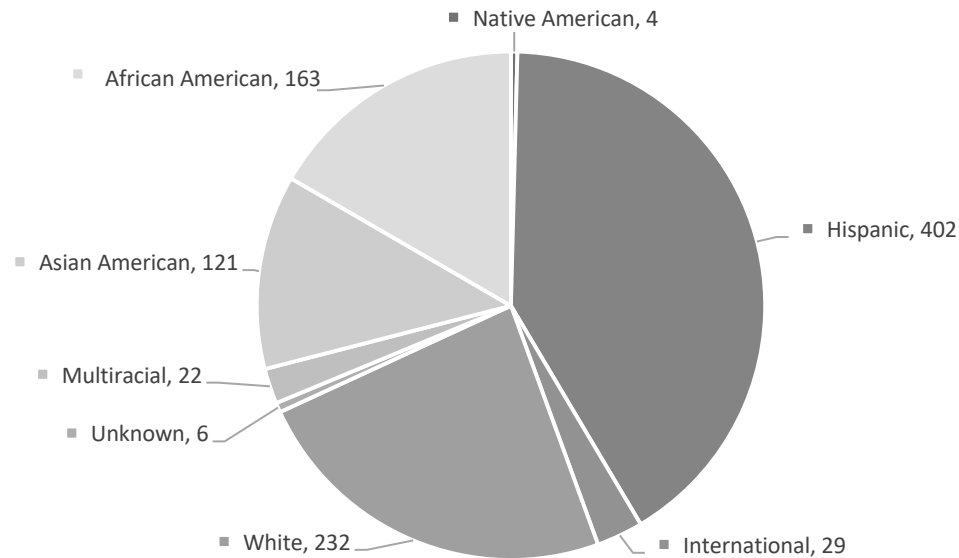
Figure 3: 2017 College of Education Demographic Breakdown
Asian American-163, Asian American-121, Hispanic-402, International-29.
Native American-4, White-232, Unknown-6 Multiracial-22. (Data retrieved
from (University of Houston, 2017)

Partnership. This study was coordinated with the efforts of the University-

School Partnerships for the Renewal of Educator Preparation (US PREP). According to

the US PREP Preparation Manual (2018), US PREP is a national collaboration of

university-based teacher preparation programs working to promote innovative practice

and prepare classroom-ready teachers. The goals of US PREP are to maintain a focus on

practice in order to promote a coherent vision of teaching, utilizing the collection of

student achievement data to create instructional goals and interventions.

Colleges of education associated with US PREP are required to design courses

through a process of purposefully planning objectives-based modules of instruction and

measuring course objectives through short pre-assessments and post-assessments to

calculate the changes in student knowledge and understanding of key concepts within each module (ND).

The university partnerships provide opportunities for course designers to collaboratively consult with coaches about course design, assessment design, and instructional interventions. Data collection and analysis derived from multiple assessments based on the course modules provide an opportunity for practical application of data throughout current and future course designs and iterations. Through design-based research, the use of data informs the instructor concerning the impact of each module of the course on preservice teachers' learning and development.

Introductory reading instruction and phonics course. The course studied in this research project was Elementary Reading and Phonics Instruction taught in the spring of 2018. The course was designed in collaboration with colleagues associated with US PREP. The data examined from the course in this report is derived only from the author of this study.

This study was based on two modules of instruction from an Elementary Reading and Phonics Instruction course taught at a large urban university. The approach for the course was directed by Stage One and Stage Two of the US PREP guidelines: establishing the context of the course and developing learning objectives.

In accordance with US PREP expectations, student knowledge was evaluated for each module using a pre-assessment to evaluate prior knowledge of the subject area. At the conclusion of the module, a post-assessment was given to enable the instructor to interpret the growth of student knowledge. The current study adapted this model by

adding a summative assessment for each module at the end of the course to analyze the extent of information retained by the preservice teachers throughout the semester.

Interventions, iterations, and refinements. The idea behind the US PREP initiative is the use of an iterative model to formulate instructional interventions based on well-defined objectives anchored in recognized standards. The iterations serve two purposes. First, a small-scaled iteration process is embedded in the course through the constructive use and analysis of multiple assessments. The results of these assessments indicate trends and patterns of current students enrolled in the course. The deliberate use of these results to immediately address and adjust instruction exemplifies one type of the iterative practice. On a larger scale, the data compiled throughout the semester, and throughout multiple semester iterations, provides the researcher with the opportunity to analyze long-term trends and enact meaningful course refinements.

This is the idea behind data-driven planning and the use of interventions within the context of this study. Multiple forms of data may be used to refine instruction as teacher educators model interventions, reflect upon the effectiveness of the interventions, analyze pre-assessment and the post-assessment results, and provide and receive student feedback. This intentional use of data not only helps improve the current class experience, but it also provides valuable insight as future courses are designed. "Quality teaching is maintained through accountability for the integrity and trustworthiness of pedagogical practices based on evidence from assessments of students' progress in relation to expected learning outcomes. In cases where students do not accomplish the expected learning outcomes, the teacher assumes responsibility for making adjustments

in practices based on evidence from appropriate assessments of students' performance"

(Southerland, Smith, Sowell, & Kittleson, 2007 as cited in Hollins, 2011).

It is inherent in the DBR process that course instructors see themselves as

educators rather than simply presenters of knowledge. The fact is, teaching has not

occurred if students have not learned. Only by administering multiple, purposeful,

assessments can students' learning be measured.

Data Collection and Analysis

Participants. This study was conducted using archival data, of anonymously

reported assessments from 40 students enrolled in Elementary Reading and Phonics

Instruction in a teacher preparation program in the spring of 2018. All 40 students were

female, were either in the first or second semester of the teacher education program, and

all were pursuing bachelor's degrees in teaching and learning with a generalist, EC-6

certification. The demographics showed 25 were Hispanic, 11 were Caucasian, two were

African American, and two were Vietnamese. Four students reported having a first

language other than English. Because all data used in this study was derived from

previous coursework and has been reported anonymously, this study constituted a

minimal risk to the former students.

Study design and analysis. This study includes the course development

highlighting the identification of objectives based on the state English Language Arts and

Reading Generalist EC-6 Standards, the knowledge descriptors in the educator standards,

and student standards identified in the Texas Essential Knowledge and Skills (TEKS)

(Texas State Board of Education, 2009; ILA & NAEYC, 1998). The design of the study

will demonstrate the development of two modules of instruction with a concentration on

phonics-based skills of preservice teachers. The inclusion of multiple tables throughout the findings is deliberate and critical to demonstrate the detailed alignment between course objectives, standards, and TEKS. The planning of these objectives and standards is the core of the assessments. Each item on the assessments was carefully designed to align with the tables of standards. Each item represents a specific objective that was reported through descriptive analysis.

The raw data of de-identified student assessment results were presented in a spreadsheet format which calculated the numeric and percentage-based data in a variety of ways: by the assessment scores of individual students, by assessment scores of the class as a whole, and by objective-based results.

The use of this raw data from the multiple course assessments was used to analyze and interpret the measurement of the development of phonics-based knowledge among preservice teachers. An example of the spreadsheet format used for raw data analysis is shown in Figure 4. Chapter four will provide detailed results of assessment outcomes presented by item analysis, alignment of items to specific standards, and results of phonics-based knowledge progression by objectives and total scores.

Assessment Results - Module One
Pre-Assessment, Post-Assessment, and Final Comprehensive Assessment
Elementary Reading and Phonics

Skill	PST01 Pre	PST01 Post	PST01 Summ	PST02 Pre	PST02 Post	PST02 Summ	PST03 Pre	PST03 Post	PST03 Summ	PST04 Pre	PST04 Post	PST04 Summ	PST05 Pre	PST05 Post	PST05 Summ	PST06 Pre	PST06 Post	PST06 Summ	PST07 Pre	PST07 Post	PST07 Summ	PST08 Pre	PST08 Post	PST08 Summ	PST09 Pre	PST09 Post	PST09 Summ	PST10 Pre	PST10 Post	PST10 Summ	Pre-Assessment Total	Post-Assessment Total	Summative Assessment Total	Pre-Assessment %	Post-Assessment %	Summative Assessment %
1 - Phonemes	1	1	1		1	1		1	1		1	1	1	1	1		1	1		1	1	1	1	1		1	1	1	1	1	4	10	10	40%	100%	100%
2 - Close Syllable	1	1	1		1		1		1		1	1				1		1	1	1	1	1	1	1		1		1		1	6	6	7	60%	60%	70%
3 - Consonant Blend		1			1				1		1						1			1			1			1	1	1	1	1	1	8	3	10%	80%	30%
4 - Open Syllable			1		1		1	1	1		1	1		1	1			1		1	1		1	1	1	1	1		1	1	2	8	9	20%	80%	90%
5 - Soft G/C	1		1	1		1	1	1	1	1		1	1	1	1	1	1	1	1		1	1		1	1	1	1			1	9	4	10	90%	40%	100%
6 - Cueing Systems	1	1	1			1		1	1	1		1			1		1	1		1	1		1	1			1			1	2	5	10	20%	50%	100%
7 - Schwa		1	1	1	1	1	1	1	1		1	1	1	1		1		1	1	1	1		1	1						1	5	7	8	50%	70%	80%
8 - Diphthong		1			1	1		1	1	1		1	1		1					1	1		1	1			1				2	5	7	20%	50%	70%
9 - Digraph		1	1		1	1		1			1				1		1	1		1	1		1	1		1	1		1	1	0	9	8	0%	90%	80%
10 - Silent e		1	1		1	1		1	1		1	1		1	1		1	1		1	1		1	1		1	1			1	0	9	10	0%	90%	100%
TOTAL CORRECT	4	8	8	2	8	7	4	8	9	3	7	8	4	5	7	3	6	8	3	9	9	3	9	9	2	7	8	3	4	9	31	71	82	31%	71%	82%
Percentage Correct	40%	80%	80%	20%	80%	70%	40%	80%	90%	30%	70%	80%	40%	50%	70%	30%	60%	80%	30%	90%	90%	30%	90%	90%	20%	70%	80%	30%	40%	90%						
Improvement from Pre-Assessment			4			5			5			4			1			3			6			6			5			1						

Figure 4: Module One Assessment Results - Sample

Validity and Reliability

In design-based research, the traditional positivist measures of validity and reliability do not accurately represent the significance of the research due to the highly

contextualized site, the particular composition of the assessments, the continuous adjustments and refinements throughout the course, and the active participation of the researcher. Such is the nature of DBR.

Johnson and Christenson (2014) wrote that descriptive validity is the determination of whether or not the researcher accurately reports the data. Because quantitative data is collected and analyzed throughout the course, Johnson's and Christenson's words are particularly compelling. As this data is used to inform the design of future courses, the process-based nature of the methodology does not truly represent the standards of positivist research.

Therefore, similar to qualitative research, one standard must be trustworthiness. Rather than pursuing a goal of generalization, a more appropriate goal is practicality and transferability. Ann Brown, one of the early proponents of DBR, noted that "an effective intervention should be able to migrate from our experimental classroom to average classrooms operated by and for average students and teachers, supported by realistic technological and personal support" (1992, p. 143).

Barab and Squire put forth the idea that, "if a researcher is intimately involved in the conceptualization, design, development, implementation, and researching of a pedagogical approach, then ensuring that researchers can make credible and trustworthy assertions is a challenge" (2004, p. 10). While many scholars associate strong research as requiring a degree of skepticism and detachment (Norris, 1997), DBR requires collaboration, and commitment to support interventions and improvement of practice (Anderson & Shattuck, 2012, p. 18). This challenge is typical in the field of qualitative and critical research.

Without a doubt, every researcher possesses a degree of bias either implicitly or explicitly. However, Onwuegbuzie and Leech (2007) contend that the personal nature of DBR methodology may add as much as it detracts from the validity. Nevertheless, it must be acknowledged that the personal interaction of the researcher to the research creates a potential conflict which could result in unintentional bias. Ultimately, validity must be determined by the trustworthiness of the researcher and the credibility of the research design.

As both the researcher of this study and instructor of the course, I acknowledge I am deeply invested in the process and results of this work. This awareness has allowed me to be conscious of the potential bias and to approach this study and research with the perspective of measuring and promoting authentic student growth and improving my personal and professional teaching skills. I have also been intentional about maintaining my role as a reflective practitioner to minimize research bias.

After reviewing the characteristics of DBR, I have determined that this methodology satisfies the "fitness for purpose" goal of this research project based on the credibility of the research design.

Establishing Credibility of the Research Design

With the admitted issues of potential bias and lack of a large sample size to obtain statistically valid quantitative results, the credibility of the research methods must be established in other ways. This study focuses on the US PREP DBR model. Because US PREP works with a consortium of universities, they established specific expectations of design and assessment procedures in order to obtain consistency among the participants.

All courses designed through the US PREP program must follow the planning stages

shown in Table 1.

US PREP 5 Stages of Course Planning	
Stage One: *Background and Contexts of Course or Field Experience*	In accordance with the US PREP template, the introductory reading instruction and phonics course is a phase one (P1) course designed to emphasize the foundational knowledge and skills required in the discipline. It is taken in the first or second semester of the teacher preparation program.
Stage Two: *Specify Learning Outcomes of the Course or Field Experience*	Learning objectives and standards will be thoroughly discussed in chapter 4 with course design and objectives.
Stage Three: *Organization of Learning Outcomes in Sequenced Modules*	The organization of sequenced modules will be addressed in chapter 4 with design of modules.
Stage Four: *Develop and Measure Interventions for Module*	Instructional interventions are outside the scope of this research. The current study is designed to define phonics-based knowledge objectives, measure the development of knowledge among preservice teachers, and identify the outcomes and implications of the assessment results.
Stage Five: *Measuring Learning Outcomes*	Development and procedures of writing specific objectives-based assessments are outlined. Development of course assessments will be addressed in chapter 4, design of assessments.

Table 1: US PREP 5 Stages of Course Planning
The full templates of the five US PREP design stages may be found in Appendix B

Designing a course with the US PREP model calls for collaboration with

colleagues and US PREP coaches to methodically align multiple objectives and standards

within the course. One major component of the US PREP model is the instructional

module organization. Breaking the course into instructional modules provides certain

advantages over typical course instructional methods. Modular instruction allows

instructors to focus intensely on specific course objectives. The use of modular pre-

assessments establishes a baseline of student knowledge which allows the instructor to

customize the instruction based on the needs of the students. The modular post-

assessments provide objective data with which to measure the effectiveness of

instruction. It also gives the instructor data about student learning at earlier stages in the

course, allowing them to make iterative changes which should lead to greater learning.

With modular pre-assessments and post-assessments playing such a big role in the

US PREP DBR model, it is imperative that they are designed properly and consistently.

The design of the pre-assessment and post-assessment for each instructional module must

demonstrate an explicit correlation to both the specific course objectives covered in the

instructional module and the state educator standards.

According to "Guiding Questions and Deadlines for Designing Courses and Field

Experiences Using Design Based Research in A Progressive Process" by US PREP,

teacher preparation courses are divided into three categories:

Phase One (P1) courses emphasize the foundational knowledge and skills required

in the discipline. Phase Two (P2) courses incorporate the knowledge and skills

from P1 and assimilate them into practice in guided and hypothetical settings such

as case studies. Phase Three (P3) courses integrate the knowledge and skills from

phase 2 with the simulated application from Phase 2, and then employ them in

real world settings (see Appendix B).

The introductory reading instruction and phonics course in this study was considered a

phase one course because the preservice teachers had not received any previous

instruction concerning reading or phonics. Therefore, the learning objectives and the

assessment items for this course were grounded in foundational knowledge-based

principles.

Learning Outcomes and Sequenced Modules

For the purpose of this study, two specific instructional modules based on course

objectives were addressed.

Module One: Foundational Concepts of Phonics and Word Study

Module Two: Developmental Word Study and Orthography

Two specific knowledge-based objectives from the course syllabus were drawn for use in

modules one and two. Preservice teachers will be able to:

• demonstrate an understanding of foundational principles of reading, including

phonics as a component of language and literacy instruction

• analyze specific reading and spelling behaviors of EC-6 students

These course objectives were purposefully aligned with the Texas English Language Arts

and Reading Generalist EC-6 Standards (2008), the knowledge-based descriptors within

the categories of these standards, and the student expectations for the English Language

Arts and Reading Texas Essential Knowledge of Skills (TEKS) (2008). This alignment of

course objectives to established standards is not only a requirement of US PREP, but it is

also simply a good teaching practice. The standards from the Texas English Language

Arts and Reading Generalist EC-6 Standards are shown in Table 2.

Texas English Language Arts and Reading Generalist EC-6 Standards Addressed in an introduction of reading and phonics course in the spring of 2018	
I. Oral Language	Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills.
II. Phonological and Phonemic Awareness	Teachers of young students understand the components of phonological and phonemic awareness and utilize a variety of approaches to help young students develop this awareness and its relationship to written language.
III. Alphabetic Principle	Teachers of young students understand the importance of the alphabetic principle to reading English, know the elements of the alphabetic principle, and provide instruction that helps students understand that printed words consist of graphic representations that relate to the sounds of spoken language in conventional and intentional ways.
IV. Literacy Development and Practice	Teachers of young students understand that literacy develops over time and progresses from emergent to proficient stages. Teachers use a variety of contexts to support the development of young students' literacy.
V. Word Analysis and Decoding	Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
X. Assessment and Instruction of Developing Literacy	Teachers understand the basic principles of assessment and use a variety of literacy assessment practices to plan and implement literacy instruction for young students

Table 2: Texas English Language Arts and Reading Generalist EC-6 Standards

Within each of the standards shown in Table 2, categories are designed to distinguish

knowledge descriptors from application descriptors. An example of this format is shown

in Figure 5.

Figure 5: English Language Arts and Reading Generalist EC-6 Guidelines
The full document of the Texas English Language Arts and Reading
Generalist EC-6 Standards is in appendix A

Measuring Learning Outcomes

For the purpose of this research study, Stage Five: Measuring Learning
Outcomes, is the most significant. The data in this study was derived from six
assessments: the pre-assessment, the post-assessment, and the summative assessment for
each module. The summative assessment was administered at the end of the course to
measure the knowledge retained throughout the course. The summative assessments were

not prescribed by the US PREP model, but as the instructor of the course, this researcher chose to add summative assessments at the end of the semester.

The requirements of US PREP were very specific in the development of the assessment design. Each item of the assessment must be aligned not only to the course objectives and content but also in style between the pre-assessment and the post-assessment. This was established during the summer of 2016, by a series of interactive video conferences held with the directors of the US PREP program. The purpose of such detailed alignment was to accurately measure the content knowledge rather than risk possible confusion concerning the wording of a question. "Guiding Questions and Deadlines for Designing Courses and Field Experiences Using Design Based Research in A Progressive Process" (see Appendix B) clarifies the full process for developing questions. An excerpt is included below.

Guiding Questions:
1. Do your pre and post questions for learning outcome measure the same category of Hollins (2011) framework of your learning outcome? Please explain.
2. Do your pre and post questions for learning outcome measure the same P1, P2, or P3 as your learning outcome? Please explain.
3. Are your pre and post questions for learning outcome parallel to each other? In other words, do they measure the same learning outcome and have similar difficulty levels. Please explain below.

Table 3: Guiding Questions from US PREP Templates in Appendix B

An example demonstrating the deliberate design of various assessment items from the US PREP Symposium in 2016 are shown in Table 4.

Sample Question from US PREP Symposium, August 8-9, 2016	
Aligned Pre-Assessment Questions	Aligned Post-Assessment Questions
Among the components of the writing process, which of the following focuses on creating a preliminary version of a text which students select words and construct sentences that most accurately show ideas? a. Planning b. Drafting c. Revising d. Editing	Among the components of the writing process, which of the following involves making content changes after students first have evaluated problems within their text that obscure their intended meaning? a. Planning b. Drafting c. Revising d. Editing
The kindergarten grade team is preparing a presentation for Parent Night about their comprehensive literacy program, including guided reading. One of the key beliefs they will most likely share is that: a) it is their responsibility to provide differentiated instruction to meet the needs of each student. c) all students will follow the same path when learning to read in order to be prepared for first grade. d) guided reading is the only context that contributes to a student's literacy development.	The third-grade team is preparing a presentation for Family Open House about their comprehensive literacy program, including guided reading. One of the key beliefs they will most likely share is that: a) it is their responsibility to provide differentiated instruction to meet the needs of each student. b) it is their responsibility to ensure that all students read the same texts each day to in order to ensure progress. c) all students will complete the same homework packets in order to be prepared for STAAR at the end of the year.
Janet is trying to find two numbers whose product is 64 and sum is 20. Find the numbers.	Tim is trying to find two numbers whose product is 45 and sum is 18. Find the numbers.
Choose one definition that best describes the meaning of Number Sense. a. Number sense is one-to-one correspondence, subitizing, number sequencing, and cardinality for amounts 1-10. b. Number sense means that one can think about and use numbers and their relationships in many different ways. (CORRECT) c. Number sense means that young children understand that counting tells how many are in a set. d. Number sense means developing a math vocabulary that allows one to make numerical comparisons in terms that everyone agrees upon.	You and your classmates are discussing the meaning of number sense. Each of you has a different definition. Whose definitions is most correct? a. Cindy-Number sense is one-to-one correspondence, subitizing, number sequencing, and cardinality for amounts 1-10. b. Marsha-Number sense means that one can think about and use numbers and their relationships in many different ways. (CORRECT) c. Jan-Number sense means that young children understand that counting tells how many are in a set. d. Peter-Number sense means developing a math vocabulary that allows one to make numerical comparisons in terms that everyone agrees upon.

Table 4: Sample Question from US PREP Symposium, August 8-9, 2016:

Design of Module One

The first module, *Foundational Concepts of Word Study and Phonics,* was

scheduled from week two to week six. This instructional module covered ten important

concepts beginning with a broad overview of a comprehensive literacy program, then

delving into the earliest principles of phonology and phonemic awareness, the alphabetic

principle, common letter-sound generalizations, and beginning syllabication patterns. The information in the following tables demonstrates the detail of the meticulous alignment undertaken for each of the ten topics which will be included on the pre-assessment, post-assessment, and summative assessment. The understanding of these alignment guides is essential to the creation and credibility of the assessments.

The specific alignment areas for each question are listed below in Table 5 through Table 14.

Module One – Alignment Tables

Module One – Foundational Concepts of Phonics and Word Study	
Pre-Assessment - Week 2 Post-Assessment - Week 6 Summative Assessment - Week 14	
Module One, Item 1	**Phonemic Awareness**
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard I	*Oral Language:* Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills.
State Standard of Teacher Knowledge 1.1k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: basic linguistic concepts (e.g., phonemes, segmentation) and developmental stages in acquiring oral language, including stages in phonology, semantics, syntax, and pragmatics, recognizing that individual variations occur
Student TEKS	K.2 (I) segment spoken one-syllable words into two to three phonemes (e.g., dog:/d/ …/o/ …/g/) 1.2 (E) isolate initial, medial, and final sounds in one-syllable spoken words 1.3 (F) segment spoken one-syllable words of three to five phonemes into individual phonemes (e.g., splat =/s/p/l/a/t/)

Table 5: Module One, Item 1 Alignment Guide

Module One, Item 2	Syllabication: Closed Syllable Generalization
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard III	Alphabetic Principle: Teachers of young students understand the importance of the alphabetic principle to reading English, know the elements of the alphabetic principle, and provide instruction that helps students understand that printed words consist of graphic representations that relate to the sounds of spoken language in conventional and intentional ways.
State Standard of Teacher Knowledge 3.2k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: expected patterns of students' alphabetic skills development and knowledge that individual variations may occur;

Student TEKS	1.3 (C) use common syllabication patterns to syllabication patterns to decode words, including:
	    (i) closed syllable (CVC) (e.g., mat, rab-bit)
	2.2 (B) use common syllabication patterns to decode words including:
	    (i) closed syllable (CVC) (e.g., pic-nic, mon-ster)
	3.1 (B) use common syllabication patterns to decode words including:
	    (i) closed syllable (CVC) (e.g., mag-net, splen-did)

Table 6: Module One, Item 2 Alignment Guide

Module One, Item 3	Consonant Blends
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard III	Alphabetic Principle: Teachers of young students understand the importance of the alphabetic principle to reading English, know the elements of the alphabetic principle, and provide instruction that helps students understand that printed words consist of graphic representations that relate to the sounds of spoken language in conventional and intentional ways.
State Standard of Teacher Knowledge 3.2k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: expected patterns of students' alphabetic skills development and knowledge that individual variations may occur

Student TEKS	1.3 (A) decode words in context and in isolation by applying common letter-sound
	    correspondences, including:
	    (iii) consonant blends (e.g., bl, st)
	2.2 (A) decode multisyllabic words in context and independent of context by applying common letter-sound correspondences including
	    (ii) consonant blends (e.g., thr, spl)

Table 7: Module One, Item 3 Alignment Guide

Module One, Item 4	Syllabication: Open Syllable Generalizations
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.1k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: that many students develop word analysis skills (e.g., decoding, blending, structural analysis, sight word vocabulary) and reading fluency in a predictable sequence, recognizing that individual variations occur
Student TEKS	1.3 (C) use common syllabication patterns to decode words, including: (ii) open syllable (CV) (e.g., he, ba-by) 2.2 (B) use common syllabication patterns to decode words including: (ii) open syllable (CV) (e.g., ti-ger) 3.1 (B) use common syllabication patterns to decode words including: (ii) open syllable (CV) (e.g., ve-to)

Table 8: Module One, Item 4 Alignment Guide

Module One, Item 5	Hard and Soft C/G Generalizations
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language
Student TEKS	1.3 (A) decode words in context and in isolation by applying common letter-sound correspondences, including: (i) single letters (consonants) including b, c=/k/, c=/s/, d, f, g=/g/ (hard), g=/j/ (soft), h, j, k, l, m, n, p, qu=/kw/, r, s=/s/, s=/z/, t, v, w, x=/ks/, y, and z

Table 9: Module One, Item 5 Alignment Guide

Module One, Item 6	Cueing System
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard VII	Reading Comprehension: Teachers understand the importance of reading for understanding, know the components of comprehension, and teach young students strategies for improving comprehension.
State Standard of Teacher Knowledge 7.4k, 7.5k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: reading comprehension as an active process of constructing meaning factors affecting students' reading comprehension, such as oral language development, word analysis skills, prior knowledge, previous reading experiences, fluency, ability to monitor understanding, and the characteristics of specific texts (e.g., structure and vocabulary)
Student TEKS	K (4) Reading/Beginning Reading/Strategies Students comprehend a variety of texts drawing on useful strategies as needed. 1 (4) Reading/Beginning Reading/Strategies Students comprehend a variety of texts drawing on useful strategies as needed. 1 (4) Reading/Beginning Reading/Strategies Students comprehend a variety of texts drawing on useful strategies as needed. 3 (2) Reading/Beginning Reading/Strategies Students comprehend a variety of texts drawing on useful strategies as needed.

Table 10: Module One, Item 6 Alignment Guide

Module One, Item 7	Schwa Generalizations
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language

Student TEKS	K (3) Reading/Beginning Reading Skills/Phonics
	    Students use the relationships between letters and sounds, spelling patterns, and morphological analysis to decode written English.
	1 (3) Reading/Beginning Reading Skills/Phonics
	    Students use the relationships between letters and sounds, spelling patterns, and morphological analysis to decode written English.
	2 (2) Reading/Beginning Reading Skills/Phonics
	    Students use the relationships between letters and sounds, spelling patterns, and morphological analysis to decode written English.
	3 (1) Reading/Beginning Reading Skills/Phonics
	    Students use the relationships between letters and sounds, spelling patterns, and morphological analysis to decode written English.

Table 11: Module One, Item 7 Alignment Guide

Module One, Item 8	Vowel Diphthongs
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language

Student TEKS	1.3 (A) decode words in context and in isolation by applying common letter-sound correspondences, including
	    (vi) vowel diphthongs including oy, oi, ou, and ow
	2.2 (A) decode multisyllabic words in context and independent of context by applying common letter-sound correspondences including
	    (iv) vowel digraphs (e.g., ie, ue, ew) and diphthongs (e.g., oi, ou)

Table 12: Module One, Item 8 Alignment Guide

Module One, Item 9	Consonant Digraphs
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language
Student TEKS	1.3 (A) decode words in context and in isolation by applying common letter-sound correspondences, including: (iv) consonant digraphs including ch, tch, sh, th=as in thing, wh, ng, ck, kn, - dge, and ph 2.2 (A) decode multisyllabic words in context and independent of context by applying common letter-sound correspondences including (iii) consonant digraphs (e.g., ng, ck, ph)

Table 13: Module One, Item 9 Alignment Guide

Module One, Item 10	Syllabication: Silent E Generalizations
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language
Student TEKS	1.3 (C) use common syllabication patterns to decode words, including: (iv) vowel-consonant-silent "e" words (VCe) (e.g., kite, hide) 2.2 (B) use common syllabication patterns to decode words including: (iv) vowel-consonant-silent "e" words (VCe) (e.g., in-vite, cape)

Table 14: Module One, Item 10 Alignment Guide

Design of Module Two

Developmental Word Study and Orthography, the second module, was covered from week seven to week eleven. This instructional module included the study of more advanced syllabication patterns in multisyllable words, structural and morphemic analysis, the introduction of grapho-phonemics, orthography, and developmental spelling patterns.

The specific alignment areas for each question are listed below in Table 15 through Table 24.

Module Two – Alignment Tables

Module Two – Developmental Word Study and Orthography	
Pre-Assessment - Week 7 Post-Assessment - Week 11 Summative Assessment - Week 14	
Module Two, Item 1	**Layers of English Orthography: Meaning Layer**
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - monitor and evaluate the effectiveness of word study instruction to recognize areas of deficiency and/or proficiency to accommodate for individual student needs.
State Standard I **State Standard IX**	Oral Language: Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills. Writing Conventions: Teachers understand how young students use writing conventions and how to help students develop those conventions.
State Standard of Teacher Knowledge **1.3k** **9.2k**	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the relationship between the development of oral language and the development of reading the relationship between spelling and phonological, graphophonemic knowledge, alphabetic awareness, and the importance of this relationship for later success in reading and writing

Student TEKS	K.5 B) recognize that compound words are made up of shorter words
	K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut")
	1.6 (B) determine the meaning of compound words using knowledge of the meaning of their individual component words (e.g., lunchtime)
	1.22 (B) use letter-sound patterns to spell:
	(i) consonant-vowel-consonant (CVC) words
	(ii) consonant-vowel-consonant-silent e (CVCe) words (e.g., "hope")
	2.5 (A) use prefixes and suffixes to determine the meaning of words (e.g., allow/disallow)
	2.23 (B) spell words with common orthographic patterns and rules:
	(ii) r-controlled vowels
	(iii) long vowels (e.g., VCe-hope)
	(iv) vowel digraphs (e.g., oo-book, fool, ee-feet), diphthongs (e.g., ou-
	out, ow-cow, oi-coil, oy-toy)
	3.4 (A) identify the meaning of common prefixes (e.g., in-, dis-) and suffixes (e.g., -full, -less), and know how they change the meaning of roots
	3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell;
	3.24 (D) spell words with common syllable constructions (e.g., closed, open, final stable syllable);
	4.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	4.22 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell
	4.22 (B) spell base words and roots with affixes (e.g., -ion, -ment, -ly, dis-, pre-)
	5.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	5.22 (B) spell words with:
	(i) Greek Roots (e.g., tele, photo, graph, meter);
	(ii) Latin Roots (e.g., spec, scrib, rupt, port, ject, dict);
	(iii) Greek suffixes (e.g., -ology, -phobia, -ism, -ist); and
	(iv) Latin-derived suffixes (e.g., -able, -ible; -ance, -ence);
	6.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes

Table 15: Module Two, Item 1 Alignment Guide

Module Two, Item 2	Layers of English Orthography: Pattern Layer
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - monitor and evaluate the effectiveness of word study instruction to recognize areas of deficiency and/or proficiency to accommodate individual student needs.
State Standard I	Oral Language: Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills.

State Standard IX	Writing Conventions: Teachers understand how young students use writing conventions and how to help students develop those conventions.
State Standard of Teacher Knowledge **1.3k**	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the relationship between the development of oral language and the development of reading
9.2k	the relationship between spelling and phonological, graphophonemic knowledge, alphabetic awareness, and the importance of this relationship for later success in reading and writing

Student TEKS	K.5 (B) recognize that compound words are made up of shorter words
	K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut")
	1.6 (B) determine the meaning of compound words using knowledge of the meaning of their individual component words (e.g., lunchtime)
	1.22 (B) use letter-sound patterns to spell:
	    (i) consonant-vowel-consonant (CVC) words
	    (ii) consonant-vowel-consonant-silent e (CVCe) words (e.g., "hope")
	2.5 (A) use prefixes and suffixes to determine the meaning of words (e.g., allow/disallow)
	2.23 (B) spell words with common orthographic patterns and rules:
	    (ii) r-controlled vowels
	    (iii) long vowels (e.g., VCe-hope)
	    (iv) vowel digraphs (e.g., oo-book, fool, ee-feet), diphthongs (e.g., ou-out, ow-cow, oi-coil, oy-toy)
	3.4 (A) identify the meaning of common prefixes (e.g., in-, dis-) and suffixes (e.g., -full, -less), and know how they change the meaning of roots
	3.24 (A)use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell;
	3.24 (D) spell words with common syllable constructions (e.g., closed, open, final stable syllable);
	4.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	4.22 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell
	4.22 (B) spell base words and roots with affixes (e.g., -ion, -ment, -ly, dis-, pre-)
	5.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	5.22 (B) spell words with:
	    (i) Greek Roots (e.g., tele, photo, graph, meter);
	    (ii) Latin Roots (e.g., spec, scrib, rupt, port, ject, dict);
	    (iii) Greek suffixes (e.g., -ology, -phobia, -ism, -ist); and
	    (iv) Latin-derived suffixes (e.g., -able, -ible; -ance, -ence);
	6.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes

Table 16: Module Two, Item 2 Alignment Guide

Module Two, Item 3	Syllabication: Multisyllable Words – Closed Generalizations

Course Objectives	Preservice teachers will be able to:
	  - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction
	
	  - analyze specific reading and spelling behaviors of EC-6 students

State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.5k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: strategies for decoding and determining the meaning of increasingly complex words

Student TEKS	K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut");
	1.3 (C) use common syllabication patterns to syllabication patterns to decode words, including:
	    (i) closed syllable (CVC) (e.g., mat, rab-bit)
	1.22 (B) use letter-sound patterns to spell:
	    (i) consonant-vowel-consonant (CVC) words
	12.2 (B) use common syllabication patterns to decode words including:
	    (i) closed syllable (CVC) (e.g., pic-nic, mon-ster)
	3.1 (B) use common syllabication patterns to decode words including:
	    (i) closed syllable (CVC) (e.g., mag-net, splen-did)
	3.24 (D) spell words with common syllable constructions (e.g., closed, open, final stable syllable)

Table 17: Module Two, Item 3 Alignment Guide

Module Two, Item 4	Syllabication: Multisyllable Words – Open Generalizations

Course Objectives	Preservice teachers will be able to:
	  - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction
	  - analyze specific reading and spelling behaviors of EC-6 students

State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.5k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: strategies for decoding and determining the meaning of increasingly complex words

Student TEKS	1.3 (C) use common syllabication patterns to decode words, including
	    (ii) open syllable (CV) (e.g., he, ba-by)
	2.2 (B) use common syllabication patterns to decode words including
	    (ii) open syllable (CV) (e.g., ti-ger)
	3.1 (B) use common syllabication patterns to decode words including
	    (ii) open syllable (CV) (e.g., ve-to)

	3.24 (D) spell words with common syllable constructions (e.g., closed, open, final stable syllable)

Table 18: Module Two, Item 4 Alignment Guide

Module Two, Item 5	**Structural/Morphemic Analysis**
Course Objectives	Preservice teachers will be able to: 　- demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction 　- analyze specific reading and spelling behaviors of EC-6 students
State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.6k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: 　the importance of word recognition skills (e.g., decoding, blending, structural analysis, sight word vocabulary) to reading comprehension and know a variety of strategies to help the young student develop and apply word analysis skills
Student TEKS	1.3 (F) use knowledge of the meaning of base words to identify and read common compound words 1.22 (D) spell base words with inflectional endings (e.g., adding "s" to make words plurals) 2.2 (D) read words with common prefixes (e.g., un-, dis-) and suffixes (e.g., -ly, -less, -ful) 2.23 (D) spell base words with inflectional endings (e.g., -ing and -ed) 2.5 (A) use prefixes and suffixes to determine the meaning of words (e.g., allow/disallow) 2.23 (D) spell base words with inflectional endings (e.g., -ing and -ed) 3.1 (A) decode multisyllabic words in context and independent of context by applying common spelling patterns including 　　　(iv) using knowledge of common prefixes and suffixes (e.g., dis-, -ly) 　　　(v) using knowledge of derivational affixes (e.g., -de, -ful, -able) 3.4 (A) identify the meaning of common prefixes (e.g., in-, dis-) and suffixes (e.g., -full, -less), and know how they change the meaning of roots 3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell 4.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes 4.22 (B) spell base words and roots with affixes (e.g., -ion, -ment, -ly, dis-, pre-) 5.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes 5.22(B) spell words with: 　　　(i) Greek Roots (e.g., tele, photo, graph, meter) 　　　(ii) Latin Roots (e.g., spec, scrib, rupt, port, ject, dict) 　　　(iii) Greek suffixes (e.g., -ology, -phobia, -ism, -ist) 　　　(iv) Latin-derived suffixes (e.g., -able, -ible; -ance, -ence) 6.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes

Table 19: Module Two, Item 5 Alignment Guide

Module Two, Item 6	Developmental Spelling Patterns: Within Word Stage
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students - administer word study assessments to EC-6 students and interpret the results to plan developmentally appropriate instruction
State Standard IX	Writing Conventions: Teachers understand how young students use writing conventions and how to help students develop those conventions.
State Standard of Teacher Knowledge 9.3k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the stages of spelling development (prephonetic, phonetic, transitional, and conventional) and how and when to support students' development from one stage to the next
Student TEKS	K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut"); 1.3 (C) use common syllabication patterns to syllabication patterns to decode words, including: (i) closed syllable (CVC) (e.g., mat, rab-bit) 1.22 (B) use letter-sound patterns to spell: (i) consonant-vowel-consonant (CVC) words 12.2 (B) use common syllabication patterns to decode words including: (i) closed syllable (CVC) (e.g., pic-nic, mon-ster) 3.1 (B) use common syllabication patterns to decode words including: (i) closed syllable (CVC) (e.g., mag-net, splen-did) 3.24 (D) spell words with common syllable constructions (e.g., closed, open, final stable syllable)

Table 20: Module Two, Item 6 Alignment Guide

Module Two, Item 7	Developmental Spelling Patterns: Derivational Stage
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students - administer word study assessments to EC-6 students and interpret the results to plan developmentally appropriate instruction
State Standard IX	Writing Conventions: Teachers understand how young students use writing conventions and how to help students develop those conventions.
State Standard of Teacher Knowledge 9.3k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the stages of spelling development (prephonetic, phonetic, transitional, and conventional) and how and when to support students' development from one stage to the next

Student TEKS	1.3 (F) use knowledge of the meaning of base words to identify and read common compound words
	1.22 (D) spell base words with inflectional endings (e.g., adding "s" to make words plurals)
	2.2 (D) read words with common prefixes (e.g., un-, dis-) and suffixes (e.g., -ly, -less, -ful)
	2.23 (D) spell base words with inflectional endings (e.g., -ing and -ed)
	2.5 (A) use prefixes and suffixes to determine the meaning of words (e.g., allow/disallow)
	2.23 (D) spell base words with inflectional endings (e.g., -ing and -ed)
	3.1 (A) decode multisyllabic words in context and independent of context by applying common spelling patterns including
	       (iv) using knowledge of common prefixes and suffixes (e.g., dis-, -ly)
	       (v) using knowledge of derivational affixes (e.g., -de, -ful, -able)
	3.4 (A) identify the meaning of common prefixes (e.g., in-, dis-) and suffixes (e.g., -full, -less), and know how they change the meaning of roots
	3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell
	4.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	4.22 (B) spell base words and roots with affixes (e.g., -ion, -ment, -ly, dis-, pre-)
	5.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	5.22(B) spell words with:
	       (i) Greek Roots (e.g., tele, photo, graph, meter)
	       (ii) Latin Roots (e.g., spec, scrib, rupt, port, ject, dict)
	       (iii) Greek suffixes (e.g., -ology, -phobia, -ism, -ist)
	       (iv) Latin-derived suffixes (e.g., -able, -ible; -ance, -ence)
	6.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes

Table 21: Module Two, Item 7 Alignment Guide

Module Two, Item 8	Developmental Spelling Stages: Emergent Stage
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students - administer word study assessments to EC-6 students and interpret the results to plan developmentally appropriate instruction - monitor and evaluate the effectiveness of word study instruction to recognize areas of deficiency and/or proficiency to accommodate for individual student needs.
State Standard VIII	Development of Written Communication: Teachers understand that writing to communicate is a developmental process and provide instruction that helps young students develop competence in written communication.
State Standard of Teacher Knowledge 8.1k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: that young students go through predictable stages in acquiring writing conventions, including the physical and cognitive processes involved in letter formation, word writing, sentence construction, spelling, punctuation, and grammatical expression, but that individual students vary in development of these conventions
Student TEKS	K.18 (A) use phonological knowledge to match sounds to letters K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut")

Table 22: Module Two, Item 8 Alignment Guide

Module Two, Item 9	Graphophonemic Representation
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction
State Standard III	Alphabetic Principle: Teachers of young students understand the importance of the alphabetic principle to reading English, know the elements of the alphabetic principle, and provide instruction that helps students understand that printed words consist of graphic representations that relate to the sounds of spoken language in conventional and intentional ways.
State Standard of Teacher Knowledge 3.1k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the importance of the elements of the alphabetic principle, including letter names, graphophonemic knowledge, and the relationship of the letters in printed words to spoken language
Student TEKS	K.1 (A) recognize that spoken words can be represented by print for communication; K.1 (B) identify upper- and lower-case letters; K.1 (C) demonstrate the one-to-one correspondence between a spoken word and a printed word in text K.3 (A) identify the common sounds that letters represent K.18 (A) use phonological knowledge to match sounds to letters

| | 1.1 (A) recognize that spoken words are represented in written English by specific sequences of letters
1.22 (A) use phonological knowledge to match sounds to letters to construct known words
2.23 (A) use phonological knowledge to match sounds to letters to construct unknown words
3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell |

Table 23: Module Two, Item 9 Alignment Guide

Module Two, Item 10	Orthographic Meaning
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction
State Standard V	Word Analysis and Decoding: Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language
Student TEKS	K.1 (A) recognize that spoken words can be represented by print for communication; K.1 (C) demonstrate the one-to-one correspondence between a spoken word and a printed word in text K.3 (A) identify the common sounds that letters represent K.18 (A) use phonological knowledge to match sounds to letters 1.1 (A) recognize that spoken words are represented in written English by specific sequences of letters 1.22 (A) use phonological knowledge to match sounds to letters to construct known words 2.23 (A) use phonological knowledge to match sounds to letters to construct unknown words 3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell

Table 24: Module Two, Item 10 Alignment Guide

Chapter 4: Findings

Alignment with Module One Questions

The pre-assessment for the first module, *Foundational Concepts of Word Study and Phonics,* was administered in week two to determine prior knowledge, the post-assessment was given in week six, and the summative assessment was taken in week fourteen. These assessments were based directly on the ten important concepts from this instructional module which covered a broad overview of a comprehensive literacy program, the earliest principles of phonology and phonemic awareness, the alphabetic principle, common letter-sound generalizations, and beginning syllabication patterns.

The items on the assessments were directly aligned to the standards previously detailed in Chapter 3. As stipulated by the US PREP guidelines, these assessments were to be knowledge-based because this was a phase one course. Additionally, the questions were to be aligned in content and style. The scoring was to be efficient so that the data could be analyzed and used immediately.

The specific questions from the pre-assessment, post-assessment, and summative assessment of Module One are listed below in Table 25 through Table 34.

Module One – Questions

Module One – Foundational Concepts of Phonics and Word Study
Pre-Assessment - Week 2   Post-Assessment - Week 6   Summative Assessment - Week 14

Pre-Assessment Item 1
 	
    1.   How many phonemes are represented in the word *knight*?
       A.   one
       B.   two
       C.   three
       D.   six

Post-Assessment Item 1
 	
    1.   How many phonemes are represented in the word thou*ght*?
       A.   one
       B.   three
       C.   five
       D.   seven

Summative Assessment Item 1
 	
    1.   How many phonemes are represented in the word *breathe*?
       A.   three
       B.   four
       C.   six
       D.   seven

Table 25: Module One Question 1

Pre-Assessment Item 2
 	
    2.   An example of a closed syllable is
       A.   desk
       B.   hot
       C.   bath
       D.   all of the words

Post-Assessment Item 2
 	
    2.   An example of a closed syllable is
       A.   wish
       B.   trust
       C.   fed
       D.   all of the words

Summative Assessment Item 2
 	
    2.   An example of a closed syllable is
       A.   high
       B.   bye
       C.   bird
       D.   all of the words

Table 26: Module One Question 2

Pre-Assessment Item 3

3. A consonant blend is illustrated by
    A. the _sh_ in shirt
    B. the _in_ in thing
    C. the _wh_ in which
    D. the _br_ in brought

Post-Assessment Item 3

3. A consonant blend is illustrated by
    A. the _in_ in shine
    B. the _th_ in thing
    C. the _bl_ in black
    D. the _ght_ in thought

Summative Assessment Item 3

3. A consonant blend is illustrated by
    A. the _o_ in Houston
    B. the _st_ in stamp
    C. the _gh_ in cough
    D. the _ch_ in much

Table 27: Module One Question 3

Pre-Assessment Item 4

4. If _e_ is the only vowel in an open syllable, it will most likely represent the _same sound_ as
    A. the silent _e_ in pine
    B. the long sound _e_ in green
    C. the schwa sound for _e_ as in system
    D. the short sound _e_ in set

Post-Assessment Item 4

4. If _o_ is the only vowel in an open syllable, it will most likely represent the _same sound_ as
    A. the silent _o_ in _you_
    B. the long sound _o_ in _boat_
    C. the schwa sound for _o_ as in _ballot_
    D. the short sound _o_ in _got_

Summative Assessment Item 4

4. If _i_ is the only vowel in an open syllable, it will most likely represent the _same sound_ as
    A. the silent _i_ in _straight_
    B. the short sound _i_ in _pit_
    C. the long sound _i_ in _hike_
    D. the short sound _i_ in _office_

Table 28: Module One Question 4

Pre-Assessment Item 5

5. The soft sound for the letter _c_ will represent the *same sound* as
    A. the _c_ in cent
    B. the _c_ in cello
    C. the _c_ in clock
    D. the _c_ in Christopher

Post-Assessment Item 5

5. The soft sound for the letter _g_ will represent the *same sound* as
    A. the _g_ in giant
    B. the _g_ in ghost
    C. the _g_ in ring
    D. the _g_ in cough

Summative Assessment Item 5

5. The soft sound for the letter _c_ will represent the *same sound* as
    A. the _c_ in Micky
    B. the second _c_ in couch
    C. the first _c_ in circus
    D. the _c_ in chef

Table 29: Module One Question 5

Pre-Assessment Item 6

6. The reading cueing systems ultimately lead to
    A. comprehension of text
    B. knowing how to read individual words
    C. understanding the importance of punctuation
    D. identifying phonemes in words

Post-Assessment Item 6

6. The reading cueing systems ultimately lead to
    A. understanding individual vocabulary words in text
    B. comprehending text
    C. decoding and spelling of text
    D. knowing the meanings of morphemes within words

Summative Assessment Item 6

6. The reading cueing systems ultimately lead to
    A. knowing the differences between phonemes and morphemes
    B. identifying affixes within words
    C. understanding phonics generalizations when reading
    D. comprehending text

Table 30: Module One Question 6

Pre-Assessment Item 7

7. The sound of the schwa is represented by
   A. the _o_ in the word goat
   B. the _e_ in the word hear
   C. the _i_ in the word until
   D. the _a_ in the word aspire

Post-Assessment Item 7

7. The sound of the schwa is represented by
   A. the _a_ in the word ball
   B. the _o_ in the word falcon
   C. the _i_ in the word light
   D. the _e_ in the word met

Summative Assessment Item 7

7. The sound of the schwa is represented by
   A. the _u_ in the word our
   B. the _i_ in the word inch
   C. the _o_ in the word occur
   D. the _a_ in the word April

Table 31: Module One Question 7

Pre-Assessment Item 8

8. _W_ is part of a diphthong in the word
   A. _w_hich
   B. to_w_er
   C. thro_w_
   D. _w_onder

Post-Assessment Item 8

8. _U_ is part of a diphthong in the word
   A. m_u_tt
   B. po_u_t
   C. ro_u_gh
   D. tho_u_ght

Summative Assessment Item 8

8. _I_ is part of a diphthong in the word
   A. pa_i_nt
   B. m_i_ss
   C. o_i_nk
   D. th_i_ng

Table 32: Module One Question 8

Pre-Assessment Item 9

9. A consonant digraph is illustrated by
    A. the _rd_ in the word _fern_
    B. the _tr_ in the word _train_
    C. the _th_ in the word _think_
    D. the _au_ in the word _taught_

Post-Assessment Item 9

9. A consonant digraph is illustrated by
    A. the _ow_ in the word _know_
    B. the _st_ in the word _ghost_
    C. the _ch_ in the word _porch_
    D. the _br_ in the word _bran_

Summative Assessment Item 9

9. A consonant digraph is illustrated by
    A. the _nd_ in the word wonder
    B. the _ph_ in the word _photo_
    C. the _ou_ in the word _cougar_
    D. the _in_ in the word _sling_

Table 33: Module One Question 9

Pre-Assessment Item 10

10. The CVCe pattern fulfills its primary phonic generalization in the word
    A. large
    B. trade
    C. mouse
    D. above

Post-Assessment Item 10

10. The CVCe pattern fulfills its primary phonic generalization in the word
    A. moose
    B. fine
    C. love
    D. barge

Summative Assessment Item 10

10. The CVCe pattern fulfills its primary phonic generalization in the word
    A. see
    B. blue
    C. bake
    D. give

Table 34: Module One Question 10

Module One Data Analysis

The student responses from the data were used to measure the phonics knowledge of the preservice teachers. The raw data was presented in a spreadsheet form. In this spreadsheet, de-identified preservice teachers were listed in the top row. The first column lists the objectives of the items which were aligned with the standards charts. Cells with a value of "1" indicated a correct response to the question. This allowed the number of correct responses to be calculated both by individual student and by specific question. This raw data was used in a number of ways to more clearly represent student progress in Module One.

Raw Data Spreadsheet: Module One

Assessment	1 - Phonemic Awareness	2 - Syllabication: Closed Syllables	3 - Consonant Blends	4 - Syllabication: Open Syllables	5 - Hard and Soft C/G Generalizations	6 - Cueing System	7 - Schwa Generalizations	8 - Vowel Diphthongs	9 - Consonant Digraphs	10 - Syllabication: Silent E	TOTAL CORRECT	Percentage Correct	Improvement from Pre-Assessment
PST 01: Pre-Assessment - Module 1	1	1			1	1					4	40%	
PST 01: Post-Assessment - Module 1	1	1	1			1	1	1	1	1	8	80%	4
PST 01: Summative Assessment - Module 1	1	1		1	1	1	1		1	1	8	80%	4
PST 02: Pre-Assessment - Module 1				1		1					2	20%	
PST 02: Post-Assessment - Module 1	1	1	1	1		1	1		1	1	8	80%	6
PST 02: Summative Assessment - Module 1	1			1	1	1	1	1		1	7	70%	5
PST 03: Pre-Assessment - Module 1		1		1	1		1				4	40%	
PST 03: Post-Assessment - Module 1	1			1	1	1	1	1	1	1	8	80%	4
PST 03: Summative Assessment - Module 1	1		1	1	1	1	1	1	1	1	9	90%	5
PST 04: Pre-Assessment - Module 1					1		1	1			3	30%	
PST 04: Post-Assessment - Module 1	1	1	1			1	1	1		1	7	70%	4
PST 04: Summative Assessment - Module 1	1	1		1	1	1	1	1		1	8	80%	5
PST 05: Pre-Assessment - Module 1	1				1		1	1			4	40%	
PST 05: Post-Assessment - Module 1	1			1			1		1	1	5	50%	1
PST 05: Summative Assessment - Module 1	1			1	1	1		1	1	1	7	70%	3
PST 06: Pre-Assessment - Module 1		1			1	1					3	30%	
PST 06: Post-Assessment - Module 1	1		1	1	1				1	1	6	60%	3
PST 06: Summative Assessment - Module 1	1	1		1	1	1	1		1	1	8	80%	5
PST 07: Pre-Assessment - Module 1		1			1		1				3	30%	
PST 07: Post-Assessment - Module 1	1	1	1	1		1	1	1	1	1	9	90%	6
PST 07: Summative Assessment - Module 1	1	1		1	1	1	1	1	1	1	9	90%	6
PST 08: Pre-Assessment - Module 1	1	1			1						3	30%	
PST 08: Post-Assessment - Module 1	1	1	1	1	1		1	1	1	1	9	90%	6
PST 08: Summative Assessment - Module 1	1	1		1	1	1	1	1	1	1	9	90%	6
PST 09: Pre-Assessment - Module 1				1	1						2	20%	
PST 09: Post-Assessment - Module 1	1	1	1	1	1				1	1	7	70%	5
PST 09: Summative Assessment - Module 1	1	1	1	1	1	1			1	1	8	80%	6
PST 10: Pre-Assessment - Module 1	1	1	1								3	30%	
PST 10: Post-Assessment - Module 1	1		1	1					1		4	40%	1
PST 10: Summative Assessment - Module 1	1	1	1		1	1	1	1	1	1	9	90%	6
PST 11: Pre-Assessment - Module 1					1				1		2	20%	
PST 11: Post-Assessment - Module 1	1	1	1	1	1	1			1		7	70%	5
PST 11: Summative Assessment - Module 1	1	1		1	1	1	1	1	1	1	9	90%	7
PST 12: Pre-Assessment - Module 1			1	1		1					3	30%	
PST 12: Post-Assessment - Module 1	1	1	1	1	1				1	1	7	70%	4
PST 12: Summative Assessment - Module 1	1	1	1	1	1	1		1	1	1	9	90%	6

Figure 6: Module One Data Spreadsheet Part 1

Assessment	1 - Phonemic Awareness	2 - Syllabication: Closed Syllables	3 - Consonant Blends	4 - Syllabication: Open Syllables	5 - Hard and Soft C/G Generalizations	6 - Cueing System	7 - Schwa Generalizations	8 - Vowel Diphthongs	9 - Consonant Digraphs	10 - Syllabication: Silent E	TOTAL CORRECT	Percentage Correct	Improvement from Pre-Assessment
PST 24: Summative Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100%	7
PST 24: Post-Assessment - Module 1	1	1	1	1		1	1	1	1	1	9	90%	6
PST 24: Pre-Assessment - Module 1		1			1	1					3	30%	
PST 23: Summative Assessment - Module 1	1		1	1	1	1	1	1	1		8	80%	7
PST 23: Post-Assessment - Module 1	1		1	1			1		1		5	50%	4
PST 23: Pre-Assessment - Module 1		1									1	10%	
PST 22: Summative Assessment - Module 1	1	1		1	1	1	1	1	1	1	9	90%	6
PST 22: Post-Assessment - Module 1	1	1	1	1		1	1	1	1	1	9	90%	6
PST 22: Pre-Assessment - Module 1		1	1						1		3	30%	
PST 21: Summative Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100%	7
PST 21: Post-Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100%	7
PST 21: Pre-Assessment - Module 1	1	1			1						3	30%	
PST 20: Summative Assessment - Module 1	1	1		1	1	1	1		1	1	8	80%	5
PST 20: Post-Assessment - Module 1	1	1	1	1	1	1		1	1		8	80%	5
PST 20: Pre-Assessment - Module 1				1	1		1				3	30%	
PST 19: Summative Assessment - Module 1	1	1		1	1	1		1	1	1	8	80%	5
PST 19: Post-Assessment - Module 1	1	1	1	1		1	1	1	1	1	9	90%	6
PST 19: Pre-Assessment - Module 1		1		1					1		3	30%	
PST 18: Summative Assessment - Module 1	1	1	1	1			1	1	1	1	8	80%	5
PST 18: Post-Assessment - Module 1	1			1			1	1		1	5	50%	2
PST 18: Pre-Assessment - Module 1				1					1	1	3	30%	
PST 17: Summative Assessment - Module 1	1		1	1	1	1	1	1	1		8	80%	6
PST 17: Post-Assessment - Module 1	1	1		1			1		1	1	6	60%	4
PST 17: Pre-Assessment - Module 1					1				1		2	20%	
PST 16: Summative Assessment - Module 1	1		1	1	1	1	1	1	1	1	9	90%	7
PST 16: Post-Assessment - Module 1		1	1				1			1	4	40%	2
PST 16: Pre-Assessment - Module 1					1					1	2	20%	
PST 15: Summative Assessment - Module 1	1	1		1	1	1	1	1	1	1	9	90%	7
PST 15: Post-Assessment - Module 1	1		1	1	1		1	1	1	1	8	80%	6
PST 15: Pre-Assessment - Module 1					1	1					2	20%	
PST 14: Summative Assessment - Module 1	1	1		1	1	1			1	1	7	70%	5
PST 14: Post-Assessment - Module 1	1		1	1			1			1	5	50%	3
PST 14: Pre-Assessment - Module 1				1	1						2	20%	
PST 13: Summative Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100%	6
PST 13: Post-Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100%	6
PST 13: Pre-Assessment - Module 1		1		1	1		1				4	40%	

Figure 7: Module One Data Spreadsheet Part 2

Assessment	1 - Phonemic Awareness	2 - Syllabication: Closed Syllables	3 - Consonant Blends	4 - Syllabication: Open Syllables	5 - Hard and Soft C/G Generalizations	6 - Cueing System	7 - Schwa Generalizations	8 - Vowel Diphthongs	9 - Consonant Digraphs	10 - Syllabication: Silent E	TOTAL CORRECT	Percentage Correct	Improvement from Pre-Assessment
PST 25: Pre-Assessment - Module 1			1		1						2	20%	
PST 25: Post-Assessment - Module 1	1	1	1		1	1	1	1	1	1	9	90%	7
PST 25: Summative Assessment - Module 1	1		1		1	1	1	1	1	1	8	80%	6
PST 26: Pre-Assessment - Module 1		1				1				1	3	30%	
PST 26: Post-Assessment - Module 1	1	1	1	1	1	1			1	1	8	80%	5
PST 26: Summative Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100%	7
PST 27: Pre-Assessment - Module 1		1					1				2	20%	
PST 27: Post-Assessment - Module 1	1		1		1		1		1	1	6	60%	4
PST 27: Summative Assessment - Module 1	1		1	1	1	1	1	1	1	1	9	90%	7
PST 28: Pre-Assessment - Module 1	1	1			1	1	1				5	50%	
PST 28: Post-Assessment - Module 1	1	1	1		1		1		1	1	7	70%	2
PST 28: Summative Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100%	5
PST 29: Pre-Assessment - Module 1				1	1						2	20%	
PST 29: Post-Assessment - Module 1	1	1	1		1		1	1	1	1	8	80%	6
PST 29: Summative Assessment - Module 1	1		1	1	1	1	1	1	1		8	80%	6
PST 30: Pre-Assessment - Module 1			1		1	1					3	30%	
PST 30: Post-Assessment - Module 1		1	1	1	1	1	1		1	1	8	80%	5
PST 30: Summative Assessment - Module 1	1		1	1	1	1	1	1	1	1	9	90%	6
PST 31: Pre-Assessment - Module 1			1		1	1	1				4	40%	
PST 31: Post-Assessment - Module 1	1	1	1		1	1	1	1	1	1	9	90%	5
PST 31: Summative Assessment - Module 1	1		1	1	1	1	1	1	1	1	9	90%	5
PST 32: Pre-Assessment - Module 1		1								1	2	20%	
PST 32: Post-Assessment - Module 1	1	1	1	1	1		1	1	1	1	9	90%	7
PST 32: Summative Assessment - Module 1	1		1	1	1	1	1	1	1	1	9	90%	7
PST 33: Pre-Assessment - Module 1					1	1					2	20%	
PST 33: Post-Assessment - Module 1		1	1	1			1			1	5	50%	3
PST 33: Summative Assessment - Module 1	1	1	1	1		1		1	1	1	8	80%	6
PST 34: Pre-Assessment - Module 1		1	1	1	1						4	40%	
PST 34: Post-Assessment - Module 1	1	1					1	1	1	1	6	60%	2
PST 34: Summative Assessment - Module 1	1		1	1	1	1	1	1	1	1	9	90%	5
PST 35: Pre-Assessment - Module 1	1	1				1	1			1	5	50%	
PST 35: Post-Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100%	5
PST 35: Summative Assessment - Module 1	1	1	1	1	1	1		1	1	1	9	90%	4
PST 36: Pre-Assessment - Module 1			1		1		1				3	30%	
PST 36: Post-Assessment - Module 1	1	1	1		1		1	1		1	7	70%	4
PST 36: Summative Assessment - Module 1				1			1	1	1	1	5	50%	2

Figure 8: Module One Data Spreadsheet Part 3

Skill	PST 37: Pre-Assessment - Module 1	PST 37: Post-Assessment - Module 1	PST 37: Summative Assessment - Module 1	PST 38: Pre-Assessment - Module 1	PST 38: Post-Assessment - Module 1	PST 38: Summative Assessment - Module 1	PST 39: Pre-Assessment - Module 1	PST 39: Post-Assessment - Module 1	PST 39: Summative Assessment - Module 1	PST 40: Pre-Assessment - Module 1	PST 40: Post-Assessment - Module 1	PST 40: Summative Assessment - Module 1
1 - Phonemic Awareness		1	1		1	1		1	1		1	1
2 - Syllabication: Closed Syllables	1	1		1	1			1	1	1	1	1
3 - Consonant Blends		1	1		1	1		1	1		1	1
4 - Syllabication: Open Syllables		1	1		1	1		1	1			
5 - Hard and Soft C/G Generalizations	1	1	1	1	1	1	1	1	1		1	
6 - Cueing System		1	1		1	1	1		1	1		1
7 - Schwa Generalizations		1	1	1	1	1		1	1	1	1	1
8 - Vowel Diphthongs	1	1	1		1	1		1	1		1	1
9 - Consonant Digraphs		1			1	1			1		1	1
10 - Syllabication: Silent E		1			1	1		1	1		1	1
TOTAL CORRECT	3	10	7	3	10	9	2	8	10	3	8	8
Percentage Correct	30%	100%	70%	30%	100%	90%	20%	80%	100%	30%	80%	80%
Improvement from Pre-Assessment		7	4		7	6		6	8		5	5

Skill	Pre-Assessment Total - Module 1	Post-Assessment Total - Module 1	Summative Assessment Total - Module 1
1 - Phonemic Awareness	7	37	39
2 - Syllabication: Closed Syllables	21	31	24
3 - Consonant Blends	8	35	26
4 - Syllabication: Open Syllables	10	28	37
5 - Hard and Soft C/G Generalizations	29	24	36
6 - Cueing System	12	20	39
7 - Schwa Generalizations	15	32	32
8 - Vowel Diphthongs	2	24	35
9 - Consonant Digraphs	6	34	37
10 - Syllabication: Silent E	5	36	36
TOTAL	115	301	341

Skill	Pre-Assessment Percentage - Module 1	Post-Assessment Percentage - Module 1	Summative Assessment Percentage - Module 1
1 - Phonemic Awareness	18%	93%	98%
2 - Syllabication: Closed Syllables	53%	78%	60%
3 - Consonant Blends	20%	88%	65%
4 - Syllabication: Open Syllables	25%	70%	93%
5 - Hard and Soft C/G Generalizations	73%	60%	90%
6 - Cueing System	30%	50%	98%
7 - Schwa Generalizations	38%	80%	80%
8 - Vowel Diphthongs	5%	60%	88%
9 - Consonant Digraphs	15%	85%	93%
10 - Syllabication: Silent E	13%	90%	90%
TOTAL	29%	75%	85%

Figure 9: Module One Data Spreadsheet Part 4

Module One – Pre-Assessment Data Analysis by Individual Student

Figure 10: Pre-Assessment: Module One by student

The chart in Figure 10 represents the total raw scores for each student in the course for the Module One pre-assessment. None of the students got more than five correct responses out of a possible ten questions. The lowest score was one out of ten. The mean score was 2.875.

The individual scores indicated a notable lack of basic phonics knowledge.

Module One – Pre-Assessment Data Analysis by Course Objective
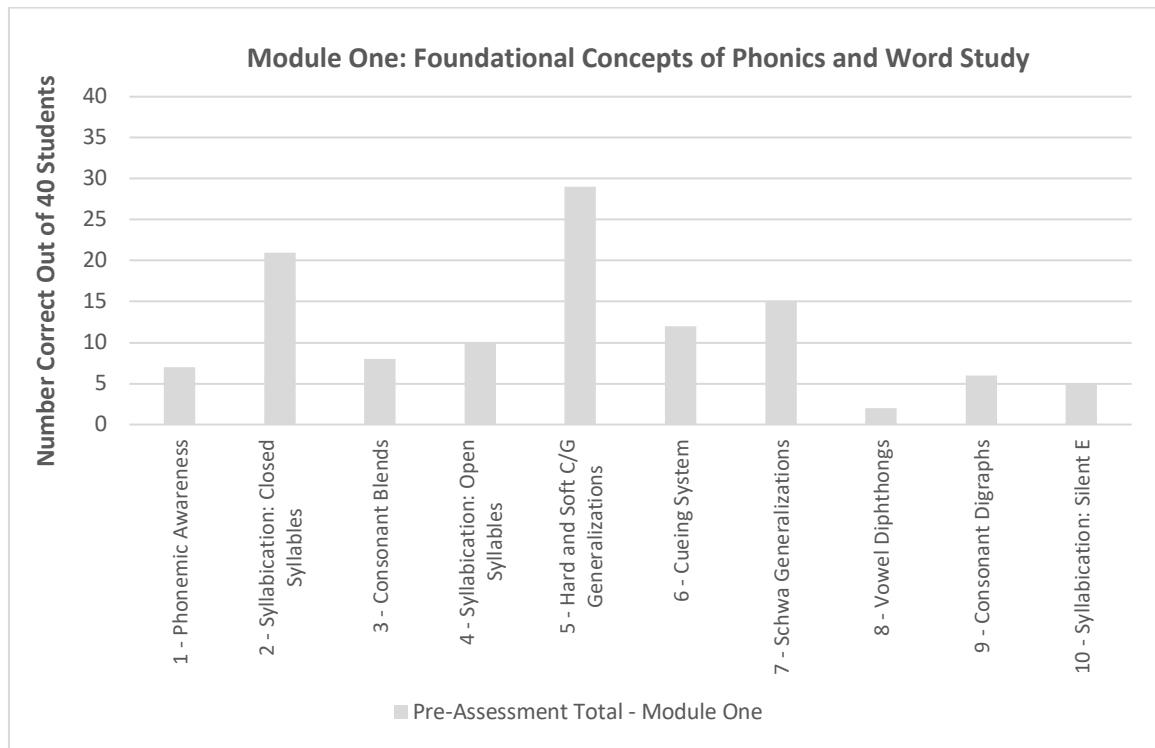
Figure 11: Pre-Assessment: Module One by objective

Rather than the individual sampling of the previous chart, the bar graph in Figure 11 represents the total responses for the class for each of the module objectives. The highest score possible for a question was 40 because there were 40 students in the class. The module objective with the lowest number of correct responses was *Vowel Diphthongs* with only two correct responses from the 40 students. By contrast, the highest number of correct answers was for Hard and Soft C/G Generalizations in which 29 students provided the correct response.

As the instructor of the course, I was concerned about the score on the sixth question, *Cueing System*. *Cueing System* combines graphophonics, semantics, and syntax. These three areas are integral to the concept of Balanced Literacy. While other questions had lower scores, *Cueing System* signifies a substantial role in comprehensive literacy.

Based on the pre-assessment analysis the instructor chose to provide additional intervention for *Vowel Diphthongs*, *Syllabication: Generalizations*, and *Cueing System*.

Module One – Post-Assessment Data Analysis by Individual Student
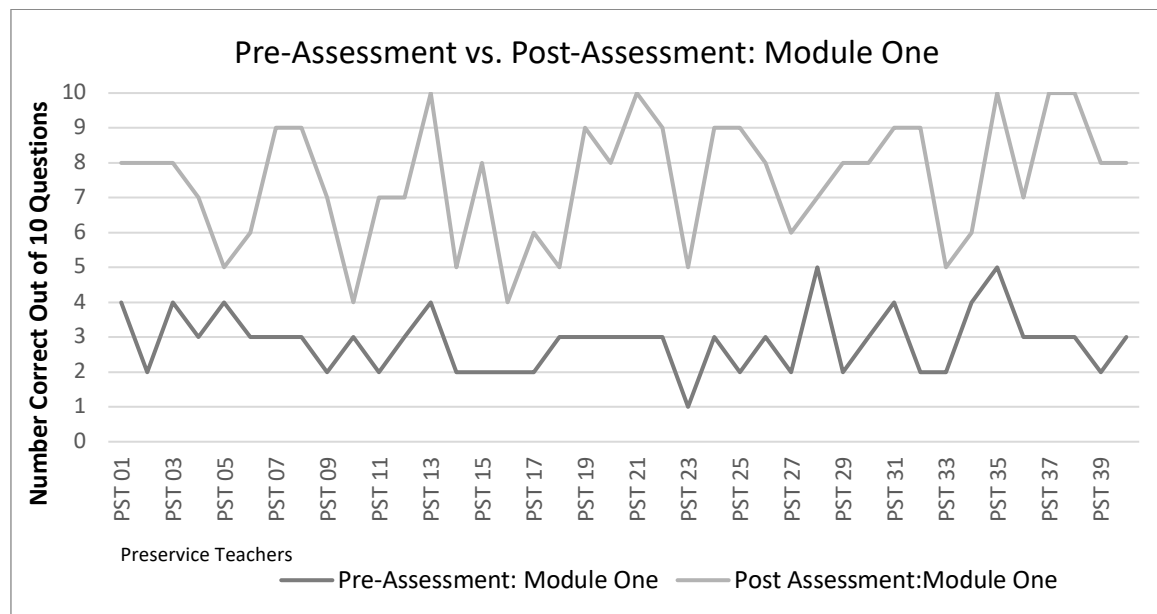
Figure 12: Pre-Assessment vs Post-Assessment: Module One by student

Comparing individual student scores from the pre-assessment in week two with the post-assessment from week six, it was encouraging to see every student had higher scores. Across the board, there was a considerable improvement with PST 21 showing the greatest increase by moving from 3 correct to a perfect score of ten correct responses. This student was just one of five perfect scores for the post-assessment. As a whole, the class increased the mean from 2.875 on the pre-assessment to 7.525 on the post-assessment.

Module One – Post-Assessment Data Analysis by Course Objective
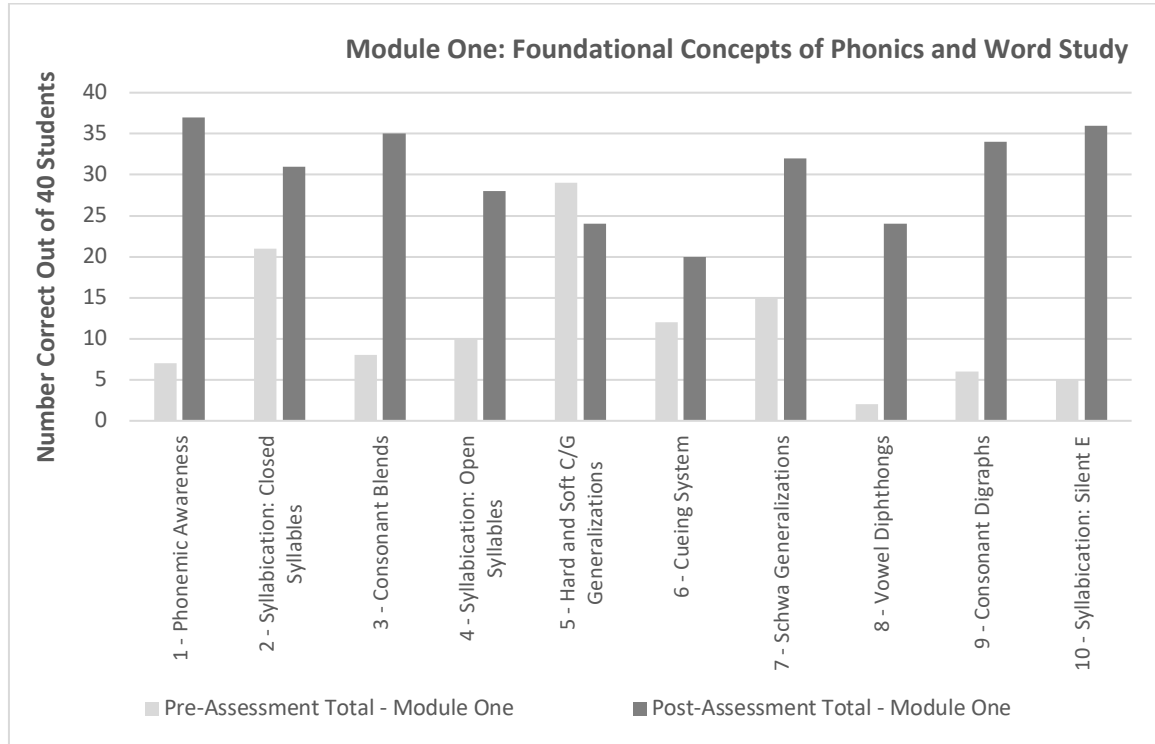
Figure 13: Pre-Assessment vs Post-Assessment: Module One by objective

The comparison of the post-assessment against the pre-assessment showed areas of impressive growth but also one area of decline. The greatest improvements were found in *Phonemic Awareness*, *Syllabication*, and *Consonant Digraphs*. While *Vowel Diphthongs* may not have shown the highest score, the improvement from only two students providing the proper response in the pre-assessment to 24 in the post-assessment was quite impressive. Seeing the large improvements in both *Vowel Diphthongs* and *Syllabication*, areas I had given special emphasis to since the pre-assessment, helped validate the instructional interventions used in these areas.

Despite the successes, the comparison also showed a surprising drop in *Hard and Soft C/G Generalizations*, which raised a concern because this area had the highest score on the pre-assessment. Analysis of this question showed two possible reasons for the drop

in the scores. First, it is possible that since this area had been the highest on the pre-assessment, I did not give it the emphasis that was needed in this module. It is also possible that because the pre-assessment focused on the Soft C while the post-assessment focused on Soft G that the difference could be related to the students' misconception of the concept or the wording of the question. Either way, this provided me with the initiative to reiterate this concept throughout the rest of the semester.

Alignment with Module Two Questions

The same process of full alignment that was used for Module One was used for Module Two. Each item on the assessments was directly aligned to the objectives on the standards charts.

The specific questions from the pre-assessment, post-assessment, and summative assessment are listed below in Table 35 through Table 44.

Module Two - Questions

Module Two – Developmental Word Study and Orthography
Pre-Assessment - Week 7   Post-Assessment - Week 11   Summative Assessment - Week 14

Pre-Assessment Item 1
 	
1. The third layer of English orthography
   A. is known as the meaning layer
   B. is characterized by alphabetic patterns in words such as light
   C. is represented by 26 letters and 44 sounds
   D. is also known as the syllable juncture stage

Post-Assessment Item 1
 	
1. The third layer of English orthography
   A. is known as the pattern layer
   B. is characterized by the use of morphemes to construct meaning
   C. is aligned with the middle within word spelling stage
   D. is characterized by the relationship between letters and sounds

Summative Assessment Item 1
 	
1. The third layer of English orthography
   A. is known as the alphabetic layer
   B. is characterized by the use of ambiguous vowel patterns
   C. is aligned with the alphabetic principle of phonics
   D. is characterized by the use of words such as autobiography

Table 35: Module Two Question 1

Pre-Assessment Item 2
 	
2. Which of the following is representative of the **second layer** of English orthography?
   A. CVCe (as in cape)
   B. re (as in rewind)
   C. the direct correspondence of letters and predictable sounds
   D. tion (as in vacation)

Post-Assessment Item 2
 	
2. The second layer of English orthography would best be represented by
   A. the direct relationship between letters and sounds
   B. ology (as in biology)
   C. CVVC (as in boat)
   D. ortho (as in orthodontist)

Summative Assessment Item 2
 	
2. The second layer of English orthography may be represented by the words
   A. high and bread
   B. bye and big
   C. bird and rewind
   D. muscle and muscular

Table 36: Module Two Question 2

Pre-Assessment Item 3

3. A closed first syllable in a multisyllable word
    A. is represented in the word family
    B. is never a morpheme
    C. is represented in the word prehistoric
    D. is generally prefix such as in the word irregular

Post-Assessment Item 3

3. A closed first syllable in a multisyllable word
    A. is always a bound morpheme
    B. is never a bound morpheme
    C. is represented in the word repeat
    D. is represented in the word candle

Summative Assessment Item 3

3. A closed first syllable in a multisyllable word
    A. is represented in the word apple
    B. will be pronounced with a long vowel sound
    C. is represented in the word heroic
    D. is the also known as a bound morpheme

Table 37: Module Two Question 3

Pre-Assessment Item 4

4. Which of the following words has an open first syllable?
    A. happiness
    B. maximize
    C. suitable
    D. relatable

Post-Assessment Item 4

4. Which of the following words has an open first syllable?
    A. Going
    B. meaning
    C. ballet
    D. hospital

Summative Assessment Item 4

4. Which of the following words has an open first syllable?
    A. argument
    B. literally
    C. opening
    D. chocolate

Table 38: Module Two Question 4

Pre-Assessment Item 5

5. A base word
   A. is a free morpheme that represents meaning
   B. is a bound morpheme that cannot stand along without meaning
   C. must always have a prefix
   D. must have both a prefix and a suffix

Post-Assessment Item 5

5. A base word
   A. is always the first syllable of a word
   B. cannot stand alone without meaning
   C. is also known as a root word that gives the word meaning
   D. is also known as a bound morpheme that can stand alone without meaning

Summative Assessment Item 5

5. A base word
   A. is always the middle syllable of a multisyllable word
   B. is a bound morpheme that represents meaning
   C. a free morpheme that represents meaning
   D. will always have a prefix and a suffix to give the word meaning

Table 39: Module Two Question 5

Pre-Assessment Item 6

6. Which of the following best represents the "within word spelling pattern"?
   A. ing (as in running)
   B. ure (as in pleasure)
   C. wh (as in whale)
   D. a - e (as in cake)

Post-Assessment Item 6

6. Which of the following best represents the "within word spelling pattern"?
   A. ea (as in bread)
   B. ll (as in cellar)
   C. ent (as in confident)
   D. sh (as in shopping)

Summative Assessment Item 6

6. Which of the following best represents the "within word spelling pattern"?
   A. st (as in the word castle)
   B. oi (as in the word point)
   C. rr (as in the word carry)
   D. pos (as in the word opposition

Table 40: Module Two Question 6

Pre-Assessment Item 7

7. The derivational spelling stage
   A. is typical for an average third grade student
   B. is characterized by morphemic analysis to represent meaning
   C. involves complex vowel patterns such as "igh"
   D. may be identified by the use of ambiguous vowels

Post-Assessment Item 7

7. The derivational spelling stage
   A. may be represented by the word *phase*
   B. may be identified by the use of complex consonant blends and diphthong vowels
   C. may identified by complex patterns such as *eigh*
   D. may be represented by the word *irrational*

Summative Assessment Item 7

7. The derivational spelling stage
   A. is typical for an average fifth grade student
   B. involves knowledge of historic origins of morphemes
   C. may be represented by the word *through*
   D. is identified by the use of syllable junctures

Table 41: Module Two Question 7

Pre-Assessment Item 8

8. Emergent spellers
   A. are beginning to associate letters with predictable sounds
   B. primarily use lines, scribbles, or drawings to express meaning
   C. are able to distinguish multiple vowel sounds and use them in spelling
   D. would represent typical third grade students

Post-Assessment Item 8

8. Emergent spellers
   A. are beginning to identify beginning and ending consonant sounds in words
   B. would represent typical second grade students at the beginning of the year
   C. primarily use lines, scribbles, or drawings to express meaning
   D. will be able to read and spell one syllable words such as *paint*

Summative Assessment Item 8

8. Emergent spellers
   A. will be able to read and spell one syllable words such *house*
   B. would represent most students in second grade
   C. are beginning to use letters to represent predictable sounds
   D. primarily use lines, scribbles, or drawings to express meaning

Table 42: Module Two Question 8

Pre-Assessment Item 9

9. according to most literacy scholars, the English language has 26 alphabetic letters and
    A. an unlimited number of sounds and tones
    B. 44 sounds
    C. an unknown number of sounds
    D. 26 sounds

Post-Assessment Item 9

9. According to most literacy scholars, the English language
    A. has 26 letters that represent an unknown number of
    B. has 26 letters that represent 44 sounds
    C. has 26 letters with predicable alphabetic patterns
    D. has 26 letters that represent an unlimited range of sounds and tones

Summative Assessment Item 9

9. According to most literacy scholars, the English language has 26 letters which represent
    A. 44 sounds, tones, and pitches
    B. approximately 44 sounds
    C. consistent and predictable letter-sound relationships
    D. approximately 62 sounds

Table 43: Module Two Question 9

Pre-Assessment Item 10

10. The ways in which letters and letter patterns in words represent sound and meaning is known as
    A. ontology
    B. graphology
    C. etymology
    D. orthography

Post-Assessment Item 10

10. The ways in which letters and letter patterns in words represent sound and meaning is known as
    A. etymology
    B. ontology
    C. orthography
    D. graphology

Summative Assessment Item 10

10. Orthography is the study of
    A. complicated derivational spelling patterns
    B. the ways in which letters and letter patterns in words represent sound and meaning
    C. the multiple ways in which students learn to read
    D. the way the mouth produces phonemic units of sound

Table 44: Module Two Question 10

Module Two Data Analysis

The analysis for Module Two data followed the same procedure outlined for the

analysis of Module One data.

Raw Data Spreadsheet: Module Two

Feature key:
- 1 - Layers of English Orthography: Meaning
- 2 - Layers of English Orthography: Pattern
- 3 - Syllabication: Multisyllable Words - Closed
- 4 - Syllabication: Multisyllable Words - Open
- 5 - Structural/Morphemic Analysis
- 6 - Developmental Spelling Patterns: Within Word
- 7 - Developmental Spelling Patterns: Derivational
- 8 - Developmental Spelling Stages: Emergent
- 9 - Graphophonemic Representation
- 10 - Orthographic Meaning

Assessment	1	2	3	4	5	6	7	8	9	10	TOTAL CORRECT	Percentage Correct	Improvement from Pre-Assessment
PST 01: Pre-Assessment - Module 2	1		1	1	1				1	1	6	60%	
PST 01: Post-Assessment - Module 2	1		1	1	1			1	1	1	7	70%	1
PST 01: Summative Assessment - Module 2	1	1		1	1	1	1		1	1	8	80%	2
PST 02: Pre-Assessment - Module 2			1	1		1		1	1	1	6	60%	
PST 02: Post-Assessment - Module 2		1	1	1	1		1	1	1		7	70%	1
PST 02: Summative Assessment - Module 2	1	1	1	1	1		1	1	1	1	9	90%	3
PST 03: Pre-Assessment - Module 2			1	1				1	1	1	5	50%	
PST 03: Post-Assessment - Module 2	1	1	1	1	1		1	1	1	1	9	90%	4
PST 03: Summative Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	5
PST 04: Pre-Assessment - Module 2	1		1	1						1	4	40%	
PST 04: Post-Assessment - Module 2	1		1	1		1	1	1	1	1	8	80%	4
PST 04: Summative Assessment - Module 2	1		1	1	1		1	1	1	1	8	80%	4
PST 05: Pre-Assessment - Module 2			1	1					1	1	4	40%	
PST 05: Post-Assessment - Module 2	1	1	1	1	1		1	1	1	1	9	90%	5
PST 05: Summative Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	6
PST 06: Pre-Assessment - Module 2			1	1		1		1	1		5	50%	
PST 06: Post-Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	5
PST 06: Summative Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	5
PST 07: Pre-Assessment - Module 2			1	1					1	1	4	40%	
PST 07: Post-Assessment - Module 2	1		1	1	1	1	1	1	1		8	80%	4
PST 07: Summative Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	6
PST 08: Pre-Assessment - Module 2			1					1	1	1	4	40%	
PST 08: Post-Assessment - Module 2	1		1	1	1		1	1	1	1	8	80%	4
PST 08: Summative Assessment - Module 2	1		1	1	1	1	1	1	1	1	9	90%	5
PST 09: Pre-Assessment - Module 2			1	1					1		3	30%	
PST 09: Post-Assessment - Module 2	1	1	1	1			1	1	1	1	8	80%	5
PST 09: Summative Assessment - Module 2	1	1	1	1	1		1	1	1	1	9	90%	6
PST 10: Pre-Assessment - Module 2			1	1					1	1	4	40%	
PST 10: Post-Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	6
PST 10: Summative Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	6
PST 11: Pre-Assessment - Module 2			1						1		2	20%	
PST 11: Post-Assessment - Module 2		1	1	1		1	1		1	1	7	70%	5
PST 11: Summative Assessment - Module 2	1	1	1	1	1		1	1	1	1	9	90%	7
PST 12: Pre-Assessment - Module 2			1	1				1	1		4	40%	
PST 12: Post-Assessment - Module 2	1	1	1	1	1			1	1	1	8	80%	4
PST 12: Summative Assessment - Module 2	1	1	1	1	1		1	1	1	1	9	90%	5

Figure 14: Module Two Data Spreadsheet Part 1

The following table reproduces the rotated spreadsheet (categories as rows, assessments as columns). A "1" indicates a correct response.

Category	PST 13: Pre	PST 13: Post	PST 13: Summative	PST 14: Pre	PST 14: Post	PST 14: Summative	PST 15: Pre	PST 15: Post	PST 15: Summative	PST 16: Pre	PST 16: Post	PST 16: Summative	PST 17: Pre	PST 17: Post	PST 17: Summative	PST 18: Pre	PST 18: Post	PST 18: Summative	PST 19: Pre	PST 19: Post	PST 19: Summative	PST 20: Pre	PST 20: Post	PST 20: Summative	PST 21: Pre	PST 21: Post	PST 21: Summative	PST 22: Pre	PST 22: Post	PST 22: Summative	PST 23: Pre	PST 23: Post	PST 23: Summative	PST 24: Pre	PST 24: Post	PST 24: Summative
1 - Layers of English Orthography: Meaning	1	1	1		1	1		1	1		1	1	1	1	1		1	1		1	1		1	1	1	1	1		1	1		1	1			1
2 - Layers of English Orthography: Pattern		1	1		1	1		1	1		1	1		1	1		1	1			1		1	1		1	1		1	1				1		
3 - Syllabication: Multisyllable Words - Closed		1	1	1	1	1	1	1	1	1				1	1		1	1	1	1	1	1	1	1		1	1	1	1	1			1	1	1	1
4 - Syllabication: Multisyllable Words - Open		1	1		1	1		1	1	1	1				1		1	1		1	1						1	1	1	1				1	1	1
5 - Structural/Morphemic Analysis	1		1	1	1	1		1	1	1	1	1		1	1			1	1	1	1		1	1	1	1	1	1	1	1		1	1		1	1
6 - Developmental Spelling Patterns: Within Word		1	1					1	1	1				1	1						1	1				1	1		1	1	1				1	
7 - Developmental Spelling Patterns: Derivational					1	1		1	1		1	1		1	1		1	1		1	1	1	1	1		1	1		1	1			1		1	1
8 - Developmental Spelling Stages: Emergent			1		1	1	1	1	1		1	1			1		1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
9 - Graphophonemic Representation	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10 - Orthographic Meaning	1	1	1	1	1	1	1	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1		1	1
TOTAL CORRECT	4	7	9	4	9	9	5	10	10	5	8	7	3	8	10	2	8	9	4	8	10	5	8	8	5	9	10	6	10	10	4	5	7	5	8	8
Percentage Correct	40%	70%	90%	40%	90%	90%	50%	100%	100%	50%	80%	70%	30%	80%	100%	20%	80%	90%	40%	80%	100%	50%	80%	80%	50%	90%	100%	60%	100%	100%	40%	50%	70%	50%	80%	80%
Improvement from Pre-Assessment		3	5		5	5		5	5		3	2		5	7		6	7		4	6		3	3		4	5		4	4		1	3		3	3

Figure 15: Module Two Data Spreadsheet Part 2

Assessment	1 - Layers of English Orthography: Meaning	2 - Layers of English Orthography: Pattern	3 - Syllabication: Multisyllable Words - Closed	4 - Syllabication: Multisyllable Words - Open	5 - Structural/Morphemic Analysis	6 - Developmental Spelling Patterns: Within Word	7 - Developmental Spelling Patterns: Derivational	8 - Developmental Spelling Stages: Emergent	9 - Graphophonemic Representation	10 - Orthographic Meaning	TOTAL CORRECT	Percentage Correct	Improvement from Pre-Assessment
PST 25: Pre-Assessment - Module 2	1	1	1						1		4	40%	
PST 25: Post-Assessment - Module 2	1		1	1	1	1	1	1	1	1	9	90%	5
PST 25: Summative Assessment - Module 2	1	1		1	1	1	1	1	1	1	9	90%	5
PST 26: Pre-Assessment - Module 2		1		1	1			1	1	1	6	60%	
PST 26: Post-Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	4
PST 26: Summative Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	4
PST 27: Pre-Assessment - Module 2							1	1	1		3	30%	
PST 27: Post-Assessment - Module 2	1	1			1	1	1	1	1	1	8	80%	5
PST 27: Summative Assessment - Module 2	1	1			1	1	1	1	1	1	8	80%	5
PST 28: Pre-Assessment - Module 2		1	1	1	1			1	1	1	7	70%	
PST 28: Post-Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	3
PST 28: Summative Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	3
PST 29: Pre-Assessment - Module 2			1			1	1	1	1		5	50%	
PST 29: Post-Assessment - Module 2	1		1	1	1	1	1		1	1	8	80%	3
PST 29: Summative Assessment - Module 2	1		1	1	1	1	1	1	1	1	9	90%	4
PST 30: Pre-Assessment - Module 2			1	1					1		3	30%	
PST 30: Post-Assessment - Module 2	1		1	1	1	1	1	1	1	1	9	90%	6
PST 30: Summative Assessment - Module 2	1		1	1	1	1	1	1	1	1	9	90%	6
PST 31: Pre-Assessment - Module 2			1	1					1		3	30%	
PST 31: Post-Assessment - Module 2	1	1	1		1		1	1	1	1	8	80%	5
PST 31: Summative Assessment - Module 2	1	1	1	1	1		1	1	1	1	9	90%	6
PST 32: Pre-Assessment - Module 2			1		1		1	1			4	40%	
PST 32: Post-Assessment - Module 2	1	1	1	1	1		1	1	1	1	9	90%	5
PST 32: Summative Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	6
PST 33: Pre-Assessment - Module 2										1	1	10%	
PST 33: Post-Assessment - Module 2	1	1				1			1	1	5	50%	4
PST 33: Summative Assessment - Module 2	1	1			1	1		1	1	1	7	70%	6
PST 34: Pre-Assessment - Module 2					1			1	1	1	4	40%	
PST 34: Post-Assessment - Module 2	1	1			1	1		1	1	1	7	70%	3
PST 34: Summative Assessment - Module 2	1	1			1	1		1	1	1	7	70%	3
PST 35: Pre-Assessment - Module 2			1	1					1	1	4	40%	
PST 35: Post-Assessment - Module 2	1		1	1	1	1	1	1	1	1	9	90%	5
PST 35: Summative Assessment - Module 2	1	1	1	1	1	1	1	1	1	1	10	100%	6
PST 36: Pre-Assessment - Module 2	1	1						1	1	1	5	50%	
PST 36: Post-Assessment - Module 2	1	1	1	1			1	1	1	1	8	80%	3
PST 36: Summative Assessment - Module 2	1	1	1	1	1		1	1	1	1	9	90%	4

Figure 16: Module Two Data Spreadsheet Part 3

	PST 37: Pre-Assessment - Module 2	PST 37: Post-Assessment - Module 2	PST 37: Summative Assessment - Module 2	PST 38: Pre-Assessment - Module 2	PST 38: Post-Assessment - Module 2	PST 38: Summative Assessment - Module 2	PST 39: Pre-Assessment - Module 2	PST 39: Post-Assessment - Module 2	PST 39: Summative Assessment - Module 2	PST 40: Pre-Assessment - Module 2	PST 40: Post-Assessment - Module 2	PST 40: Summative Assessment - Module 2
1 - Layers of English Orthography: Meaning		1	1		1	1	1	1	1		1	1
2 - Layers of English Orthography: Pattern		1	1		1	1			1		1	1
3 - Syllabication: Multisyllable Words - Closed		1	1	1	1	1	1	1	1		1	1
4 - Syllabication: Multisyllable Words - Open	1	1	1	1	1	1	1	1	1		1	1
5 - Structural/Morphemic Analysis	1		1	1	1	1		1	1	1	1	1
6 - Developmental Spelling Patterns: Within Word			1		1	1					1	1
7 - Developmental Spelling Patterns: Derivational		1	1		1	1	1	1	1		1	1
8 - Developmental Spelling Stages: Emergent	1	1	1	1	1	1	1	1	1	1	1	1
9 - Graphophonemic Representation	1	1	1	1	1	1	1	1	1	1	1	1
10 - Orthographic Meaning	1	1	1	1	1	1	1	1	1		1	1
TOTAL CORRECT	5	8	10	6	10	10	7	8	9	3	10	10
Percentage Correct	50%	80%	100%	60%	100%	100%	70%	80%	90%	30%	100%	100%
Improvement from Pre-Assessment		3	5		4	4		1	2		7	7

	Pre-Assessment Total - Module 2	Post-Assessment Total - Module 2	Summative Assessment Total - Module 2
1 - Layers of English Orthography: Meaning	6	37	40
2 - Layers of English Orthography: Pattern	5	28	33
3 - Syllabication: Multisyllable Words - Closed	30	35	35
4 - Syllabication: Multisyllable Words - Open	23	32	32
5 - Structural/Morphemic Analysis	12	32	40
6 - Developmental Spelling Patterns: Within Word	6	23	27
7 - Developmental Spelling Patterns: Derivational	7	34	38
8 - Developmental Spelling Stages: Emergent	22	36	39
9 - Graphophonemic Representation	37	40	40
10 - Orthographic Meaning	25	36	40
TOTAL CORRECT	173	333	364

	Pre-Assessment Percentage - Module 2	Post-Assessment Percentage - Module 2	Summative Assessment Percentage - Module 2
1 - Layers of English Orthography: Meaning	15%	93%	100%
2 - Layers of English Orthography: Pattern	13%	70%	83%
3 - Syllabication: Multisyllable Words - Closed	75%	88%	88%
4 - Syllabication: Multisyllable Words - Open	58%	80%	80%
5 - Structural/Morphemic Analysis	30%	80%	100%
6 - Developmental Spelling Patterns: Within Word	15%	58%	68%
7 - Developmental Spelling Patterns: Derivational	18%	85%	95%
8 - Developmental Spelling Stages: Emergent	55%	90%	98%
9 - Graphophonemic Representation	93%	100%	100%
10 - Orthographic Meaning	63%	90%	100%
TOTAL CORRECT	43%	83%	91%

Figure 17: Module Two Data Spreadsheet Part 4

**Module Two – Pre-Assessment Data Analysis by Individual Student**

Figure 18: Pre-Assessment: Module Two by student

The first thing I noticed while reviewing the results of the Module Two pre-assessment was that the scores were considerably higher than the Module One pre-assessment scores. For the Module One pre-assessment, the mean was 2.875 and the mean score for the Module Two pre-assessment was 4.325. While no one correctly answered more than five questions on the Module One pre-assessment, 17 students scored 5 or more on the Module Two pre-assessment with two providing seven correct responses.

Module Two – Pre-Assessment Data Analysis by Course Objective
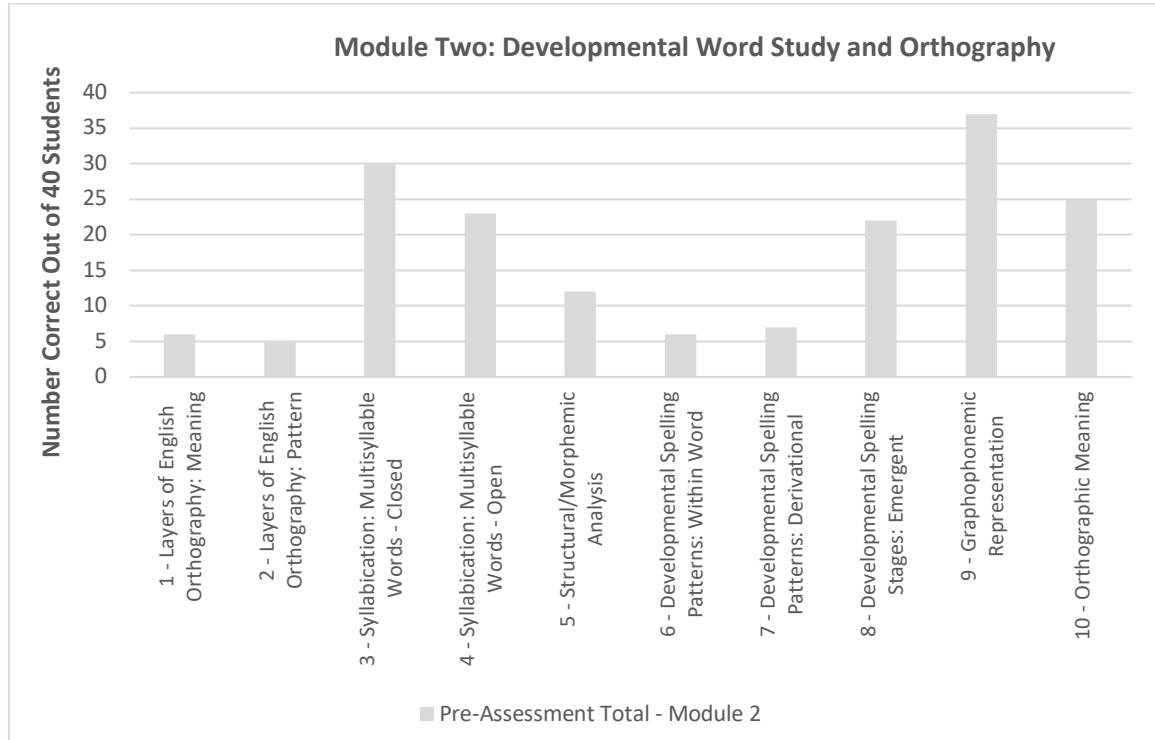
Figure 19: Pre-Assessment: Module Two by objective

The most significant observation from the data in Figure 18 was the high score on *Graphophonemic Representation*. My inference was that this question was very basic and covered rote information, therefore it was not surprising the students scored so high. The greatest concerns were spread across four different low scoring items, two of which fall under *Layers of English Orthography* while the other two covered *Developmental Spelling Patterns*. Orthography and Spelling Patterns have similar foundations so finding discrepancies in both would not be unusual.

Module Two – Post-Assessment Data Analysis by Individual Student
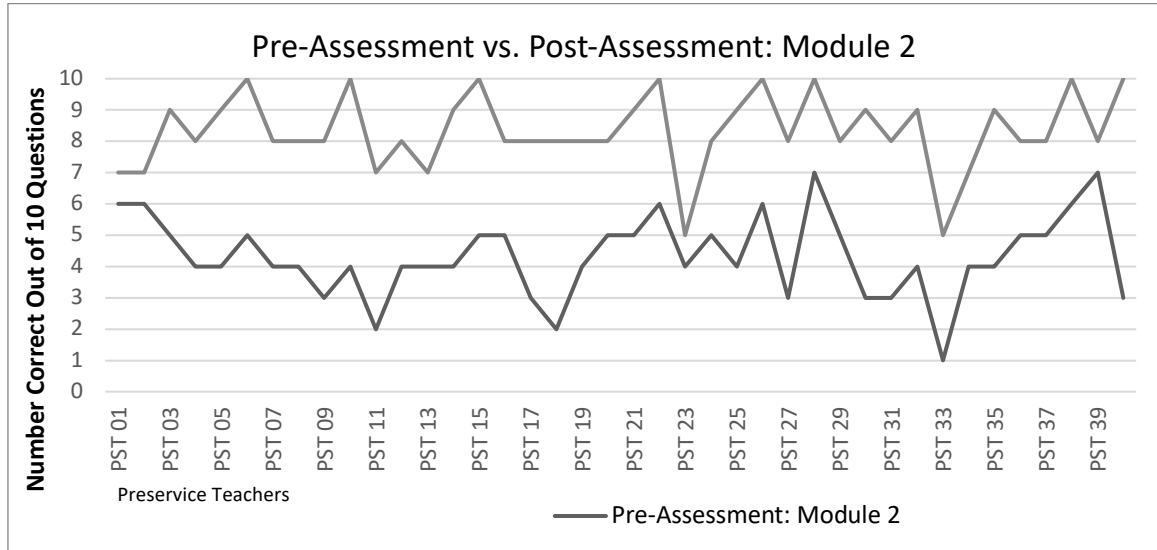
Figure 20: Pre-Assessment vs Post-Assessment: Module Two by student

An interesting finding involved the growth of six students by six or more correct answers. Everyone showed some degree of improvement. The increase of the mean from the pre-assessment (4.325) to the mean from the post-assessment (8.325) was encouraging.

Module Two – Post-Assessment Data Analysis by Course Objectives
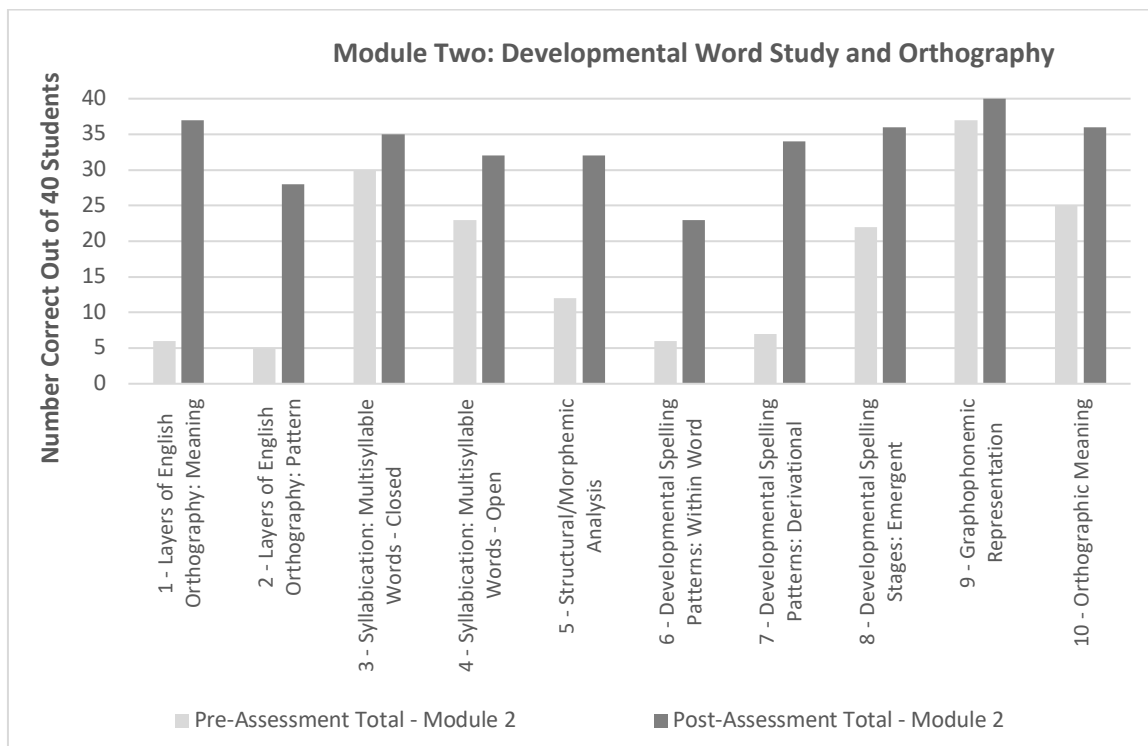
Figure 21: Pre-Assessment vs Post Assessment: Module Two by objective

Predictably, *Graphophonemic Representation* showed the smallest increase because only three students missed it on the pre-assessment. All students answered this question correctly on the post-assessment. This reinforced my original inference that this question required rote knowledge and little thought.

The areas of greatest concern from the pre-assessment, *Layers of Orthography* and *Developmental Spelling Patterns*, consistently showed the highest growth on the post-assessment. This was encouraging because these will be areas of phonics knowledge that will be directly applied in future classrooms. One possible reason for the growth in *Developmental Spelling Patterns* is that the classroom instruction included active, application-based interventions.

While the Module One data showed a decrease in one of the objectives between the pre-assessment and the post-assessment, there were no such areas in Module Two. I would attribute this, at least in part, to the fact that I was conscious of maintaining strong instruction in all areas, even those areas that appeared high in relation to others.

Summative Assessment

According to the guidelines of US PREP, each instructional module is required to have a pre-assessment and a post-assessment. The instructor deviated from the US PREP guidelines by choosing to include a summative assessment. The intent of adding the summative assessment at the end of the semester was to measure long-term retention of knowledge of all objectives throughout the course.

Each summative assessment was constructed by following the US PREP expectations to ensure consistency with the standard US PREP assessments.

This minor adjustment was implemented to determine retention of knowledge from the beginning of the semester to the end. While the pre-assessments and post-assessments provide continuous improvement throughout the semester, the addition of summative assessments may help support continuous improvement by providing data needed for future course iterations.

**Module One – Summative Assessment Data Analysis by Individual Student**
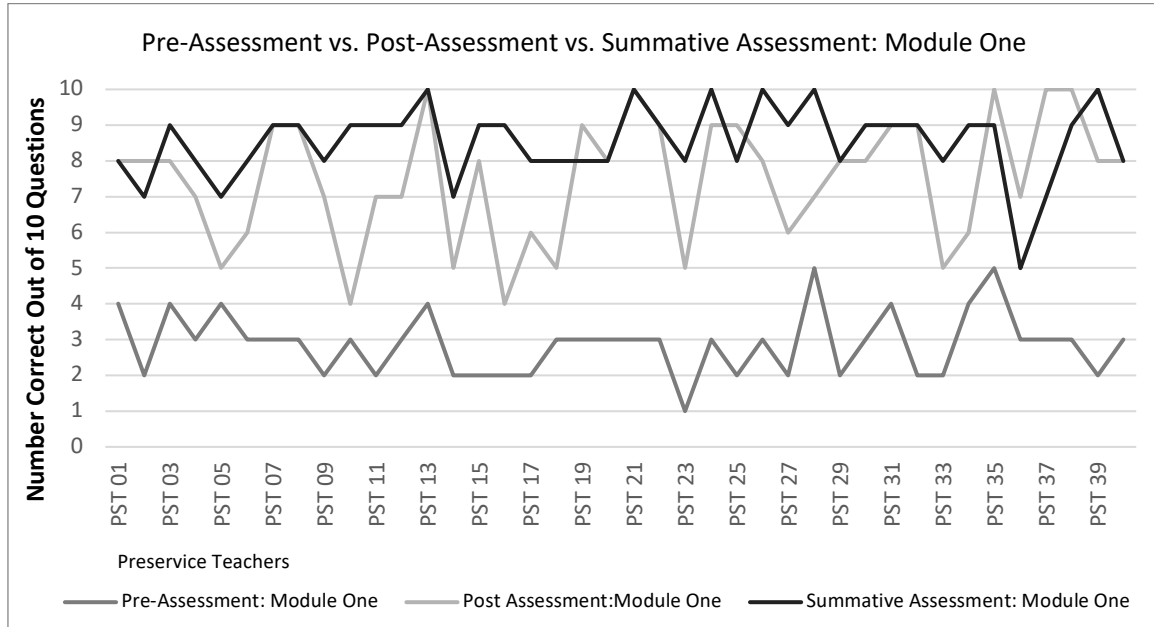
Figure 22: Pre vs Post vs Summative Assessment: Module One by student

It is noticeable that all of the students improved their phonics-based knowledge from the beginning to the end of the semester. One aspect of this summative assessment that should be considered is the fact that Module One had been completed in week six and the summative assessment was administered in week fourteen. Even with the eight-week interval, a majority of students retained the knowledge level they achieved on the post-assessment at the end of Module One. This improvement showed with an analysis of the mean rising from 7.525 on the post-assessment to 8.525 on the summative assessment.

Module One – Summative Assessment Data Analysis by Course Objective
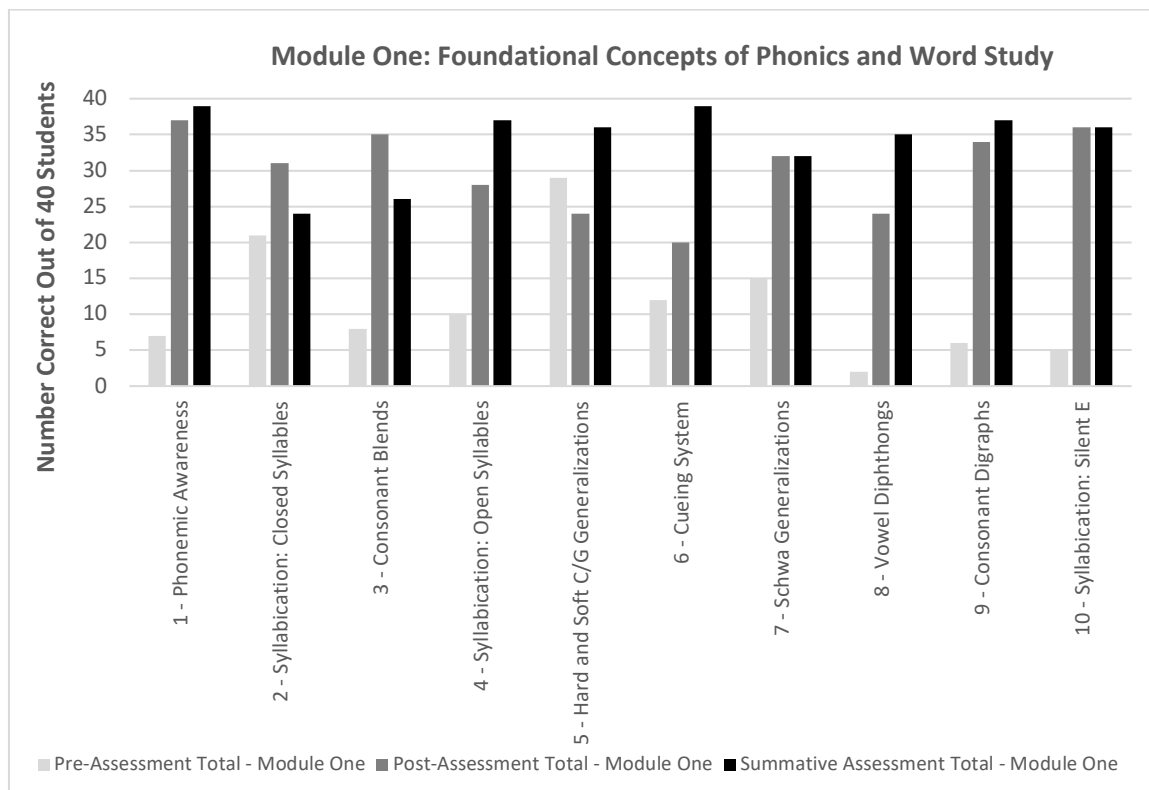
Figure 23: Pre vs Post vs Summative Assessment: Module One by objective

As the instructor, I was encouraged to see that *Cueing System* increased steadily throughout the semester.

I was also encouraged to see the improvement in *Hard and Soft C/G Generalization* because it had declined from the pre-assessment to the post-assessment. After noting the decrease during the post-assessment analysis, I was able to embed instruction about this concept throughout the semester. The improvement in the score suggests that this practice was effective.

While all areas improved from the pre-assessment to the summative assessment, it is noteworthy that eight out of the ten objectives either maintained or increased during the eight-week span from the post-assessment to the summative assessment.

**Module Two – Summative Assessment Data Analysis by Course Objective**
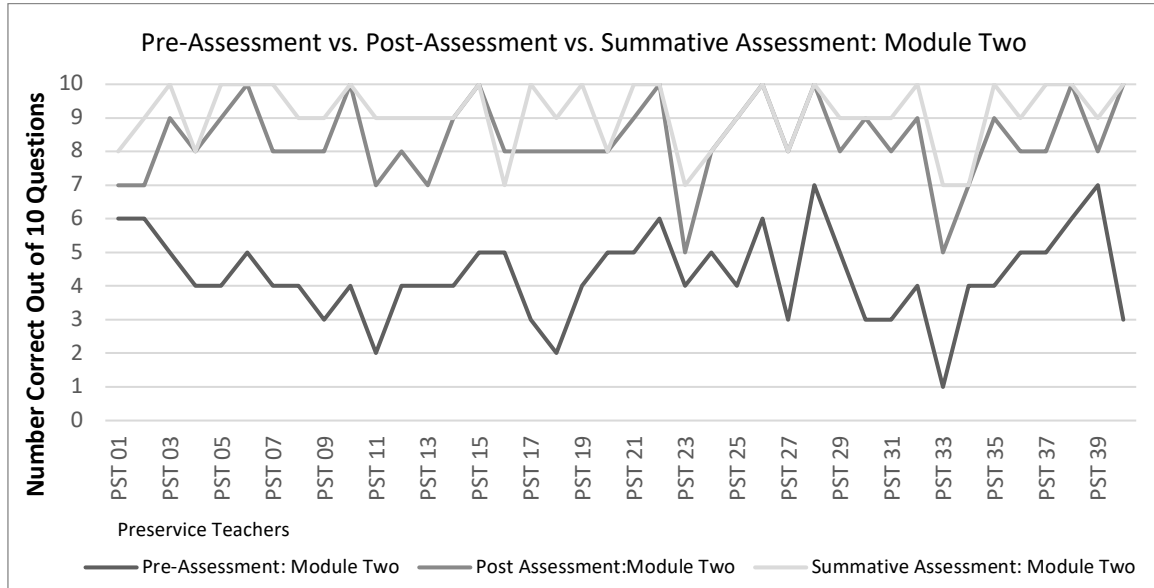
Figure 24: Pre vs Post vs Summative Assessment: Module Two by student

It is obvious that all of the students improved their phonics-based knowledge from the beginning to the end of the semester. Only one student showed any decrease between the post-assessment and the summative assessment. With only two weeks between the assessments, one should not expect much decrease. The class mean for the summative assessment showed a slight increase from the post-assessment rising from 8.325 to 9.1.

**Module Two – Summative Assessment Data Analysis by Course Objective**
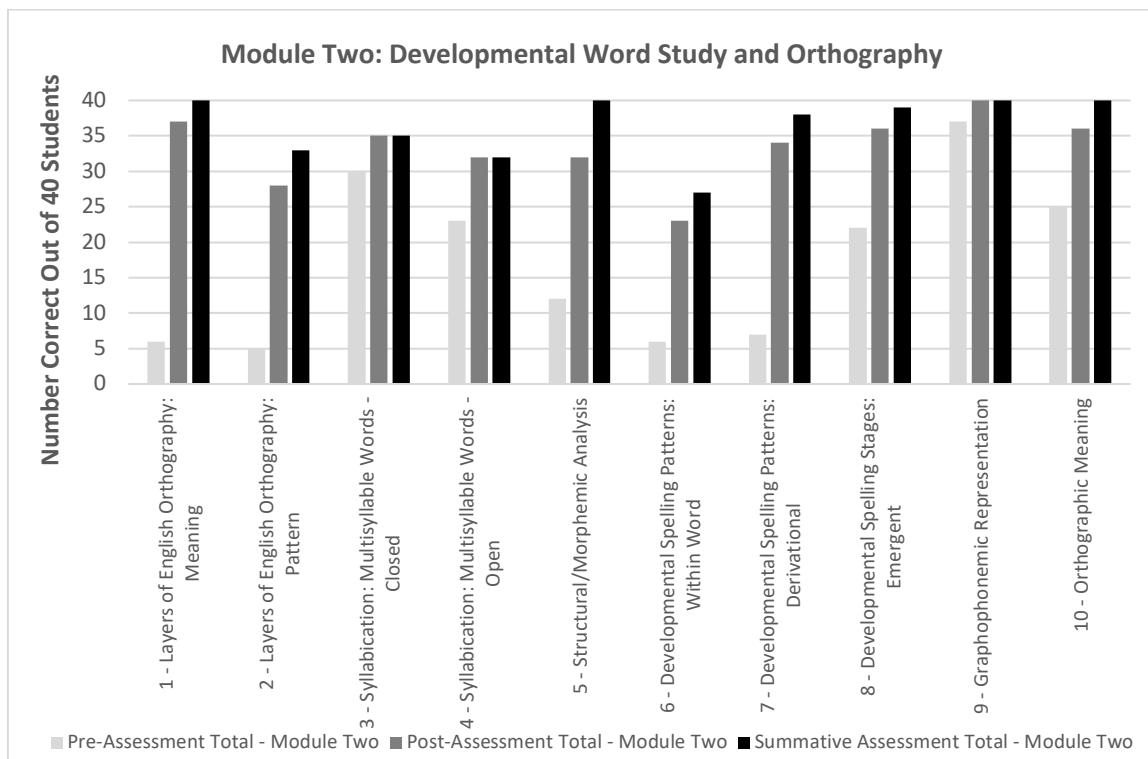
Figure 25: Pre vs Post vs Summative Assessment: Module Two by objective

As with Module One, all objectives saw an increase from the pre-assessment to the summative assessment. Given the two-week interval between the post-assessment and the summative assessment, it would be expected that all objectives would be stable or would increase. This idea was verified by the data displayed in Figure 25.

Notably, the *Structural/Morphemic Analysis* increased steadily through all three assessments. This was just one of the four objectives in which all of the preservice teachers scored 100 percent.

Chapter 5: Summary

Conclusions

The opportunity to use design-based research within an authentic setting with preservice teachers has been both enlightening, frustrating, and encouraging. I have learned more about phonics-based content within the contextual framework of Balanced Literacy. I have also come to more fully understand the needs of preservice teachers. From this study, I could categorize my learning in three primary areas.

Phonics-Based Instruction

Pre-assessments within the reading instruction and phonics course have demonstrated that most preservice teachers arrive at the college level with very limited phonics knowledge. Their lack of phonics knowledge makes it imperative that they are intentionally, and explicitly, taught the phonics knowledge that will enable them to use these skills in practical application settings.

While an abundance of current research suggests that phonics is just one important part of a comprehensive literacy plan that focuses on comprehension, it is a vital part, especially for those who have reading difficulties. The structure of phonics-based instruction helps people go past simply decoding groups of letters to authentically reading and comprehending what has been read. The preservice teachers cannot teach something they do not know. By helping them develop phonics knowledge ranging from phonemic awareness to structural and morphemic analysis, the instructors set them on a path to help students with both reading and writing.

About Design-Based Research:

Throughout the study, I learned both helpful and somewhat surprising lessons about design-based research. One thing I realized is there can be a danger to basing your instruction on pre-assessments. The less students know, the more they will guess. This may result in scores that will skew data. If you base your instruction solely on pre-assessments, you may be focusing on the wrong areas. Just as troubling, you may be ignoring areas by assuming the students already understand the objectives.

Rather than modify the time spent with the objectives, pre-assessment data should inform planning and collaboration with colleagues to increase the quality of all interventions. Adjustments to instructional interventions should always be used to reinforce low performing objectives while maintaining high quality instruction in all areas.

Another realization is that instructional adjustments should not end with modular post-assessments. Many objectives where students are weak on post-assessments can be embedded within further instruction to increase the conceptual understandings throughout the semester. While an objective may not be scheduled in the current module, there are usually ways to embed it in future instruction. This can lead to increased knowledge throughout the course of the semester.

Regardless of the status with the US PREP organization, DBR as a method of action research should be considered for use in all courses as instructors strive for continuous improvement. By utilizing design-based research, instructors will be able to see continuous improvement within the courses they are currently teaching as well as in

planning for future semesters. All instructors should be open-minded to innovation and improvement, even when it is uncomfortable.

Multiple assessments throughout the course allow the instructor to ensure that students are learning. If the students demonstrate misconceptions, it is the responsibility of the instructor to make instructional adjustments. Teaching is not taking place until the students are learning.

While pre-assessments can provide a basis for initial instruction and post-assessments can provide a basis for adjustments in the current course, summative assessments should be considered for all DBR developed courses to gather valuable data which may inform and refine future course iterations. Without a summative assessment, there is no measure of the effectiveness of any adjustments the instructor made after the post-assessment. Without measuring the results, you cannot draw a valid conclusion about the helpfulness of an intervention strategy.

Limitations

As with any other process, there are some limitations that come with the design-based research method.

- The development of assessments is a potential limitation. Even when items are grounded in standards-based objectives, this may not provide enough information to develop sound assessment items. This limitation can be somewhat mitigated through multiple evaluations and iterations of the assessments.

- The limited number of participants and the context of the research may skew data and results.

- The timely scoring and analysis of assessments may not always be practical.

- Instructors may need to receive training on some of the technological aspects of data disaggregation.

- While the use of DBR with a leading organization may provide support and leadership, it may also become confining to personal innovation.

Suggestions for Future Research

While the DBR approach was helpful for this class, I think it would be interesting to conduct a longitudinal study based on multiple semesters and years of the same course. Seeing the class changes over a long period of time and what adjustments brought the most continuous improvement would be a worthy multi-year study.

The pre-assessment on Module Two showed me a question that ended up not being very helpful. I kept thinking about how I would change it for the next semester. I think a study for refining course assessments over time would make an interesting study. By studying multiple courses and increasing the number of participants, statistical models may be used to establish validity and reliability of course assessments.

Personal Reflections

While the empirical results of this research were dependable and objective, it should be acknowledged that the nature of design-based research is to improve current instruction with the understanding that every course is unique. This requires not only objective analysis, but also reflective analysis. As the researcher and instructor of this course, I was interested and invested in the results. For me, the objective data became more than simply numbers, spreadsheets, and graphs. This data represented the instruction I provided as well as the progress made by my students. In many ways, this data came to life.

As the study progressed, I became acutely aware of the personal nature and ramifications of this study. There were times that I experienced emotional responses to the results, and I became concerned. Is it acceptable for a researcher to become emotionally connected to a study? In this case, I believe it was both acceptable and essential. The results of this design-based research study were intended to help me grow as an instructor for the benefit of current and future students. While the findings of this research certainly measured the development of phonics knowledge among preservice teachers, this study also resulted in the renewal of my personal aspirations towards continuous professional improvement.

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Appendix A

Texas English Language Arts and Reading Generalist EC-6 Standards

English Language Arts and Reading Generalist EC–6 Standards

Final

THE STATE OF TEXAS

English Language Arts and Reading Generalist EC–6 Standards

ENGLISH LANGUAGE ARTS AND READING GENERALIST EC–6 STANDARDS

Standard I. *Oral Language:* Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills.

Standard II. *Phonological and Phonemic Awareness:* Teachers of young students understand the components of phonological and phonemic awareness and utilize a variety of approaches to help young students develop this awareness and its relationship to written language.

Standard III. *Alphabetic Principle:* Teachers of young students understand the importance of the alphabetic principle to reading English, know the elements of the alphabetic principle, and provide instruction that helps students understand that printed words consist of graphic representations that relate to the sounds of spoken language in conventional and intentional ways.

Standard IV. *Literacy Development and Practice:* Teachers of young students understand that literacy develops over time and progresses from emergent to proficient stages. Teachers use a variety of contexts to support the development of young students' literacy.

Standard V. *Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.

Standard VI. *Reading Fluency:* Teachers understand the importance of fluency to reading comprehension and provide many opportunities for students to improve reading fluency.

Standard VII. *Reading Comprehension:* Teachers understand the importance of reading for understanding, know the components of comprehension, and teach young students strategies for improving comprehension.

Standard VIII. *Development of Written Communication:* Teachers understand that writing to communicate is a developmental process and provide instruction that helps young students develop competence in written communication.

Standard IX. *Writing Conventions:* Teachers understand how young students use writing conventions and how to help students develop those conventions.

Standard X. *Assessment and Instruction of Developing Literacy:* Teachers understand the basic principles of assessment and use a variety of literacy assessment practices to plan and implement literacy instruction for young students.

Standard XI. *Research and Inquiry Skills:* Teachers understand the importance of study and inquiry skills as tools for learning and promote students' development in applying study and inquiry skills.

Standard XII. *Viewing and Representing:* Teachers understand how to interpret, analyze, evaluate, and produce.

English Language Arts and Reading Generalist EC–6 Standards

Standard I. *Oral Language:* Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills.

Teacher Knowledge: What Teachers Know	Application: What Teachers Can Do
Teachers of Students in Grades EC–6	**Teachers of Students in Grades EC–6**
The beginning teacher knows and understands:	The beginning teacher is able to:
1.1k basic linguistic concepts (e.g., phonemes, segmentation) and developmental stages in acquiring oral language, including stages in phonology, semantics, syntax, and pragmatics, recognizing that individual variations occur;	1.1s acknowledge students' current oral language skills and build on these skills to increase students' oral language proficiency through specific language instruction using such activities as meaningful and purposeful conversations, dramatic play, songs, rhymes, stories, games, language play, discussions, questioning, and sharing information;
1.2k how to build on students' cultural, linguistic, and home backgrounds to enhance their oral language development;	1.2s strengthen vocabulary and narrative skills in spoken language by reading aloud to students and teaching them to recognize the connections between spoken and printed language;
1.3k the relationship between the development of oral language and the development of reading;	1.3s provide direct and indirect instruction, including modeling and reading aloud, in "classroom" English (e.g., language structures and pronunciations commonly associated with written English) and support students' learning and use of classroom English through meaningful and purposeful oral language activities;
1.4k skills for speaking to different audiences for various purposes;	1.4s select and use instructional materials and strategies that promote students' language development, respond to students' individual strengths, needs, and interests, and reflect cultural diversity;
1.5k active, purposeful listening in a variety of contexts;	1.5s help students learn how to adapt students' spoken language to various audiences, purposes, and occasions;
1.6k the use of critical listening to analyze and evaluate a speaker's message;	1.6s help students learn how to evaluate the content of their own spoken messages and the content and effectiveness of the messages of others;
1.7k listening skills for enjoying and appreciating spoken language;	
1.8k the use of technology in promoting oral communication skills;	
1.9k how to use effective informal and formal assessments to evaluate students' oral language skills, and recognize when speech or language delays or differences warrant in-depth evaluations and additional help or intervention;	

English Language Arts and Reading Generalist EC–6 Standards

Standard I. *Oral Language:* Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills.

Teacher Knowledge: What Teachers Know	**Application: What Teachers Can Do**
Teachers of Students in Grades EC–6 (continued)	*Teachers of Students in Grades EC–6 (continued)*
The beginning teacher has a basic knowledge of:	The beginning teacher is able to:
1.10k similarities and differences between oral and written language conventions and how to promote young students' awareness of these similarities and differences; and	1.7s plan, implement, and monitor instruction that is focused on individual student's needs, strengths, and interests and is based on informal and formal assessment of students' progress in oral language development;
1.11k how to use instruction that interrelates oral and written languages to promote student reading and learning (e.g., preview-review, discussions, and questioning) when speech or language delays or differences warrant in-depth evaluations and additional help or interventions.	1.8s communicate with student's families about ways that they can encourage their student's language development;
	1.9s provide opportunities for students to engage in active purposeful listening;
	1.10s communicate with other professionals and continually seek implications for practice from current research about oral language development; and
	1.11s support students' development of communication skills through the use of technology.

English Language Arts and Reading Generalist EC–6 Standards

Standard II. *Phonological and Phonemic Awareness:* Teachers of young students understand the components of phonological and phonemic awareness and utilize a variety of approaches to help young students develop this awareness and its relationship to written language.

Teacher Knowledge: What Teachers Know	Application: What Teachers Can Do
Teachers of Students in Grades EC–6	**Teachers of Students in Grades EC–6**
The beginning teacher knows and understands:	The beginning teacher is able to:
2.1k the concept of phonological awareness, its relationship to the ability to read an alphabetic language, and the development of phonological awareness in students (*a student who has phonological awareness hears distinct words, syllables, and sounds in language separate from print*);	2.1s plan, implement, and monitor instruction that is focused on individual students' needs and is based on continuous use of formal and informal assessments of individual students' phonological development;
2.2k the significance of phonological and phonemic awareness for reading and typical patterns in the development of phonological and phonemic awareness, and recognizes that individual variations occur (*A student who has phonological awareness hears distinct words, syllables, and sounds in language separate from print. A student who has phonemic awareness can identify individual sounds in spoken words, blend together the separated sounds of spoken words to form words, and play with the sounds of spoken language by adding or taking away sounds from words.*); and	2.2s use instructional approaches, including language games, activities, materials, and direct teacher instruction, that promote students' phonological awareness;
	2.3s select and use instructional materials that promote students' phonological and phonemic awareness and build on students' current language skills;
	2.4s inform parents of their child's phonological development and its importance to reading and communicate with families about ways to encourage students' phonological awareness at home; and
2.3k effective formal and informal assessments of phonological and phonemic awareness and be able to analyze results, and identifying appropriate instructional strategies for teaching phonological and phonemic awareness to individual student.	2.5s communicate with other professionals and continually seek implications for practice from current research about phonological awareness.

English Language Arts and Reading Generalist EC–6 Standards

Standard III. *Alphabetic Principle:* Teachers of young students understand the importance of the alphabetic principle to reading English, know the elements of the alphabetic principle, and provide instruction that helps students understand that printed words consist of graphic representations that relate to the sounds of spoken language in conventional and intentional ways.

Teacher Knowledge: What Teachers Know	Application: What Teachers Can Do
Teachers of Students in Grades EC–6	**Teachers of Students in Grades EC–6**
The beginning teacher knows and understands:	The beginning teacher is able to:
3.1k the importance of the elements of the alphabetic principle, including letter names, graphophonemic knowledge, and the relationship of the letters in printed words to spoken language;	3.1s respond to individual student's needs by providing focused instruction on the letters of the alphabet and the relationships of sounds and letters;
3.2k expected patterns of students' alphabetic skills development and knowledge that individual variations may occur;	3.2s select and use instructional materials and strategies, including multisensory techniques (e.g., letter names, graphophonemic knowledge, and the relationship of letters and printed words to spoken language) to promote students' understanding of the elements of the alphabetic principle;
3.3k that not all written languages are alphabetic, that many alphabetic languages are more phonetically regular than English, and know how to help English language learner deal with positive and negative transfer related to the alphabetic principle; and	3.3s use formal and informal assessments to analyze individual student's alphabetic skills, monitor learning, and plan instruction;
3.4k how to select, administer, and analyze results from informal and formal assessments of alphabetic knowledge.	3.4s communicate with parents about ways to increase students' alphabetic knowledge;
	3.5s communicate with other professionals and continually seek implications for practice from current research about the development of alphabetic knowledge; and
	3.6s provide learning experiences that promote students' ability to read critically and evaluate information presented in nonliterary texts.

English Language Arts and Reading Generalist EC–6 Standards

Standard IV. *Literacy Development and Practice:* Teachers of young students understand that literacy develops over time and progresses from emergent to proficient stages. Teachers use a variety of contexts to support the development of young students' literacy.

Teacher Knowledge: What Teachers Know	**Application: What Teachers Can Do**
Teachers of Students in Grades EC–6	*Teachers of Students in Grades EC–6*
The beginning teacher knows and understands:	The beginning teacher is able to:
4.1k that literacy acquisition develops in an often predictable pattern from prereading (sometimes referred to as emergent literacy) to conventional literacy and that individual variations occur in literacy acquisition;	4.1s provide instruction that focuses on concepts about print and functions of print, including book handling, parts of a book, orientation, directionality, and the relationships between written and spoken words;
4.2k that the developing reader has a growing awareness of print in the environment, of the sounds in spoken words, and of the uses of print;	4.2s assist young students in distinguishing letter forms from number forms and text from pictures;
4.3k that literacy development occurs in multiple contexts through reading, writing, and the use of oral language;	4.3s provide multiple opportunities for young students to listen to and respond to a wide variety of student literature, both fiction and non-fiction, and to recognize characteristics of various types of narrative and expository texts;
4.4k a wide range of student literature and other texts written for students;	4.4s talk with students about their favorite books;
4.5k the importance of modeling and encouraging reading for pleasure and lifelong learning;	4.5s engage students in story reading experiences and encourage young students to interact with others about stories;
4.6k the difference between guided and independent practice in reading;	4.6s provide many opportunities for students to read and write in order to develop an extensive reading and writing vocabulary;
4.7k the importance of reading as a skill in all content areas;	4.7s assist young readers in selecting their own books for independent reading;
4.8k the use of technology in promoting literacy; and	4.8s teach students about authors and their purposes for writing;
4.9k how to select, administer, analyze, and use results from informal and formal assessments of literacy acquisition, including assessments of phonological and phonemic awareness and alphabetic skills.	4.9s use formal and informal assessments of individual student's literacy development to plan, implement, and monitor instruction;
	4.10s communicate with families about ways to enhance students' literacy development;

English Language Arts and Reading Generalist EC–6 Standards

Standard IV. *Literacy Development and Practice:* Teachers of young students understand that literacy develops over time and progresses from emergent to proficient stages. Teachers use a variety of contexts to support the development of young students' literacy.

Application: What Teachers Can Do
Teachers of Students in Grades EC–6 (continued)
The beginning teacher is able to:
4.11s communicate with other professionals and continually seek implications for practice from current research on literacy acquisition; and
4.12s use technology to help students access a wide range of narrative and expository texts.

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English Language Arts and Reading Generalist EC–6 Standards

Standard V. *Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.

Teacher Knowledge: What Teachers Know	Application: What Teachers Can Do
Teachers of Students in Grades EC–6	**Teachers of Students in Grades EC–6**
The beginning teacher knows and understands:	The beginning teacher is able to:
5.1k that many students develop word analysis skills (e.g., decoding, blending, structural analysis, sight word vocabulary) and reading fluency in a predictable sequence, recognizing that individual variations occur;	5.1s teach the analysis of phonetically regular words in a simple-to-complex progression, i.e., phonemes, blending onsets and rimes, short vowels, consonant blends, other common vowel and consonant patterns, and syllables;
5.2k the continuum of word analysis skills and grade-level expectations for these skills;	5.2s teach students to read passages using decodable texts and provide opportunities for students to progress from sounding out words orally to decoding words silently;
5.3k the norms for reading fluency that have been established for various age and grade levels;	5.3s teach students to recognize high-frequency irregular words by selecting words that appear frequently in students' books and reviewing difficult words often;
5.4k important phonetic elements and conventions of the English language;	5.4s teach students ways to identify vowel sound combinations and multisyllabic words;
5.5k strategies for decoding and determining the meaning of increasingly complex words;	5.5s provide instruction in how to use structural cues to recognize compound words, base words, and inflections (e.g., prefixes and suffixes);
5.6k the importance of word recognition skills (e.g., decoding, blending, structural analysis, sight word vocabulary) to reading comprehension and know a variety of strategies to help young student develop and apply word analysis skills;	5.6s teach students to use knowledge of word order (English syntax) and context to support word identification and confirm word meaning;
5.7k differences in students' development of word analysis skills and know how to adjust instruction in response to various students' needs;	5.7s use formal and informal assessments to analyze individual student's word identification and decoding skills in order to plan and monitor instruction;
5.8k a variety of formal and informal procedures for assessing students' word identification and decoding skills; and	5.8s communicate with parents about ways to support students' word identification and decoding skills; and
5.9k instructional practices to meet students' individual needs in decoding and word identification.	

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English Language Arts and Reading Generalist EC–6 Standards

Standard V. *Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.

Application: What Teachers Can Do

Teachers of Students in Grades EC–6 (continued)

The beginning teacher is able to:

5.9s   communicate with other professionals and continually seek implications for practice from current research about the development of decoding and word identification.

English Language Arts and Reading Generalist EC–6 Standards

Standard VI. *Reading Fluency:* Teachers understand the importance of fluency to reading comprehension and provide many opportunities for students to improve reading fluency.

Teacher Knowledge: What Teachers Know	Application: What Teachers Can Do
Teachers of Students in Grades EC–6	**Teachers of Students in Grades EC–6**
The beginning teacher knows and understands:	The beginning teacher is able to:
6.1k how students' reading rate and fluency affect comprehension;	6.1s identify and monitor on an ongoing basis young students' fluency levels by using leveled passages or reading materials on a daily basis;
6.2k how young students develop reading fluency and that fluency involves rate, accuracy, and intonation;	6.2s provide frequent opportunities for fluency development through reading in independent-level materials, reading orally from familiar text, repeated reading activities, and silent reading for increasingly longer periods;
6.3k how to assess students' reading fluency on an ongoing basis and know the norms that have been established for various age and grade levels;	6.3s apply norms for reading fluency to evaluate students' reading fluency;
6.4k instructional practices that enhance the development of fluency, including providing opportunities for students to read regularly, both orally and silently, in independent-level materials and to do repeated reading and partner reading;	6.4s communicate with families about students' reading fluency and ways they can help to increase students' fluency;
6.5k instructional strategies and practices for promoting students' word analysis skills and reading fluency;	6.5s communicate with other professionals and continually seek implications from current research about the development of students' reading fluency; and
6.6k differences in students' development of word analysis skills and reading fluency, and instructional practices for meeting students' individual needs in these areas; and	6.6s provide opportunities for students to improve reading fluency through self-correction.
6.7k a variety of informal and formal procedures for assessing on an ongoing basis students' reading fluency.	

English Language Arts and Reading Generalist EC–6 Standards

Standard VII. *Reading Comprehension:* Teachers understand the importance of reading for understanding, know the components of comprehension, and teach young students strategies for improving comprehension.

Teacher Knowledge: What Teachers Know	Application: What Teachers Can Do
Teachers of Students in Grades EC–6	**Teachers of Students in Grades EC–6**
The beginning teacher knows and understands:	The beginning teacher is able to:
7.1k that reading comprehension begins with listening comprehension and knows strategies to help students improve listening comprehension;	7.1s formally and informally assess students' reading comprehension and provide focused instruction in reading comprehension based on individual student's needs;
7.2k how to model and teach literal comprehension skills (e.g., identifying stated main idea, details, sequence, and cause-and-effect relationships);	7.2s use a variety of instructional strategies to enhance students' listening and reading comprehension, including helping students link the content of texts to students' lives and connect related ideas across different texts;
7.3k the continuum of reading comprehension skills and grade-level expectations for these skills;	7.3s guide students in developing and using metacognitive skills;
7.4k reading comprehension as an active process of constructing meaning;	7.4s model strategies for improving reading comprehension such as previewing texts, self-monitoring, and retelling;
7.5k factors affecting students' reading comprehension, such as oral language development, word analysis skills, prior knowledge, previous reading experiences, fluency, ability to monitor understanding, and the characteristics of specific texts (e.g., structure and vocabulary);	7.5s provide frequent opportunities for students to engage in silent reading, both at school and at home;
7.6k the role of visualization skills in reading comprehension;	7.6s guide students to generate questions and apply research about topics introduced in reading selections, both fiction and nonfiction;
7.7k the relationship between extensive reading, vocabulary development, and reading comprehension;	7.7s provide time for extended reading of a wide range of materials, including expository texts;
7.8k the use of metacognitive skills in reading comprehension;	7.8s use instructional strategies that help increase students' reading vocabulary;
7.9k various literary genres (e.g., historical fiction, poetry, myths, and fables) and their characteristics;	7.9s provide instruction that increases knowledge of students' own culture and the cultures of others through reading;

English Language Arts and Reading Generalist EC–6 Standards

Standard VII. *Reading Comprehension:* Teachers understand the importance of reading for understanding, know the components of comprehension, and teach young students strategies for improving comprehension.

Teacher Knowledge: What Teachers Know	Application: What Teachers Can Do
Teachers of Students in Grades EC–6 (continued)	**Teachers of Students in Grades EC–6 (continued)**
The beginning teacher knows and understands:	The beginning teacher is able to:
7.10k how to model and teach inferential comprehension skills (e.g., inferring main ideas, comparisons, unstated and stated cause-and-effect relationships; summarizing; making predictions; drawing conclusions; making generalizations);	7.10s provide instruction in how to use graphics (e.g., tables, charts, and signs) and other informational texts and technologies (e.g., the Internet) to acquire information;
7.11k know to model and teach evaluative comprehension skills (e.g., distinguishing between fact and opinion; detecting faulty reasoning; reacting to a text's content, characters, and use of language);	7.11s provide opportunities for students to apply comprehension strategies to literature and to respond to literature in a variety of ways (e.g., using reading journals and discussions), including relating background knowledge to literary texts;
7.12k how comprehension can be improved through wide reading, the importance of allocating time to wide reading, and how to develop and maintain classroom libraries and "sending home" libraries;	7.12s teach elements of literary analysis, such as story elements and features of different literary genres;
7.13k the importance of vocabulary development through wide reading and experiences, such as interpreting idioms, multiple-meaning words and analogies;	7.13s provide instruction in comprehension skills that support students' transition from "learning to read" to "reading to learn," (e.g., recognizing different types and functions of texts and matching comprehension strategies to the type of text) and teach students how to locate, retrieve, and retain information from a range of content-area and expository texts;
7.14k a variety of formal and informal procedures for monitoring students' reading comprehension and instructional practices to meet individual student's needs;	7.14s provide frequent opportunities for students to engage in silent reading at school and encourage opportunities for silent reading at home through the development and maintenance of classroom libraries and home libraries;
7.15k comprehension skills and strategies for understanding and interpreting different types of written materials, including narratives, expository texts, technical writing, and content-area textbooks;	7.15s communicate with families about students' reading comprehension and ways to encourage students' reading; and
7.16k different purposes for reading and associated reading strategies;	7.16s communicate with other professionals and seek implications for practice from ongoing research about the development of students' reading comprehension.
7.17k how to interpret and evaluate information presented in various formats (e.g., maps, tables, and graphs);	

English Language Arts and Reading Generalist EC–6 Standards

Standard VII. *Reading Comprehension:* Teachers understand the importance of reading for understanding, know the components of comprehension, and teach young students strategies for improving comprehension.

Teacher Knowledge: What Teachers Know

Teachers of Students in Grades EC–6 (continued

The beginning teacher knows and understands:

7.18k   the importance of providing students with direct, explicit instruction in the use of comprehension strategies;

7.19k   a range of strategies that students can use to facilitate comprehension before, during, and after reading (e.g., previewing, making predictions, questioning, self-monitoring, rereading, mapping, using reading journals, and discussing texts);

7.20k   the importance of locating the meanings, pronunciations, and derivations of unfamiliar words using dictionaries, glossaries, and other sources;

7.21k   literary response and analysis and ways to promote students' development of literary response and analysis;

7.22k   strategies for helping students comprehend abstract content and ideas in written materials (e.g., by using manipulatives, examples, and diagrams);

7.23k   the reading comprehension needs of students with different needs (e.g., English Language Learners and students with disabilities) and how to provide instruction for those students; and

7.24k   the use of technology in promoting reading comprehension.

English Language Arts and Reading Generalist EC–6 Standards

Standard VIII. *Development of Written Communication:* Teachers understand that writing to communicate is a developmental process and provide instruction that helps young students develop competence in written communication.

Teacher Knowledge: What Teachers Know	**Application: What Teachers Can Do**
Teachers of Students in Grades EC–6	***Teachers of Students in Grades EC–6***
The beginning teacher knows and understands:	The beginning teacher is able to:
8.1k predictable stages in the development of written language and writing conventions, including the physical and cognitive processes involved in letter formation, word writing, sentence construction, spelling, punctuation, and grammatical expression, while recognizing that individual variations occur;	8.1s create an environment in which students are motivated to express ideas in writing;
8.2k writing processes, including the use of self-assessment in writing;	8.2s teach purposeful, meaningful writing in connection with listening, speaking, and reading;
8.3k writing for a variety of audiences, purposes, and settings;	8.3s formally and informally monitor students' writing development and provide focused instruction to address students' individual strengths, needs, and interests;
8.4k the differences between first draft writing and writing for publication;	8.4s provide instruction in various stages of writing, including prewriting, drafting, editing, and revising;
8.5k appropriate instructional strategies and sequences for developing students' writing skills;	8.5s provide instruction in the use of available technology that facilitates written communication;
8.6k the development of writing in relation to listening, speaking, and reading, and know instructional strategies that connect these various aspects of language;	8.6s provide opportunities for students to write in a variety of forms and modes and for various purposes and audiences;
8.7k the similarities and differences between language (e.g., syntax and vocabulary) used in spoken and written English and how to help students recognize these similarities and differences to promote effective use of written English conventions;	8.7s provide opportunities for students to self-assess both personal writings (e.g., for clarity, comprehensiveness, and interest to audience) and development as a writer and to elicit critiques from others;
8.8k the benefits of technology for teaching writing and writing for publication; and	8.8s communicate with families about students' development of written communication and ways to encourage students' written communication;
	8.9s communicate with other professionals and continually seek implications for practice from current research about students' development of written communication; and

English Language Arts and Reading Generalist EC–6 Standards

Standard VIII. *Development of Written Communication:* Teachers understand that writing to communicate is a developmental process and provide instruction that helps young students develop competence in written communication.

Teacher Knowledge: What Teachers Know	**Application: What Teachers Can Do**
Teachers of Students in Grades EC–6 (continued)	*Teachers of Students in Grades EC–6 (continued)*
The beginning teacher knows and understands:	The beginning teacher is able to:
8.9k informal and formal procedures for ongoing monitoring and assessment of writing development and writing conventions, and know how to use assessment results to help plan instruction for individuals and groups.	8.10s provide opportunities for students to conference with peers and the teacher.

English Language Arts and Reading Generalist EC–6 Standards

Standard IX. *Writing Conventions:* Teachers understand how young students use writing conventions and how to help students develop those conventions.

Teacher Knowledge: What Teachers Know	**Application: What Teachers Can Do**
Teachers of Students in Grades EC–6	*Teachers of Students in Grades EC–6*
The beginning teacher knows and understands:	**Life Science**
	The beginning teacher is able to:
9.1k that young students go through predictable stages in acquiring writing conventions, including the physical and cognitive processes involved in letter formation, word writing, sentence construction, spelling, punctuation, and grammatical expression, but that individual students vary in development of these conventions;	9.1s formally and informally assess young students' development of writing conventions and provide focused instruction based on individual students' strengths, needs, and interests;
9.2k the relationship between spelling and phonological, graphophonemic knowledge, alphabetic awareness, and the importance of this relationship for later success in reading and writing;	9.2s provide hands-on activities to help young students develop the fine motor skills necessary for writing;
	9.3s teach pencil grip, paper position, and beginning stroke;
9.3k the stages of spelling development (prephonetic, phonetic, transitional, and conventional) and how and when to support students' development from one stage to the next;	9.4s provide direct instruction and guided practice in English writing conventions (e.g., grammar, spelling, capitalization, and punctuation);
9.4k the similarities and differences between language (e.g., syntax and vocabulary) used in spoken and written English and how to help students recognize these similarities and differences to promote effective use of written English conventions;	9.5s provide systematic spelling instruction in common spelling patterns based on phonics skills already taught and provide opportunities for student to use and develop spelling skills in the context of meaningful written expression (e.g., applying decoding skills as one strategy to help proofread spelling during the editing process);
9.5k formal and informal ways to assess young students' development of writing conventions;	9.6s work with students to select pieces of their work to teach writing conventions, recognizing that first drafts are not always edited and revised, but help students realize that accuracy in conventions is necessary when preparing a piece for publication;
9.6k the importance of spelling and graphophonemic knowledge for success in reading and writing; and	9.7s communicate students' performance in the use of writing conventions to families and discuss ways to encourage students' use of writing conventions; and
9.7k the appropriate use of writing conventions and appropriate grammar and usage for communicating clearly and effectively in writing.	9.8s communicate with other professionals and seek implications for practice from ongoing research about student's development of writing conventions.

English Language Arts and Reading Generalist EC–6 Standards

Standard X. *Assessment and Instruction of Developing Literacy:* Teachers understand the basic principles of assessment and use a variety of literacy assessment practices to plan and implement literacy instruction for young students.

Teacher Knowledge: What Teachers Know	**Application: What Teachers Can Do**
Teachers of Students in Grades EC–6	*Teachers of Students in Grades EC–6*
The beginning teacher knows and understands:	The beginning teacher is able to:
10.1k appropriate uses and characteristics of screening devices, formal assessments (e.g., norm-referenced achievement tests and criterion-referenced state tests) and informal assessments (e.g., curriculum-based reading assessments and informal reading inventories) related to the development of literacy in young students;	10.1s use multiple assessments to plan instruction in and monitor the literacy development of young students;
10.2k formative and summative uses of assessment;	10.2s analyze students' errors in reading and writing and use them as a basis for future instruction;
10.3k how to use multiple assessments and the results of these assessments to inform reading and writing instruction;	10.3s use ongoing assessments to determine when a child may be in need of classroom interventions or specialized reading instruction and develop an appropriate instructional plan;
10.4k how to use assessment to determine when a student needs additional help or intervention to bring the student's performance to grade level, based on state content and performance standards for reading, writing, listening, and speaking that comprise the Texas Essential Knowledge and Skills (TEKS);	10.4s communicate students' progress in literacy development to parents and other professionals through a variety of means, including the use of examples of students' work;
10.5k how students' use of self-evaluation and self-monitoring procedures can enhance literacy development;	10.5s communicate instructional decisions based on research, assessments, and knowledge of students; and
10.6k the reciprocal nature of assessment and instruction and how to use assessment results to select appropriate instructional strategies and materials (e.g., basals, supplemental programs, and trade books) to ensure the literacy development of all students;	10.6s collaborate with other professionals and continually seek implications for practice from convergent research about assessment of students' developing literacy.
10.7k the importance of providing many opportunities for students to experience extended reading of narrative and expository texts; and	

English Language Arts and Reading Generalist EC–6 Standards

Standard X. *Assessment and Instruction of Developing Literacy:* Teachers understand the basic principles of assessment and use a variety of literacy assessment practices to plan and implement literacy instruction for young students.

Teacher Knowledge: What Teachers Know

Teachers of Students in Grades EC–6 (continued)

The beginning teacher knows and understands:

10.8k how to determine students' independent, instructional, and frustration reading levels and the importance of using this information when selecting materials for reading instruction for individual students and guiding selection of independent reading materials.

English Language Arts and Reading Generalist EC–6 Standards

Standard XI. *Research and Inquiry Skills:* Teachers understand the importance of study and inquiry skills as tools for learning and promote students' development in applying study and inquiry skills.

Teacher Knowledge: What Teachers Know	Application: What Teachers Can Do
Teachers of Students in Grades EC–6	**Teachers of Students in Grades EC–6**
The beginning teacher knows and understands:	The beginning teacher is able to:
11.1k study and inquiry skills and their significance for student learning and achievement (e.g., using text organizers; taking notes; outlining; drawing conclusions; applying test-taking strategies; previewing; setting purposes for reading; locating, organizing, evaluating, and communicating information; summarizing information; using multiple sources of information; and interpreting and using graphic sources of information);	11.1s use ongoing assessment and knowledge of grade-level expectations to identify students' needs in regard to study and inquiry skills and to plan instruction;
	11.2s respond to students' needs by providing direct, explicit instruction to promote the acquisition and use of study and inquiry skills;
11.2k instructional practices that promote students' acquisition and use of study and inquiry skills across the curriculum;	11.3s provide students with varied and meaningful opportunities to learn and use study and inquiry skills and to recognize the importance of using these skills to enhance achievement across the curriculum;
11.3k grade-level expectations and procedures for assessing students' study and inquiry skills; and	11.4s communicate with families/caregivers about students' study and inquiry skills development and collaborate to promote development in these areas;
11.4k how to use accepted formats for writing research, which includes documenting resources.	11.5s collaborate with other professionals and continually seek implications for practice from convergent research about students' development of study and inquiry skills; and
	11.6s provide students with opportunities to use accepted formats for writing research, including the documentation of resources.

English Language Arts and Reading Generalist EC–6 Standards

Standard XII. Viewing and Representing: Teachers understand how to interpret, analyze, evaluate, and produce.

Teacher Knowledge: What Teachers Know	Application: What Teachers Can Do
Teachers of Students in Grades EC–6	**Teachers of Students in Grades EC–6**
The beginning teacher knows and understands:	The beginning teacher is able to:
12.1k characteristics and functions of different types of media (e.g., film, and print);	12.1s use ongoing assessment and knowledge of grade-level expectations to plan instruction and to identify students' needs regarding the interpretation, analysis, evaluation, and production of visual images, messages, and meanings;
12.2k how different types of media influence and inform;	12.2s compare and contrast print, visual, and electronic media (e.g., films and written stories);
12.3k procedures and criteria for analyzing and evaluating visual images, messages, and meanings;	12.3s evaluate how visual image makers (e.g., illustrators, documentary filmmakers, political cartoonists, and news photographers) represent meanings and provide students with varied opportunities to analyze and interpret visual images;
12.4k procedures for producing visual images, messages, and meanings to communicate with others;	12.4s teach students to analyze visual image makers' choices (e.g., related to style, elements, and medium) and evaluate how these choices help to represent or extend meaning;
12.5k instructional practices that promote students' ability to interpret, analyze, evaluate, and produce visual images, messages, and meanings;	12.5s use various instructional techniques to help students understand and distinguish between denotative and connotative meanings;
12.6k grade-level expectations and procedures for assessing students' skills in interpreting, analyzing, evaluating, and producing visual images, messages, and meanings;	12.6s provide students with opportunities to interpret events and ideas based on information from maps, charts, graphics, video segments, and technology presentations, and to use media to compare ideas and points of view;
12.7k how to distinguish between denotative and connotative meanings; and	12.7s teach students how to select, organize, and produce visuals to complement and extend meanings;
12.8k word origins and the understanding of historical influences on English wording meanings.	

English Language Arts and Reading Generalist EC–6 Standards

Standard XII. Viewing and Representing: Teachers understand how to interpret, analyze, evaluate, and produce.

Application: What Teachers Can Do

Teachers of Students in Grades EC–6 (continued)

The beginning teacher is able to:

12.8s   provide students with opportunities to use technology to produce various types of communications (e.g., class newspapers, multimedia reports, and video reports) and help student assess how language, medium, and presentation contribute to the message;

12.9s   communicate with families/caregivers about students' progress in developing skills for interpreting, analyzing, evaluating, and producing visual images, messages, and meanings and collaborate with them to promote development in these areas; and

12.10s   collaborate with other professionals and continually seek implications for practice from convergent research about students' development of skills for interpreting, analyzing, evaluating, and producing visual images, messages, and meanings.

Appendix B

US PREP Templates

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**Guiding Questions and Deadlines for Designing Courses and Field Experiences
Using Design Based Research in A Progressive Process**
US PREP National Center

Please have faculty member(s) involved in designing each course or field experience
using design-based research answer the following questions. Templates for each stage
can be downloaded from each module.

Stage 1: Background and Contexts of Course or Field Experience

Questions and Deadline for Completion:

1. What is the name of the course or field experience that you are planning to involve in
    redesigning using designed based research for this project? Please give a short
    description of this course and purpose of this course for the program.

2. Is this a Phase 1, Phase 2, or Phase 3 course?

    Glossary:

    *Phase One (P1) courses emphasize the foundational knowledge and skills required
    in the discipline. Phase Two (P2) courses incorporate the knowledge and skills
    from P1 and assimilates them into practice in guided and hypothetical settings,
    such as case studies. Phase Three (P3) courses integrate the knowledge and skills
    from Phase 1 with the simulated application from Phase 2, and then employ them
    in authentic real world settings.*

3. Is this course or field experience required for all teacher candidates in the certification
    program (e.g., elementary, middle, or secondary programs)?

4. When do teacher candidates take this course or field experience (for example, first,
    second, third, and fourth semester)?

5. How many sections of this course are usually offered each semester?

6. Does this course have an associated practicum experience? If so, please provide the
    title of the practicum experience course and describe the requirements of that course
    (e.g., one full day a week in the placement).

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7. Is this course offered in Fall 2017? Spring 2018? (The course should be offered so your design could be tested.)

8. Who are the different instructors that teach this course each semester? What expertise areas do these colleagues possess in terms of designing learning outcomes, assessments, interventions (i.e., instructional activities and resources), and data analyses?

9. What learning management system (LMS) is your department/ institution officially using? (e.g., Blackboard, Moodle, Canvas, etc.)

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Stage 2: Specify Learning Outcomes of Course or Field Experience

1. What are the *achievable, measurable, and required* learning outcomes of this course or field placement? Please organize these by knowledge, beliefs, and teaching practices.

   a) Teacher candidate knowledge expected from this course or field experience (if not applicable, type "NA")?

   b) Teacher candidate beliefs or dispositions expected from this course or field experience (If not applicable, type "NA")?

   c) Teacher candidate teaching practice or skills expected from this course or field experience (If not applicable, type "NA")?

2. How are the above learning outcomes expected in the course and field experience aligned with the relevant initial requirements of teaching licensure standards for your content area in your state?

   a) What state requirements are consistent with the following knowledge outcomes (If not applicable, type "NA")?

   b) What state requirements are consistent with the following belief or dispositions outcomes (If not applicable, type "NA")?

   c) What state requirements are consistent with the following teaching practice or skill outcomes (If not applicable, type "NA")?

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3. How well are the above learning outcomes consistent with the relevant K12 curriculum standards for your content area in your state? Please organize these by knowledge and/or skills, teacher candidate beliefs, and teacher candidate practices.

   a) What K-12 curriculum standards are specifically consistent with the following knowledge outcomes (If not applicable, type "NA")?

   d) What K-12 curriculum standards are specifically are consistent with the following belief or dispositions outcomes (If not applicable, type "NA")?

   e) What K-12 curriculum standards are specifically with the following teaching practice or skill outcomes (If not applicable, type "NA")?

4. If the course or field experience is not the initial course or field experience in the program, what learning experiences that teacher candidates have already developed in the program can be used as bases for the effective development of above learning outcomes in this course or field experience?

   a) What knowledge that teacher candidates have already developed in their program will benefit their knowledge outcomes to be developed in this course or field experience (If not applicable, type "NA")?

   b) What beliefs or dispositions that teacher candidates have already developed in their program will benefit their beliefs or disposition outcomes to be developed in this course or field experience (If not applicable, type "NA")?

   c) What teaching practices or skills that teacher candidates have already developed in their program will benefit their teaching practices or skill outcomes to be developed in this course or field experience (If not applicable, type "NA")?

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5. What are the theoretical and/or research bases for the above learning outcomes expected from the course or field experience (for example, how are your learning outcomes aligned with any of the theory of situated learning, constructivist, behaviorist, complexity, and/or humanist perspective of learning and what research evidences?)

   a) What are the specific theoretical or research bases for which of knowledge outcomes expected from this course or field experience? (If not applicable, type "NA")?

   b) What are the specific theoretical or research bases for which of belief and disposition outcomes expected from this course or field experience? (If not applicable, type "NA")?

   c) What are the specific theoretical or research bases for which of teaching practice or skill outcomes expected from this course or field experience? (If not applicable, type "NA")?

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Stage 3: Organization of Learning Outcomes in Sequenced Modules

1. How can you group all the above learning outcomes into no more than five appropriately sequenced learning modules each with specific thematic focus for the course or field experience so that teacher candidates will have sufficient time and opportunities to develop the expected learning outcomes with quality and rigor?

    a) What is the thematic focus of Module 1, why is it appropriate to put this module here in the sequence, and which of the specific knowledge, belief, and practice or skill learning outcomes will be included in the module?

    b) What is the thematic focus of Module 2, why is it appropriate to put this module here in the sequence, and which of the specific knowledge, belief, and practice or skill learning outcomes will be included in the module?

    c) What is the thematic focus of Module 2, why is it appropriate to put this module here in the sequence, and which of the specific knowledge, belief, and practice or skill learning outcomes will be included in the module?

    d) What is the thematic focus of Module 4, why is it appropriate to put this module here in the sequence, and which of the specific knowledge, belief, and practice or skill learning outcomes will be included in the module?

    e) What is the thematic focus of Module 5, why is it appropriate to put this module here in the sequence, and which of the specific knowledge, belief, and practice or skill learning outcomes will be included in the module?

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Stage 4: Develop and Measure Interventions for Module

In this task you will describe and justify the interventions that you will use in your module to impact teacher candidate's knowledge, skills, and/or dispositions based on your learning outcomes. See Grossman (2005), Tirosh (2008), and content area readings for popular research-based interventions.

Module Title:

Learning Outcome 1
Type learning outcome here
Intervention #1a Type of Intervention: (e.g., micro-teaching, laboratory setting, computer simulations, video technology, case studies, portfolios, practitioner research, lesson study): *Type here*   Detailed description/Instructions for Teacher Candidates: *Type here*   Context of Intervention: (e.g., small group task, whole class task, pairs, stations) *Type here*   Resources Needed: (e.g., readings, handouts, presentations, websites, manipulatives) *Type here*   Anticipated Duration for Implementation and Timing (e.g., 1.5 hours during first week of module) *Type here*

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Measurement of Intervention: (e.g., post reflection survey on the helpfulness of resources/activities, self-check short quizzes guiding teacher candidate learning during intervention)

Type here

Theoretical and/or Empirical Support of Intervention:

Please provide citation of article in APA style, abstract of article, and justification of why this intervention would be effective based on previous theory and research findings.

Intervention #1b

Type of Intervention: (e.g., micro-teaching, laboratory setting, computer simulations, video technology, case studies, portfolios, practitioner research, lesson study):

Type here

Detailed description/Instructions for Teacher Candidates:
Type here

Context of Intervention: (e.g., small group task, whole class task, pairs, stations)
Type here

Resources Needed: (e.g., readings, handouts, presentations, websites, manipulatives)

Type here

Anticipated Duration for Implementation and Timing (e.g., 1.5 hours during first week of module)

Type here

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Measurement of Intervention: (e.g., post reflection survey on the usefulness of resources, activities) *Type here*
Theoretical and/or Empirical Support of Intervention: *Please provide citation of article in APA style, abstract of article, and justification of why this intervention would be effective based on previous theory and research findings.*
Add on if needed.

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Learning Outcome 2
Type learning outcome here
Intervention #2a Type of Intervention: (e.g., micro-teaching, laboratory setting, computer simulations, video technology, case studies, portfolios, practitioner research, lesson study): *Type here*   Detailed description/Instructions for Teacher Candidates: *Type here*   Context of Intervention: (e.g., small group task, whole class task, pairs, stations) *Type here*   Resources Needed: (e.g., readings, handouts, presentations, websites, manipulatives) *Type here*   Anticipated Duration for Implementation and Timing (e.g., 1.5 hours during first week of module) *Type here*
Measurement of Intervention: (e.g., post reflection survey on the usefulness of resources, activities) *Type here*
Theoretical and/or Empirical Support of Intervention: *Please provide citation of article in APA style, abstract of article, and justification of why this intervention would be effective based on previous theory and research findings.*

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Intervention #2b

Type of Intervention: (e.g., micro-teaching, laboratory setting, computer simulations, video technology, case studies, portfolios, practitioner research, lesson study):

Type here

Detailed description/Instructions for Teacher Candidates:
Type here

Context of Intervention: (e.g., small group task, whole class task, pairs, stations)
Type here

Resources Needed: (e.g., readings, handouts, presentations, websites, manipulatives)

Type here

Anticipated Duration for Implementation and Timing (e.g., 1.5 hours during first week of module)

Type here

Measurement of Intervention: (e.g., post reflection survey on the helpfulness of resources/activities, self-check short quizzes guiding teacher candidate learning during intervention)
Type here

Theoretical and/or Empirical Support of Intervention:

Please provide citation of article in APA style, abstract of article, and justification of why this intervention would be effective based on previous theory and research findings.

Add on if needed.

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Learning Outcome 3
Type learning outcome here
Intervention #3a Type of Intervention: (e.g., micro-teaching, laboratory setting, computer simulations, video technology, case studies, portfolios, practitioner research, lesson study): *Type here*   Detailed description/Instructions for Teacher Candidates: *Type here*   Context of Intervention: (e.g., small group task, whole class task, pairs, stations) *Type here*   Resources Needed: (e.g., readings, handouts, presentations, websites, manipulatives) *Type here*   Anticipated Duration for Implementation and Timing (e.g., 1.5 hours during first week of module) *Type here*
Measurement of Intervention: (e.g., post reflection survey on the helpfulness of resources/activities, self-check short quizzes guiding teacher candidate learning during intervention) *Type here*
Theoretical and/or Empirical Support of Intervention: *Please provide citation of article in APA style, abstract of article, and justification of why this intervention would be effective based on previous theory and research findings.*

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Intervention #3b

Type of Intervention: (e.g., micro-teaching, laboratory setting, computer simulations, video technology, case studies, portfolios, practitioner research, lesson study):

Type here

Detailed description/Instructions for Teacher Candidates:
Type here

Context of Intervention: (e.g., small group task, whole class task, pairs, stations)
Type here

Resources Needed: (e.g., readings, handouts, presentations, websites, manipulatives)

Type here

Anticipated Duration for Implementation and Timing (e.g., 1.5 hours during first week of module)

Type here

Measurement of Intervention: (e.g., post reflection survey on the helpfulness of resources/activities, self-check short quizzes guiding teacher candidate learning during intervention)
Type here

Theoretical and/or Empirical Support of Intervention:

Please provide citation of article in APA style, abstract of article, and justification of why this intervention would be effective based on previous theory and research findings.

Add on if needed.

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Sequence of Interventions:
If the final goal of your students is to perform, how will you sequence them to help teacher candidates do well on the video based assessment (D & E)? When listing interventions use labels such as Intervention 1a, Intervention 2b, etc.
Week 1:
Week 2:
Week 3:
Week 4:
Literature Base for Sequence: What research bases do you have for the sequence?

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> *Note:*
> ***Measuring Learning Outcomes*** *was Stage 4 in 2016. It was changed to Stage 5 in 2017 but was not updated on the template form.*

Stage 4: Measuring Learning Outcomes

For each of your learning outcomes from one module, please provide information below about how you will measure these using paper-based assessments. These should be parallel to the questions on your posttest.

If your learning outcomes are P2 or P3, make sure to include scenario-based items.

Module Title:

Learning Outcome 1

Type learning outcome, specify the category of Hollins (2011) framework that the learning outcome fits into, and specify whether the learning outcome is P1, P2, or P3.

*If you need to tweak your learning outcome because it is **not** measureable, please type old and new learning outcome here.*

Hollins (2011) Framework

a) knowledge of learners,
b) knowledge of learning,
c) knowledge of subject matter,
d) knowledge of pedagogy,
e) knowledge of accountability and assessment, and
f) ability to participate in a professional community.

If your learning outcome is related to dispositions, please label as a teaching disposition.

Please see Hollins (2011) reading for more details about these categories.

Phase:

Phase One (P1) learning outcomes emphasize the foundational knowledge and skills required in the discipline. Phase Two (P2) courses incorporate the knowledge and skills from P1 and assimilates them into practice in guided and hypothetical settings, such as case studies, teaching simulations, role playing, and/or microteaching. Phase Three (P3) courses integrate the knowledge and skills from Phase 1 with the simulated application from Phase 2, and then employ them in authentic real world settings.

Please note that the majority of your learning outcomes should be aligned with the Phase of the course. For example, courses that are P1 should have learning outcomes that are mostly P1 and some P2. On the other hand, if your course is P3, then the majority of your learning outcomes should be P3 with some P2.

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Pre-Test Question(s) /Answers *Type pretest questions and answers. In addition, specify whether your question(s) are P1 or P2.*
Post-Test Question(s)/Answers *Type posttest questions and answers. In addition, specify whether your questions are P1 or P2.*
Guiding Questions:
1. Do your pre and post questions for learning outcome measure the same category of Hollins (2011) framework of your learning outcome? Please explain.
2. Do your pre and post questions for learning outcome measure the same P1, P2, or P3 as your learning outcome? Please explain.
3. Are your pre and post questions for learning outcome parallel to each other? In other words, do they measure the same learning outcome and have similar difficulty levels. Please explain below.
4. If you obtained items from an article, state licensure exam for teachers, or other, please specify that resource here. Use APA style.

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Learning Outcome 2:
Type learning outcome, specify the category of Hollins (2011) framework that the learning outcome fits into, and specify whether the learning outcome is P1, P2, or P3. *If you need to tweak your learning outcome because it is **not** measureable, please type old and new learning outcome here.*
Pre-Test Question(s) /Answers *Type pretest questions and answers. In addition, specify whether your question(s) are P1 or P2.*
Post-Test Question(s)/Answers *Type posttest questions and answers. In addition, specify whether your questions are P1 or P2.*
Guiding Questions:
1. Do your pre and post questions for learning outcome measure the same category of Hollins (2011) framework of your learning outcome? Please explain.
2. Do your pre and post questions for learning outcome measure the same P1, P2, or P3 as your learning outcome? Please explain.
3. Are your pre and post questions for learning outcome parallel to each other? In other words, do they measure the same learning outcome and have similar difficulty levels. Please explain below.
4. If you got items from an article, state licensure exam for teachers, or other, please specify that resource here. Use APA style.

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Learning Outcome 3:
Type learning outcome, specify the category of Hollins (2011) framework that the learning outcome fits into, and specify whether the learning outcome is P1, P2, or P3.   *If you need to tweak your learning outcome because it is **not** measureable, please type old and new learning outcome here.*
Pre-Test Question(s) /Answers   *Type pretest questions and answers. In addition, specify whether your question(s) are P1 or P2.*
Post-Test Question(s)/Answers   *Type posttest questions and answers. In addition, specify whether your questions are P1 or P2.*
Guiding Questions:
1. Do your pre and post questions for learning outcome measure the same category of Hollins (2011) framework of your learning outcome? Please explain.
2. Do your pre and post questions for learning outcome measure the same P1, P2, or P3 as your learning outcome? Please explain.
3. Are your pre and post questions for learning outcome parallel to each other? In other words, do they measure the same learning outcome and have similar difficulty levels. Please explain below.
4. If you got items from an article, state licensure exam for teachers, or other, please specify that resource here. Use APA style.

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Learning Outcome 4:
Type learning outcome, specify the category of Hollins (2011) framework that the learning outcome fits into, and specify whether the learning outcome is P1, P2, or P3.   *If you need to tweak your learning outcome because it is **not** measureable, please type old and new learning outcome here.*
Pre-Test Question(s) /Answers   *Type pretest questions and answers. In addition, specify whether your question(s) are P1 or P2.*
Post-Test Question(s)/Answers   *Type posttest questions and answers. In addition, specify whether your questions are P1 or P2.*
Guiding Questions:
1. Do your pre and post questions for learning outcome measure the same category of Hollins (2011) framework of your learning outcome? Please explain.
2. Do your pre and post questions for learning outcome measure the same P1, P2, or P3 as your learning outcome? Please explain.
3. Are your pre and post questions for learning outcome parallel to each other? In other words, do they measure the same learning outcome and have similar difficulty levels. Please explain below.
4. If you got items from an article, state licensure exam for teachers, or other, please specify that resource here. Use APA style.

Appendix C

Internal Review Board Documentation

UNIVERSITY of HOUSTON
DIVISION OF RESEARCH
Institutional Review Boards

APPROVAL OF SUBMISSION

October 26, 2018

Misty Black

mrblack2@uh.edu

Dear Misty Black:

On October 26, 2018, the IRB reviewed the following submission:

Type of Review:	Initial Study
Title of Study:	APPLYING DESIGN-BASED RESEARCH TO MEASURE THE KNOWLEDGE OF PHONICS AMONG PRESERVICE TEACHERS WITHIN THE
Investigator:	Misty Black
IRB ID:	STUDY00001266
Funding/ Proposed	Name: Unfunded
Award ID:	
Award Title:	
IND, IDE, or HDE:	None
Documents Reviewed:	• Sample data chart of archival data, Category: Study tools (ex: surveys, interview/focus group questions, data collection forms, etc.); • Planning Guide for Course Objectives and Assessment Questions Module 2, Category: Study tools (ex: surveys, interview/focus group questions, data collection forms, etc.); • Protocol for IRB Submission_Misty Black, Category: IRB Protocol; • Archival data spreadsheet for analysis, Category: Study tools (ex: surveys, interview/focus group questions, data collection forms, etc.); • Planning Guide for Course Objectives and Assessment Questions Module 1, Category: Study tools (ex: surveys, interview/focus group questions, data collection forms, etc.);
Review Category:	Exempt

UNIVERSITY of
HOUSTON
DIVISION OF RESEARCH
Institutional Review Boards

Committee Name:	Not Applicable
IRB Coordinator:	Sandra Arntz

The IRB approved the study from October 26, 2018 to October 25, 2023, inclusive.

To ensure continuous approval for studies with a review category of "Committee Review" in the above table, you must submit a continuing review with required explanations by the deadline for the September 2023 meeting. These deadlines may be

For expedited and exempt studies, a continuing review should be submitted no later than

If continuing review approval is not granted on or before October 25, 2023, approval of this study expires and all research (including but not limited to recruitment, consent, study procedures, and analysis of identifiable data) must stop. If the study expires and

Unless a waiver has been granted by the IRB, use the stamped consent form approved by the IRB to document consent. The approved version may be downloaded from the

In conducting this study, you are required to follow the requirements listed in the Investigator Manual (HRP-103), which can be found by navigating to the IRB Library

If your study meets the NIH or FDA definitions of clinical trial, or may be published in an ICMJE journal, registration at ClinicalTrials.gov is required. See the UH

Sincerely,

Research Integrity and Oversight (RIO) Office

University of Houston, Division of Research

713 743 9204

FULL PROTOCOL TITLE: APPLYING DESIGN-BASED RESEARCH TO

MEASURE THE KNOWLEDGE OF PHONICS AMONG PRESERVICE TEACHERS

PRINCIPAL INVESTIGATOR:

Misty Black

Curriculum and Instruction

832-451-4119

mrblack2@uh.edu

Table of Contents

1.0   Objectives

This project is designed to assess the development of phonetic knowledge within in the course, Elementary Reading Instruction and Phonics, taught at the University of Houston by the primary investigator. The study is guided by one main research question: How can multiple assessments be utilized to measure the development of phonics-based knowledge among preservice teachers within the context of an introductory reading course at a large urban university? One sub question will be analyzed: How can the results of formative and summative assessments be analyzed and applied to promote continuous improvement within the course and in the design of future course iterations?

2.0   Background

Extensive research indicates that phonics-based instruction is a crucial component of primary reading instruction. Additional research suggests that an abundance of preservice teachers lack essential knowledge of the fundamental principles of phonics. As a result, many beginning teachers are often certified without sufficient knowledge needed for phonics-based reading instruction. Specific content knowledge in phonics is necessary for preservice teachers to be adequately prepared to teach essential reading skills to beginning and struggling readers. Because strong phonics-based instruction is built on a solid knowledge base of teachers, it is critical that teacher education programs prepare future teachers to master the skills of effective reading instruction.

(ELED 3322) which was taught by the primary investigator of this study in the spring of 2018.

3.0   Inclusion and Exclusion Criteria

All data is archival, from the course conducted in the spring of 2018. This course

consisted of adult college students in the Teacher Education Program at the

University of Houston. However, the purpose of this study is to analyze archival

data rather than the human subjects enrolled in the course. Data will not be used

from courses other than ELED 3322. Data from instructors other than the

- Adults unable to consent
-
- Individuals who are not yet adults (infants, children, teenagers)
- Pregnant women
- Prisoners
-

4.0   Vulnerable Populations

5.0   Number of Subjects

LOCAL:

6.0   Recruitment Methods

7.0   Multi-Site Research Communication

8.0   Study Timelines

Archival data will be analyzed. No further data collection will be necessary. The investigator will complete the preliminary analysis of this data during the fall of

9.0   Study Endpoints

10.0   Procedures Involved

The Study Design

This study is based on the model of design-based research (DBR), which is both

action oriented and reflective, necessitating considerable involvement of the

researcher in the design and implementation of research. As such, this study

Description of Research Procedures

Design-based research will be used to analyze overall course effectiveness, potential for continuous improvement, and identification of refinements for the design of future course iterations.

1) The researcher will use archival data from the course ELED 3322, taught in the spring of 2018. All data were based objective results of assignments embedded within the course.

2) The researcher will not collect additional information from human subjects. The use of the archival data is compatible with the requirements of the University of Houston's affiliation with the University-School Partnership for the Renewal of Education (US PREP).

3) The researcher will input the archival data into a spreadsheet, which will be used to determine the development of phonics-based knowledge according to the previously collected data. This format will allow the researcher to objectively analyze the development of knowledge acquisition rather than study of human subjects. The spreadsheet will report the acquisition of phonics-based knowledge in relation to the standards of the course design and

4) In addition to analyzing the quantitative results of the data, DBR is designed to

use objective information from authentic settings to refine instruction and

inform future course development. Thus, DBR includes both objective and

The following figure summarizes the approach of DBR as presented by T. C. Reeves in 2006.
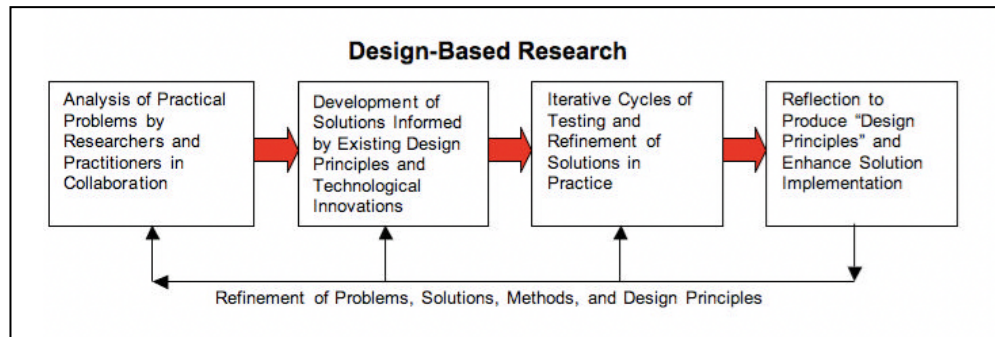
11.0   Setting

The setting of this research and data analysis will be based at the University of Houston.

Archival data for this study is primarily digital and will be housed in the password

12.0   Drugs or Devices

13.0   Risks to Subjects

There is no potential risk because the purpose of this study is to analyze archival data

14.0   Potential Benefits to Subjects

15.0   Provisions to Monitor Data to Ensure the Safety of Subjects

16.0   Withdrawal of Subjects

17.0   Costs/Payments to Subjects

18.0   Compensation for Research-Related Injury

19.0   Confidentiality

Confidentially will be maintained by storing digital records via server space allocated by the College of Education to the University of Houston.

There will be no access outside of the research team to any potential identifying

20.0   Provisions to Protect the Privacy Interests of Subjects

The archival data in this research will contain no human subject identifiers. All potential identifiers within this archival data have been removed.

Original work from which data was obtained has been returned to students. Only

21.0   Informed Consent Process

A waiver of consent is requested. The SOP: Informed Consent Process for Research (HRP-90) will not be used due the archival nature of this research. The purpose of this study is to analyze archival data rather than human subjects.

Because of the archival nature of the data being studied, individual informed consent is neither applicable nor obtainable. This research cannot be carried out without this waiver.

This research is not FDA regulated and does not involve non-viable neonates. This

subjects. This waiver will not adversely affect the rights and welfare of the subjects due to the de-identification of all data.

22.0   Process to Document Consent in Writing

The researcher is requesting a Waiver of Written Documentation of Consent and will not

23.0   HIPAA

24.0   FERPA

Because of the archival nature of the data being studied, there will be no disclosure of

25.0   Data Management

The data will be stored digitally on the University of Houston campus for three years following the completion of the study. Data will be housed in the password protected server within the College of Education.

The data will be maintained under the care of Dr. Laveria Hutchison, the faculty advisor

for this dissertation research. The data may only be accessed by the investigator and the

26.0   Specimen Use and Banking

27.0   Community-Based Participatory Research

28.0   Sharing of Results with Subjects

29.0   Resources

The researcher was the instructor of record for Elementary Reading Instruction and Phonics, ELED 3322, sections 20026 and 26966 at the University of Houston in the spring of 2018. The researcher is knowledgeable about the course objectives, design, and instructional practices. The findings of this study will be used to inform instruction, promote continuous improvement within the course, and assist in the design of future

30.0   Additional Approvals

Elementary Reading Instruction and Phonics - ELED 3322
Planning Guide for Preliminary, Formative, and Summative Assessments

Designed According to US PREP Guidelines: Measuring Learning Outcomes

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 1 – Foundational Concepts of Phonics and Word Study

Preliminary Assessment - Week 2

Formative Assessment - Week 6

Module 1, Item 1	Phonemes
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard I	*Oral Language:* Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills.
State Standard of Teacher Knowledge 1.1k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: basic linguistic concepts (e.g., phonemes, segmentation) and developmental stages in acquiring oral language, including stages in phonology, semantics, syntax, and pragmatics, recognizing that individual variations occur
Student TEKS	K.2 (I) segment spoken one-syllable words into two to three phonemes (e.g., dog:/d/ .../o/ .../g/) 1.2 (E) isolate initial, medial, and final sounds in one-syllable spoken words 1.3 (F) segment spoken one-syllable words of three to five phonemes into individual phonemes (e.g., splat =/s/p/l/a/t/)

Preliminary Assessment Item 1

1. How many phonemes are represented in the word *knight*?

    A. one
    B. two
    C. three
    D. six

Formative Assessment Item 1

1. How many phonemes are represented in the word *thought*?

    A. one
    B. three
    C. five
    D. seven

Summative Assessment Item 1

1. How many phonemes are represented in the word *breathe*?

    A. three
    B. four
    C. six
    D. seven

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Designed According to US PREP Guidelines: Measuring Learning Outcomes

Module 1
Foundational Concepts of Phonics and Word Study

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 1, Item 2	Closed Syllables
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard III	*Alphabetic Principle:* Teachers of young students understand the importance of the alphabetic principle to reading English, know the elements of the alphabetic principle, and provide instruction that helps students understand that printed words consist of graphic representations that relate to the sounds of spoken language in conventional and intentional ways.
State Standard of Teacher Knowledge 3.2k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: expected patterns of students' alphabetic skills development and knowledge that individual variations may occur;

Student TEKS	1.3 (C) use common syllabication patterns to syllabication patterns to decode words, including:
	    (i) closed syllable (CVC) (e.g., mat, rab-bit)
	2.2 (B) use common syllabication patterns to decode words including:
	    (i) closed syllable (CVC) (e.g., pic-nic, mon-ster)
	3.1 (B) use common syllabication patterns to decode words including:
	    (i) closed syllable (CVC) (e.g., mag-net, splen-did)

Preliminary Assessment Item 2

2. An example of a closed syllable is

    A. desk.
    B. hot.
    C. bath.
    D. all of the words.

Formative Assessment Item 2

2. An example of a closed syllable is

    A. wish.
    B. trust.
    C. fed.
    D. all of the words.

Summative Assessment Item 2

2. An example of a closed syllable is

    A. high.
    B. bye.
    C. bird.
    D. all of the words.

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Designed According to US PREP Guidelines: Measuring Learning Outcomes

Module 1
Foundational Concepts of Phonics and Word Study

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 1, Item 3	Consonant Blends
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard III	*Alphabetic Principle:* Teachers of young students understand the importance of the alphabetic principle to reading English, know the elements of the alphabetic principle, and provide instruction that helps students understand that printed words consist of graphic representations that relate to the sounds of spoken language in conventional and intentional ways.
State Standard of Teacher Knowledge 3.2k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: expected patterns of students' alphabetic skills development and knowledge that individual variations may occur
Student TEKS	1.3 (A) decode words in context and in isolation by applying common letter-sound correspondences, including: (iii) consonant blends (e.g., bl, st) 2.2 (A) decode multisyllabic words in context and independent of context by applying common letter-sound correspondences including: (ii) consonant blends (e.g., thr, spl)

Preliminary Assessment Item 3

3. A consonant blend is illustrated by

   A. the *sh* in shirt.
   B. the *in* in thing.
   C. the *wh* in which.
   D. the *br* in brought.

Formative Assessment Item 3

3. A consonant blend is illustrated by

   A. the *in* in shine.
   B. the *th* in thing.
   C. the *bl* in black.
   D. the *ght* in thought.

Summative Assessment Item 3

3. A consonant blend is illustrated by

   A. the *o* in Houston.
   B. the *st* in stamp.
   C. the *gh* in cough.
   D. the *ch* in much.

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Designed According to US PREP Guidelines: Measuring Learning Outcomes

| Module 1 |
| Foundational Concepts of Phonics and Word Study |

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 1, Item 4	**Open Syllables**
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.1k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: that many students develop word analysis skills (e.g., decoding, blending, structural analysis, sight word vocabulary) and reading fluency in a predictable sequence, recognizing that individual variations occur
Student TEKS	1.3 (C) use common syllabication patterns to decode words, including: (ii) open syllable (CV) (e.g., he, ba-by) 2.2 (B) use common syllabication patterns to decode words including: (ii) open syllable (CV) (e.g., ti-ger) 3.1 (B) use common syllabication patterns to decode words including: (ii) open syllable (CV) (e.g., ve-to)

Preliminary Assessment Item 4

4.   If $\underline{e}$ is the only vowel in an open syllable, it will most likely represent the *same sound* as

    A.   the silent $\underline{e}$ in pine.
    B.   the long sound $\underline{e}$ in green.
    C.   the schwa sound for $\underline{e}$ as in system.
    D.   the short sound $\underline{e}$ in set.

Formative Assessment Item 4

4.   If $\underline{o}$ is the only vowel in an open syllable, it will most likely represent the *same sound* as

    A.   the silent $\underline{o}$ in *you*.
    B.   the long sound $\underline{o}$ in *boat*.
    C.   the schwa sound for $\underline{o}$ as in *ballot*.
    D.   the short sound o in *got*.

Summative Assessment Item 4

4.   If $\bar{i}$ is the only vowel in an open syllable, it will most likely represent the *same sound* as

    A.   the silent $\bar{i}$ in *straight*.
    B.   the short sound $\bar{i}$ in *pit*.
    C.   the long sound $\bar{i}$ in *hike*.
    D.   the short sound $\bar{i}$ in *office*.

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| Module 1 |
| Foundational Concepts of Phonics and Word Study |

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 1, Item 5	**Soft c/g**
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language
Student TEKS	1.3 (A) decode words in context and in isolation by applying common letter-sound correspondences, including: (i) single letters (consonants) including b, c=/k/, c=/s/, d, f, g=/g/ (hard), g=/j/ (soft), h, j, k, l, m, n, p, qu=/kw/, r, s=/s/, s=/z/, t, v, w, x=/ks/, y, and z

Preliminary Assessment Item 5

5. The soft sound for the letter _c_ will represent the *same sound* as

    A. the _c_ in cent.
    B. the _c_ in cello.
    C. the _c_ in clock.
    D. the _c_ in Christopher.

Formative Assessment Item 5

5. The soft sound for the letter _g_ will represent the *same sound* as

    A. the _g_ in giant.
    B. the _g_ in ghost.
    C. the _g_ in ring.
    D. the _g_ in cough.

Summative Assessment Item 5

5. The soft sound for the letter _c_ will represent the *same sound* as

    A. the _c_ in Micky.
    B. the second _c_ in couch.
    C. the first _c_ in circus.
    D. the _c_ in chef.

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Module 1
Foundational Concepts of Phonics and Word Study

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 1, Item 6	Cueing System
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard VII	*Reading Comprehension:* Teachers understand the importance of reading for understanding, know the components of comprehension, and teach young students strategies for improving comprehension.
State Standard of Teacher Knowledge 7.4k, 7.5k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: reading comprehension as an active process of constructing meaning factors affecting students' reading comprehension, such as oral language development, word analysis skills, prior knowledge, previous reading experiences, fluency, ability to monitor understanding, and the characteristics of specific texts (e.g., structure and vocabulary)

Student TEKS	K (4) Reading/Beginning Reading/Strategies
	    Students comprehend a variety of texts drawing on useful strategies as needed.
	1 (4) Reading/Beginning Reading/Strategies
	    Students comprehend a variety of texts drawing on useful strategies as needed.
	1 (4) Reading/Beginning Reading/Strategies
	    Students comprehend a variety of texts drawing on useful strategies as needed.
	3 (2) Reading/Beginning Reading/Strategies
	    Students comprehend a variety of texts drawing on useful strategies as needed.

Preliminary Assessment Item 6

6. The reading cueing systems ultimately lead to

    A. comprehension of text.
    B. knowing how to read individual words.
    C. understanding the importance of punctuation.
    D. identifying phonemes in words.

Formative Assessment Item 6

6. The reading cueing systems ultimately lead to

    A. understanding individual vocabulary words in text.
    B. comprehending text.
    C. decoding and spelling of text.
    D. knowing the meanings of morphemes within words.

Summative Assessment Item 6

6. The reading cueing systems ultimately lead to

    A. knowing the differences between phonemes and morphemes.

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Module 1
Foundational Concepts of Phonics and Word Study

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

C. understanding phonics generalizations when reading.
D. comprehending text.

Module 1, Item 7	Schwa
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language

Student TEKS	K (3) Reading/Beginning Reading Skills/Phonics
	     Students use the relationships between letters and sounds, spelling patterns, and morphological analysis to decode written English.
	 1 (3) Reading/Beginning Reading Skills/Phonics
	     Students use the relationships between letters and sounds, spelling patterns, and morphological analysis to decode written English.
	 2 (2) Reading/Beginning Reading Skills/Phonics
	     Students use the relationships between letters and sounds, spelling patterns, and morphological analysis to decode written English.
	 3 (1) Reading/Beginning Reading Skills/Phonics
	     Students use the relationships between letters and sounds, spelling patterns, and morphological analysis to decode written English.

Preliminary Assessment Item 7

7. The sound of the schwa is represented by

    A. the *o* in the word goat.
    B. the *e* in the word hear.
    C. the *i* in the word until.
    D. the *a* in the word aspire.

Formative Assessment Item 7

7. The sound of the schwa is represented by

    A. the *a* in the word ball.
    B. the *o* in the word falcon.
    C. the *i* in the word light.
    D. the *e* in the word met.

Summative Assessment Item 7

7. The sound of the schwa is represented by

    A. the *u* in the word our.

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Module 1
Foundational Concepts of Phonics and Word Study

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C. the <u>o</u> in the word occur.

D. the <u>a</u> in the word April.

Module 1, Item 8	Vowel Diphthongs
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language
Student TEKS	1.3 (A) decode words in context and in isolation by applying common letter-sound correspondences, including: (vi) vowel diphthongs including oy, oi, ou, and ow 2.2 (A) decode multisyllabic words in context and independent of context by applying common letter-sound correspondences including: (iv) vowel digraphs (e.g., ie, ue, ew) and diphthongs (e.g., oi, ou)

Preliminary Assessment Item 8

8. <u>W</u> is part of a diphthong in the word

A. <u>w</u>hich.

B. to<u>w</u>er.

C. thro<u>w</u>.

D. <u>w</u>onder.

Formative Assessment Item 8

8. <u>U</u> is part of a diphthong in the word

A. m<u>u</u>tt.

B. po<u>u</u>t.

C. ro<u>u</u>gh.

D. tho<u>u</u>ght.

Summative Assessment Item 8

8. <u>ī</u> is part of a diphthong in the word

A. pa<u>ī</u>nt.

B. m<u>ī</u>ss.

C. o<u>ī</u>nk

D. th<u>ī</u>ng.

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Module 1
Foundational Concepts of Phonics and Word Study

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 1, Item 9	**Consonant Digraphs**
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language
Student TEKS	1.3 (A) decode words in context and in isolation by applying common letter-sound correspondences, including: (iv) consonant digraphs including ch, tch, sh, th=as in thing, wh, ng, ck, kn, -dge, and ph 2.2 (A) decode multisyllabic words in context and independent of context by applying common letter-sound correspondences including: (iii) consonant digraphs (e.g., ng, ck, ph)

Preliminary Assessment Item 9

9.   A consonant digraph is illustrated by

    A.   the <u>rd</u> in the word *fern*.
    B.   the <u>tr</u> in the word *train*.
    C.   the <u>th</u> in the word *think*.
    D.   the <u>au</u> in the word *taught*.

Formative Assessment Item 9

9.   A consonant digraph is illustrated by

    A.   the <u>ow</u> in the word *know*.
    B.   the <u>st</u> in the word *ghost*.
    C.   the <u>ch</u> in the word *porch*.
    D.   the <u>br</u> in the word *bran*.

Summative Assessment Item 9

9.   A consonant digraph is illustrated by

    A.   the <u>nd</u> in the word *wonder*.
    B.   the <u>ph</u> in the word *photo*.
    C.   the <u>ou</u> in the word *cougar*.
    D.   the <u>in</u> in the word *sling*.

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Module 1
Foundational Concepts of Phonics and Word Study

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 1, Item 10	Silent e Generalization
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language

Student TEKS	1.3 (C) use common syllabication patterns to decode words, including:
	    (iv) vowel-consonant-silent "e" words (VCe)(e.g., kite, hide)
	2.2 (B) use common syllabication patterns to decode words including:
	    (iv) vowel-consonant-silent "e" words (VCe) (e.g., in-vite, cape)

Preliminary Assessment Item 10

10. The CVCe pattern fulfills its primary phonic generalization in the word

    A. large.
    B. trade.
    C. mouse.
    D. above.

Formative Assessment Item 10

10. The CVCe pattern fulfills the primary phonic generalization in the word

    A. moose.
    B. fine.
    C. love.
    D. barge.

Summative Assessment Item 10

10. The CVCe pattern fulfills the primary phonic generalization in the word

    A. see.
    B. blue.
    C. bake.
    D. give.

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| Module 2 |
| Developmental Word Study and Orthography |

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2 – Developmental Word Study and

Orthography

Module 2, Item 1	Layers of English Orthography
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - monitor and evaluate the effectiveness of word study instruction to *recognize areas of deficiency and/or proficiency to accommodate for individual student needs.*
State Standard I State Standard IX	*Oral Language:* Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills. *Writing Conventions:* Teachers understand how young students use writing conventions and how to help students develop those conventions.
State Standard of Teacher Knowledge 1.3k 9.2k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the relationship between the development of oral language and the development of reading the relationship between spelling and phonological, graphophonemic knowledge, alphabetic awareness, and the importance of this relationship for later success in reading and writing

Student TEKS	K.5 (B) recognize that compound words are made up of shorter words
	K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut")
	1.6 (B) determine the meaning of compound words using knowledge of the meaning of their individual component words (e.g., lunchtime)
	1.22 (B) use letter-sound patterns to spell:
	    (i) consonant-vowel-consonant (CVC) words
	    (ii) consonant-vowel-consonant-silent e (CVCe) words (e.g., "hope")
	2.5 (A) use prefixes and suffixes to determine the meaning of words (e.g., allow/disallow)
	2.23 (B) spell words with common orthographic patterns and rules:
	    (ii) r-controlled vowels
	    (iii) long vowels (e.g., VCe-hope)
	    (iv) vowel digraphs (e.g., oo-book, fool, ee-feet), diphthongs (e.g., ou-out, ow-cow, oi-coil, oy-toy)
	3.4 (A) identify the meaning of common prefixes (e.g., in-, dis-) and suffixes (e.g., -full, -less), and know how they change the meaning of roots
	3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell;
	3.24 (D) spell words with common syllable constructions (e.g., closed, open, final stable syllable);
	4.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes

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Module 2
Developmental Word Study and Orthography

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

	4.22 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell
	4.22 (B) spell base words and roots with affixes (e.g., -ion, -ment, -ly, dis-, pre-)
	5.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	5.22 (B) spell words with:
	    (i) Greek Roots (e.g., tele, photo, graph, meter);
	    (ii) Latin Roots (e.g., spec, scrib, rupt, port, ject, dict);
	    (iii) Greek suffixes (e.g., -ology, -phobia, -ism, -ist); and
	    (iv) Latin derived suffixes (e.g., -able, -ible; -ance, -ence);
	6.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes

Preliminary Assessment Item 1

1. The third layer of English orthography

    A. is known as the meaning layer.
    B. is characterized by alphabetic patterns in words such as light.
    C. is represented by 26 letters and 44 sounds.
    D. is also known as the syllable juncture stage.

Formative Assessment Item 1

1. The third layer of English orthography

    A. is known as the pattern layer.
    B. is characterized by the use of morphemes to construct meaning.
    C. is aligned with the middle within word spelling stage.
    D. is characterized by the relationship between letters and sounds.

Summative Assessment Item 1

1. The third layer of English orthography

    A. is known as the alphabetic layer.
    B. is characterized by the use of ambiguous vowel patterns.
    C. is aligned with the alphabetic principle of phonics.
    D. is characterized by the use of words such as autobiography.

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Module 2
Developmental Word Study and Orthography

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2, Item 2	Layers of English Orthography
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - monitor and evaluate the effectiveness of word study instruction to *recognize areas of deficiency and/or proficiency to accommodate for individual student needs*
State Standard I	*Oral Language:* Teachers of young students understand the importance of oral language, know the developmental processes of oral language, and provide a variety of instructional opportunities for young students to develop listening and speaking skills.
State Standard IX	*Writing Conventions:* Teachers understand how young students use writing conventions and how to help students develop those conventions.
State Standard of Teacher Knowledge 1.3k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the relationship between the development of oral language and the development of reading
9.2k	the relationship between spelling and phonological, graphophonemic knowledge, alphabetic awareness, and the importance of this relationship for later success in reading and writing

Student TEKS	K.5 (B) recognize that compound words are made up of shorter words
	K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut")
	1.6 (B) determine the meaning of compound words using knowledge of the meaning of their individual component words (e.g., lunchtime)
	1.22 (B) use letter-sound patterns to spell:
	    (i) consonant-vowel-consonant (CVC) words
	    (ii) consonant-vowel-consonant-silent e (CVCe) words (e.g., "hope")
	2.5 (A) use prefixes and suffixes to determine the meaning of words (e.g., allow/disallow)
	2.23 (B) spell words with common orthographic patterns and rules:
	    (ii) r-controlled vowels
	    (iii) long vowels (e.g., VCe-hope)
	    (iv) vowel digraphs (e.g., oo-book, fool, ee-feet), diphthongs (e.g., ou-out, ow-cow, oi-coil, oy-toy)
	3.4 (A) identify the meaning of common prefixes (e.g., in-, dis-) and suffixes (e.g., -full, -less), and know how they change the meaning of roots
	3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell;
	3.24 (D) spell words with common syllable constructions (e.g., closed, open, final stable syllable);
	4.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	4.22 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell
	4.22 (B) spell base words and roots with affixes (e.g., -ion, -ment, -ly, dis-, pre-)
	5.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes

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| Module 2 |
| Developmental Word Study and Orthography |

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

	5.22 (B) spell words with:
	    (i) Greek Roots (e.g., tele, photo, graph, meter);
	    (ii) Latin Roots (e.g., spec, scrib, rupt, port, ject, dict);
	    (iii) Greek suffixes (e.g., -ology, -phobia, -ism, -ist); and
	    (iv) Latin derived suffixes (e.g., -able, -ible; -ance, -ence);
	6.2 (A) determine the meaning of grade-level academic English words derived from
	    Latin, Greek, or other linguistic roots and affixes

Preliminary Assessment Item 2

2.   Which of the following is representative of the **second layer** of English orthography?

    A.   CVCe (as in cape)
    B.   re (as in rewind)
    C.   the direct correspondence of letters and predictable sounds
    D.   tion (as in vacation)

Formative Assessment Item 2

2.   The second layer of English orthography would best be represented by

    A.   the direct relationship between letters and sounds
    B.   ology (as in biology)
    C.   CVVC (as in boat)
    D.   ortho (as in orthodontist)

Summative Assessment Item 2

2.   The second layer of English orthography may be represented by the words

    A.   high and bread.
    B.   bye and big.
    C.   bird and rewind.
    D.   muscle and muscular.

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Module 2
Developmental Word Study and Orthography

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2, Item 3	Closed Patterns in Multisyllable Words
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.5k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: strategies for decoding and determining the meaning of increasingly complex words
Student TEKS	K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut"); 1.3 (C) use common syllabication patterns to syllabication patterns to decode words, including: (i) closed syllable (CVC) (e.g., mat, rab-bit) 1.22 (B) use letter-sound patterns to spell: (i) consonant-vowel-consonant (CVC) words 12.2 (B) use common syllabication patterns to decode words including: (i) closed syllable (CVC) (e.g., pic-nic, mon-ster) 3.1 (B) use common syllabication patterns to decode words including: (i) closed syllable (CVC) (e.g., mag-net, splen-did) 3.24 (D) spell words with common syllable constructions (e.g., closed, open, final stable syllable)

Preliminary Assessment Item 3

3. A closed first syllable in a multisyllable word

   A. is represented in the word family.
   B. is never a morpheme.
   C. is represented in the word prehistoric.
   D. is generally prefix such as in the word irregular

Formative Assessment Item 3

3. A closed first syllable in a multisyllable word

   A. is always a bound morpheme.
   B. is never a bound morpheme.
   C. is represented in the word repeat.
   D. is represented in the word candle.

Summative Assessment Item 3

3. A closed first syllable in a multisyllable word

   E. is represented in the word apple.
   F. will be pronounced with a long vowel sound.
   G. is represented in the word heroic.
   H. is the also known as a bound morpheme

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| Module 2 |
| Developmental Word Study and Orthography |

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2, Item 4	**Open Patterns in Multisyllable Words**
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.5k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: strategies for decoding and determining the meaning of increasingly complex words

Student TEKS	1.3 (C) use common syllabication patterns to decode words, including:
	    (ii) open syllable (CV) (e.g., he, ba-by)
	2.2 (B) use common syllabication patterns to decode words including:
	    (ii) open syllable (CV) (e.g., ti-ger)
	3.1 (B) use common syllabication patterns to decode words including:
	    (ii) open syllable (CV) (e.g., ve-to)
	3.24 (D) spell words with common syllable constructions
	    (e.g., closed, open, final stable syllable)

Preliminary Assessment Item 4

4.   Which of the following words has an open first syllable?

    A.   happiness
    B.   maximize
    C.   suitable
    D.   relatable

Formative Assessment Item 4

4.   Which of the following words has an open first syllable?

    A.   going
    B.   meaning
    C.   ballet
    D.   hospital

Summative Assessment Item 4

4.   Which of the following words has an open first syllable?

    A.   argument
    B.   literally
    C.   opening
    D.   chocolate

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| Module 2 |
| Developmental Word Study and Orthography |

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2, Item 5	Morphemic Analysis
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.6k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the importance of word recognition skills (e.g., decoding, blending, structural analysis, sight word vocabulary) to reading comprehension and know a variety of strategies to help young student develop and apply word analysis skills
Student TEKS	1.3 (F) use knowledge of the meaning of base words to identify and read common compound words 1.22 (D) spell base words with inflectional endings (e.g., adding "s" to make words plurals) 2.2 (D) read words with common prefixes (e.g., un-, dis-) and suffixes (e.g., -ly, -less, -ful) 2.23(D) spell base words with inflectional endings (e.g., -ing and -ed) 2.5 (A) use prefixes and suffixes to determine the meaning of words (e.g., allow/disallow) 2.23 (D) spell base words with inflectional endings (e.g., -ing and -ed) 3.1 (A) decode multisyllabic words in context and independent of context by applying common spelling patterns including: (iv) using knowledge of common prefixes and suffixes (e.g., dis-, -ly) (v) using knowledge of derivational affixes (e.g., -de, -ful, -able) 3.4 (A) identify the meaning of common prefixes (e.g., in-, dis-) and suffixes (e.g., -full, -less), and know how they change the meaning of roots 3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell 4.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes 4.22 (B) spell base words and roots with affixes (e.g., -ion, -ment, -ly, dis-, pre-) 5.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes 5.22(B) spell words with: (i) Greek Roots (e.g., tele, photo, graph, meter) (ii) Latin Roots (e.g., spec, scrib, rupt, port, ject, dict) (iii) Greek suffixes (e.g., -ology, -phobia, -ism, -ist) (iv) Latin derived suffixes (e.g., -able, -ible; -ance, -ence) 6.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes;

Preliminary Assessment Item 5

5. A base word

A. is a free morpheme that represents meaning.

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    C.   must always have a prefix.
    D.   must have both a prefix and a suffix.

Formative Assessment Item 5

5. A base word

    A.   is always the first syllable of a word.
    B.   cannot stand alone without meaning.
    C.   is also known as a root word that gives the word meaning.
    D.   is also known as a bound morpheme that can stand alone without meaning.

Summative Assessment Item 5

5. A base word

    A.   is always the middle syllable of a multisyllable word.
    B.   is a bound morpheme represents meaning.
    C.   a free morpheme that represents meaning.
    D.   will always have a prefix and a suffix to give the word meaning.

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| Module 2 |
| Developmental Word Study and Orthography |

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2, Item 6	**Spelling Stages – Within Word**
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students - administer word study assessments to EC-6 students and *interpret the results to plan developmentally appropriate instruction*
State Standard IX	*Writing Conventions:* Teachers understand how young students use writing conventions and how to help students develop those conventions.
State Standard of Teacher Knowledge 9.3k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the stages of spelling development (prephonetic, phonetic, transitional, and conventional) and how and when to support students' development from one stage to the next

Student TEKS	K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut");
	 1.3 (C) use common syllabication patterns to syllabication patterns to decode words, including:
	   (i) closed syllable (CVC) (e.g., mat, rab-bit)
	 1.22 (B) use letter-sound patterns to spell:
	   (i) consonant-vowel-consonant (CVC) words
	 12.2 (B) use common syllabication patterns to decode words including:
	   (i) closed syllable (CVC) (e.g., pic-nic, mon-ster)
	 3.1 (B) use common syllabication patterns to decode words including:
	   (i) closed syllable (CVC) (e.g., mag-net, splen-did)
	 3.24 (D) spell words with common syllable constructions
	   (e.g., closed, open, final stable syllable)

Preliminary Assessment Item 6

6. Which of the following best represents the "within word spelling pattern"?

    A. ing (as in running)
    B. ure (as in pleasure)
    C. wh (as in whale)
    D. a - e (as in cake)

Formative Assessment Item 6

6. Which of the following best represents the "within word spelling pattern"?

    A. ea (as in bread)
    B. ll (as in cellar)
    C. ent (as in confident)
    D. sh (as in shopping)

Summative Assessment Item 6

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Module 2
Developmental Word Study and Orthography

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

A.   st (as in the word castle)
B.   oi (as in the word point)
C.   rr (as in the word carry)
D.   pos (as in the word opposition)

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Module 2
Developmental Word Study and Orthography

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2, Item 7	Spelling Stages – Derivational Patterns
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students - administer word study assessments to EC-6 students and *interpret the results to plan developmentally appropriate instruction*
State Standard IX	*Writing Conventions:* Teachers understand how young students use writing conventions and how to help students develop those conventions.
State Standard of Teacher Knowledge 9.3k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the stages of spelling development (prephonetic, phonetic, transitional, and conventional) and how and when to support students' development from one stage to the next

Student TEKS	1.3 (F) use knowledge of the meaning of base words to identify and read common compound words
	1.22 (D) spell base words with inflectional endings (e.g., adding "s" to make words plurals)
	2.2 (D) read words with common prefixes (e.g., un-, dis-) and suffixes (e.g., -ly, -less, -ful)
	2.23(D) spell base words with inflectional endings (e.g., -ing and -ed)
	2.5 (A) use prefixes and suffixes to determine the meaning of words (e.g., allow/disallow)
	2.23 (D) spell base words with inflectional endings (e.g., -ing and -ed)
	3.1 (A) decode multisyllabic words in context and independent of context by applying common spelling patterns including:
	  (iv) using knowledge of common prefixes and suffixes (e.g., dis-, -ly)
	  (v) using knowledge of derivational affixes (e.g., -de, -ful, -able)
	3.4 (A) identify the meaning of common prefixes (e.g., in-, dis-) and suffixes (e.g., -full, -less), and know how they change the meaning of roots
	3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell
	4.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	4.22 (B) spell base words and roots with affixes (e.g., -ion, -ment, -ly, dis-, pre-)
	5.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes
	5.22(B) spell words with:
	  (i) Greek Roots (e.g., tele, photo, graph, meter)
	  (ii) Latin Roots (e.g., spec, scrib, rupt, port, ject, dict)
	  (iii) Greek suffixes (e.g., -ology, -phobia, -ism, -ist)
	  (iv) Latin derived suffixes (e.g., -able, -ible; -ance, -ence)
	6.2 (A) determine the meaning of grade-level academic English words derived from Latin, Greek, or other linguistic roots and affixes;

Preliminary Assessment Item 7

7. The derivational spelling stage

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Developmental Word Study and Orthography

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    A.   is typical for an average third grade student.

    B.   is characterized by morphemic analysis to represent meaning.

    C.   involves complex vowel patterns such as "igh."

    D.   may be identified by the use of ambiguous vowels.

Formative Assessment Item 7

7.   The derivational spelling stage

    A.   may be represented by the word *phase*.

    B.   may be identified by the use of complex consonant blends and diphthong vowels.

    C.   may identified by complex patterns such as *eigh*.

    D.   may be represented by the word *irrational*.

Summative Assessment Item 7

7. The derivational spelling stage

    A.   is typical for an average fifth grade student.

    B.   involves knowledge of historic origins of morphemes.

    C.   may be represented by the word *through*.

    D.   is identified by the use of syllable junctures.

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Module 2
Developmental Word Study and Orthography

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2, Item 8	Spelling Stages – Emergent Spelling
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction - analyze specific reading and spelling behaviors of EC-6 students - administer word study assessments to EC-6 students and *interpret the results to plan developmentally appropriate instruction* - monitor and evaluate the effectiveness of word study instruction to recognize areas of deficiency and/or proficiency to accommodate for individual student needs.
State Standard VIII	*Development of Written Communication:* Teachers understand that writing to communicate is a developmental process and provide instruction that helps young students develop competence in written communication.
State Standard of Teacher Knowledge 8.1k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: that young students go through predictable stages in acquiring writing conventions, including the physical and cognitive processes involved in letter formation, word writing, sentence construction, spelling, punctuation, and grammatical expression, but that individual students vary in development of these conventions
Student TEKS	K.18 (A) use phonological knowledge to match sounds to letters K.18 (B) use letter-sound correspondences to spell consonant-vowel-consonant (CVC) words (e.g., "cut")

Preliminary Assessment Item 8

8.   Emergent spellers

    A.   are beginning to associate letters with predictable sounds.
    B.   primarily use lines, scribbles, or drawings to express meaning.
    C.   are able to distinguish multiple vowel sounds and use them in spelling.
    D.   would represent typical third grade students.

Formative Assessment Item 8

8.   Emergent spellers

    A.   are beginning to identify beginning and ending consonant sounds in words.
    B.   would represent typical second grade students at the beginning of the year.
    C.   primarily use lines, scribbles, or drawings to express meaning.
    D.   will be able to read and spell one syllable words such as *paint*.

Summative Assessment Item 8

8.   Emergent spellers

    A.   will be able to read and spell one syllable words such *house*.
    B.   would represent most students in second grade.
    C.   are beginning to use letters to represent predictable sounds.
    D.   primarily use lines, scribbles, or drawings to express meaning.

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Module 2
Developmental Word Study and Orthography

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2, Item 9	**Graphemic Representation**
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction
State Standard III	*Alphabetic Principle:* Teachers of young students understand the importance of the alphabetic principle to reading English, know the elements of the alphabetic principle, and provide instruction that helps students understand that printed words consist of graphic representations that relate to the sounds of spoken language in conventional and intentional ways.
State Standard of Teacher Knowledge 3.1k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: the importance of the elements of the alphabetic principle, including letter names, graphophonemic knowledge, and the relationship of the letters in printed words to spoken language;
Student TEKS	K.1 (A) recognize that spoken words can be represented by print for communication; K.1 (B) identify upper- and lower-case letters; K.1 (C) demonstrate the one-to-one correspondence between a spoken word and a printed word in text K.3 (A) identify the common sounds that letters represent K.18 (A) use phonological knowledge to match sounds to letters 1.1 (A) recognize that spoken words are represented in written English by specific sequences of letters 1.22 (A) use phonological knowledge to match sounds to letters to construct known words 2.23 (A) use phonological knowledge to match sounds to letters to construct unknown words 3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell

Preliminary Assessment Item 9

9. According to most literacy scholars, the English language has 26 alphabetic letters and

    A.   an unlimited number of sounds and tones.
    B.   44 sounds.
    C.   an unknown number of sounds.
    D.   26 sounds.

Formative Assessment Item 9

9.   According to most literacy scholars, the English language

    A.   has 26 letters that represent an unknown number of sounds.
    B.   has 26 letters that represent 44 sounds.
    C.   has 26 letters with predicable alphabetic patterns.
    D.   has 26 letters that represent an unlimited range of sounds and tones.

Summative Assessment Item 9

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Developmental Word Study and Orthography

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

A. 44 sounds, tones, and pitches.
B. approximately 44 sounds.
C. consistent and predictable letter-sound relationships.
D. approximately 62 sounds.

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| Module 2 |
| Developmental Word Study and Orthography |

• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

Module 2, Item 10	Orthographic Meaning
Course Objectives	Preservice teachers will be able to: - demonstrate an understanding of foundational principles of reading, including phonics as a component of language and literacy instruction
State Standard V	*Word Analysis and Decoding:* Teachers understand the importance of word analysis and decoding to reading and provide many opportunities for students to improve word analysis and decoding abilities.
State Standard of Teacher Knowledge 5.4k	Teacher Knowledge: What Teachers Know The beginning teacher knows and understands: important phonetic elements and conventions of the English language
Student TEKS	K.1 (A) recognize that spoken words can be represented by print for communication; K.1 (C) demonstrate the one-to-one correspondence between a spoken word and a printed word in text K.3 (A) identify the common sounds that letters represent K.18 (A) use phonological knowledge to match sounds to letters 1.1 (A) recognize that spoken words are represented in written English by specific sequences of letters 1.22 (A) use phonological knowledge to match sounds to letters to construct known words 2.23 (A) use phonological knowledge to match sounds to letters to construct unknown words 3.24 (A) use knowledge of letter sounds, word parts, word segmentation, and syllabication to spell

Preliminary Assessment Item 10

10. The ways in which letters and letter patterns in words represent sound and meaning is known as:

    A. ontology.
    B. graphology.
    C. etymology.
    D. orthography.

Summative Assessment Item 10

10. The ways in which letters and letter patterns in words represent sound and meaning is known as:

    A. etymology
    B. ontology.
    C. orthography.
    D. graphology.

Formative Assessment Item 10

10. Orthography is the study of

    A. complicated derivational spelling patterns.
    B. the ways in which letters and letter patterns in words represent sound and meaning.
    C. the multiple ways in which students learn to read.
    D. the way the mouth produces phonemic units of sound.

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Module 2
Developmental Word Study and Orthography
• Phase One (Introductory Course): Learning outcomes emphasize the foundational knowledge and skills required in the discipline.

	1 - Phonemes	2 - Close Syllable	3 - Consonant Blend	4 - Open Syllable	5 - Soft G/C	6 - Cueing Systems	7 - Schwa	8 - Diphthong	9 - Digraph	10 - Silent e	TOTAL CORRECT	Percentage Correct	Improvement from Preliminary Assessment
PST 35: Preliminary Assessment - Module 1	1	1				1	1			1	5	50%	
PST 35: Formative Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100	5
PST 35: Summative Assessment - Module 1	1	1	1	1		1	1	1	1	1	9	90%	4
PST 36: Preliminary Assessment - Module 1			1		1		1				3	30%	
PST 36: Formative Assessment - Module 1	1	1	1	1	1		1			1	7	70%	4
PST 36: Summative Assessment - Module 1	1	1		1			1	1		1	5	50%	2
PST 37: Preliminary Assessment - Module 1		1			1				1		3	30%	
PST 37: Formative Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100	7
PST 37: Summative Assessment - Module 1	1	1		1	1	1	1			1	7	70%	4
PST 38: Preliminary Assessment - Module 1		1			1		1				3	30%	
PST 38: Formative Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100	7
PST 38: Summative Assessment - Module 1	1	1	1		1	1	1	1	1	1	9	90%	6
PST 39: Preliminary Assessment - Module 1					1	1					2	20%	
PST 39: Formative Assessment - Module 1	1	1		1	1	1	1		1	1	8	80%	6
PST 39: Summative Assessment - Module 1	1	1	1	1	1	1	1	1	1	1	10	100	8
PST 40: Preliminary Assessment - Module 1		1				1	1				3	30%	
PST 40: Formative Assessment - Module 1	1	1	1		1		1	1	1	1	8	80%	5
PST 40: Summative Assessment - Module 1	1	1	1			1	1	1	1	1	8	80%	5

	1 - Phonemes	2 - Close Syllable	3 - Consonant Blend	4 - Open Syllable	5 - Soft G/C	6 - Cueing Systems	7 - Schwa	8 - Diphthong	9 - Digraph	10 - Silent e	TOTAL
Preliminary Assessment Total - Mod	7	21	8	10	29	12	15	2	6	5	115
Formative Assessment Total - Modul	37	31	35	28	24	20	32	24	34	36	301
Summative Assessment Total - Mod	39	24	26	37	36	39	32	35	37	36	341

	1 - Phonemes	2 - Close Syllable	3 - Consonant Blend	4 - Open Syllable	5 - Soft G/C	6 - Cueing Systems	7 - Schwa	8 - Diphthong	9 - Digraph	10 - Silent e	TOTAL
Preliminary Assessment Percentage -	18%	53%	20%	25%	73%	30%	38%	5%	15%	13%	29%
Formative Assessment Percentage -	93%	78%	88%	70%	60%	50%	80%	60%	85%	90%	75%
Summative Assessment Percentage -	98%	60%	65%	93%	90%	98%	80%	88%	93%	90%	85%

Assessment Class Totals

Bar chart showing assessment class totals across categories. Y-axis ranges from 0 to 45 in increments of 5.

Category	Preliminary Assessment Total - Module 1 (blue)	(orange)	Formative Assessment Total (gray)
1 - Phonemes	17	46	48
2 - Close	31	41	34
3 - Consonant Blend	18	45	36
4 - Open	20	38	46
5 - Soft	39	34	46
6 - Cueing	22	30	48
7 -	25	42	42
8 - Diphthong	12	34	45

Legend:
- ■ (blue) Preliminary Assessment Total - Module 1
- ■ (orange) Formative Assessment Total -
- ■ (gray)