EFFECTS OF ONLINE PROFESSIONAL DEVELOPMENT ON TEACHERS' INSTRUCTIONAL READING ADAPTATIONS FOR ENGLISH LEARNERS THROUGH DATA-BASED INDIVIDUALIZATION

by

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ABSTRACT

DANIELLE CHRISTINE WYSENSKI. Effects of Online Professional Development on Teachers' Instructional Reading Adaptations for English Learners through Data-Based Individualization. (Under the direction of DR. KRISTEN D. BEACH)

English learners (ELs) make up a significant portion of the nation's K-12 student population who come from culturally and linguistically diverse backgrounds. ELs bring a wealth of diversity to the United States' education system; however, teachers' limited knowledge and practices that integrate ELs' cultural, linguistic, and prior educational experiences in the general education curriculum can contribute to low academic growth and overidentification of ELs into special education programs, particularly for learning disabilities in reading. This study examined the impact of online professional development on general and special education teachers' knowledge of data-based individualization (DBI) and curriculum-based measurement (CBM) to adapt validated reading interventions with culturally and linguistically responsive practices (CLRPs) for ELs with persistent reading difficulties. Results of this single-case, multiple probe across participants study indicated an increase in knowledge of DBI and CBM to adapt validated reading interventions with CLRPs; however, a functional relation was not established due to the study ending before all the teachers could complete the professional development components. The findings of this study provide several implications for online DBI professional development and adapting validated reading interventions for ELs. Suggestions for future research are also offered.

DEDICATION

First and foremost, this dissertation is dedicated to the students, families, and colleagues who have motivated me to continue to pursue my dream to improve outcomes for students with disabilities. This dissertation results from the experiences we shared and the lessons you taught me along the way. I hope my future work will make as big of an impact in the field as the impact you have left on me.

Second, I dedicate this dissertation to my fiancé and son. Michael, you have and continue to be my rock. Thank you for your support and patience as I traveled back and forth from Charlotte to achieve my educational goals. Your calm presence and love guided me through this dissertation and allowed me to recognize all my potential. Raylan, you have taught me the true meaning of a parent's love for a child. You are a constant reminder of the good in this world and inspire me to make the world a better place for you and other children. You are a blessing and give me hope that the future holds great things.

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CHAPTER 1: INTRODUCTION

Statement of the Problem

Non-native speakers, or English learners (ELs), comprise a significant portion of the United States education system and represent one of the fastest-growing populations of students from culturally and linguistically diverse backgrounds (Counts et al., 2018; Genessee et al., 2005; U.S. Department of Education, 2020). In the fall of 2017, five million ELs were registered in public schools across the nation, increasing close to 30% from the 2000-2001 academic school year (Hussar et al., 2020). While findings suggest the number of ELs will continue to grow well into the next decade (Counts et al., 2018; Migration Policy Institute, 2016, U.S. Department of Education, 2018), the United States' K-12 student population is dramatically changing, and teachers are faced with providing instruction to a progressively diverse group of students (Khong & Saito, 2014; National Council of Teachers, 2008).

ELs represent a portion of the student population who speak multiple native languages and dialects. ELs can also differ in terms of their races, ethnicities, and cultures (Linan-Thompson et al., 2018; National Council of Teachers of English, 2008; Perez, 1998). In 2020, the National Center on Education Statistics (NCES) reported approximately 75% of ELs registered in public schools identified their race/ethnicity as Hispanic, 10% Asian, 6% White, and 4% Black. Pacific Islander, American Indians/Alaska Natives, and ELs of two or more racial/ethnic groups comprised the remaining 5% of the EL student population. Additionally, Hussar et al. (2020) found there were 30 most commonly reported native languages of ELs spoken within schools; however, previous research indicates over 100 languages spoken in states that have higher populations of ELs (e.g., Atlanta, California, Texas; Wagner et al., 2005). Another linguistic difference among ELs' experiences is their exposure to English and schools' academic languages. The National Council of Teachers of English (2008) found ELs (a) come from homes where only native languages are spoken, (b) are learning English and native languages simultaneously, (c) are recent immigrants with a lot, little, or no English or prior schooling, or (d) have lived in the United States and been exposed to English and a standard course of study. Furthermore, language is just one varying aspect of ELs' cultures. ELs may also come from families who embrace many different religions, behaviors, values, and worldviews that are different from their school's mainstream culture (Terry & Irving, 2010). All of these individual facets of ELs' backgrounds illustrate the heterogeneity of the EL student population. They are also critical factors that need to be considered when designing classroom practices to ensure ELs have equal access to the general education curriculum (Aceves & Orosco, 2014; Linan-Thompson et al., 2018).

Acknowledging the need for an education system reflective of ELs' cultural and linguistic experiences is found in federal legislation dating back to the 1960s (Bos et al., 2012). The Civil Rights Act of 1964 prohibited discrimination based on an individual's race, color, or national origin in programs that received federal funding (Wiese & García, 1998). The Elementary and Secondary Education Act (ESEA; 1965) and the Bilingual Education Act (BEA; 1968) were among the first laws acknowledging the need for meaningful and equitable learning opportunities for students learning English in the school environment (August & Hakuta, 1997; Wiese & García, 1998). The Equal Educational Opportunities Act of 1974 (EEOA) mandated schools provide additional resources and instruction in native languages for minority language speakers (Wiese & García, 1998). The No Child Left Behind Act of 2001 (NCLB), and later the Every Student Succeeds Act (ESSA; 2015), placed greater accountability on schools to deliver quality instruction for ELs that resulted in higher gains in English proficiency and grade-level standards (Abedi & Dietel, 2004; Bos et al., 2012; Darling-Hammond, 2007). These historic laws underscored the importance of schools to (a) improve the quality of instruction for ELs and (b) provide ELs with as much access to the general education curriculum as their peers (Wiese & García, 1998). However, national test scores continue to signify inequitable learning opportunities between ELs and non-ELs (e.g., U.S. Department of Education, 2019; White House Initiative on Educational Excellence for Hispanic Americans, 1999). In 2019, the National Assessment of Educational Progress (NAEP) revealed 65% of fourth-grade ELs and 72% of eighth-grade ELs were reading below proficiency levels on national reading assessments (U.S. Department of Education, 2019). In contrast, only 29% of the nation's fourth-grade students and 24% of eighth-grade students were read below proficiency levels. Mathematics proficiency scores also display similar trends. In 2019, 41% of fourth-grade ELs and 72% of eighth-grade ELs performed below proficiency levels, while 16% of fourth-grade non-ELs and 28% of the eighth-grade non-ELs were below proficient math levels. These learning gaps may indicate potential bias within teacher practices and assessments and raises questions on the best instructional methods for such a diverse group of learners.

As higher percentages of ELs fall below proficient levels in the general education curriculum, schools have witnessed increasing numbers of ELs referred and found eligible for special education programs (Counts et al., 2018; Klingner et al., 2006; Linan-Thompson, 2010; Orosco, 2010). The U.S. Department of Education (2020) reported 14% of the EL student population receives special education services compared to 13% of the overall student population. Furthermore, among ELs found eligible for special education services, approximately 50% qualified under a Specific Learning Disability (SLD) due to reading difficulties. Given research remains unclear on the extent to which ELs' language proficiency impact their attainment of reading skills, it remains to be determined if literacy practices commonly used in classrooms are meeting the linguistic backgrounds of ELs and if higher percentages of ELs do have SLDs (Chamberlain, 2005; Klingner et al., 2006; Snow, 2002; Wagner et al., 2005). To this point, Martinez et al. (2014) found the majority of research studies examining literacy approaches in the United States were primarily conducted with monolingual English-speaking students, with only a small number of studies investigating if those strategies were effective for students learning a second language. Consequently, teachers may be implementing reading practices they believe support all students but may not be adequate for ELs, causing it to appear that many ELs have underlining learning disabilities.

Due to the crucial role early language development and literacy skills have on students' educational outcomes, employment statuses, and social interactions (Martinez et al., 2014; Snow et al., 1998; Werner & Smith, 1992), supporting general and special education teachers in gaining knowledge of effective language and literacy practices for ELs with persistent reading challenges is of high importance. In the following sections, I stress the need to increase K-12 general and special education teachers' awareness of validated methods to individualize and adapt reading instruction for ELs with persistent reading difficulties. First, I provide a definition for ELs that served as a basis for this study. Second, I reviewed the representation of ELs into special education programs under the category of SLD. Third, I examined schools' multi-level frameworks to support students' academic, behavioral, and social-emotional needs. Next, I highlighted data-based individualization (DBI) and curriculum-based measurement (CBM) as frameworks to integrate validated reading interventions, reliable assessment measures, and culturally and linguistically responsive practice (CLRP) within a multi-level school framework for ELs making inadequate reading progress. Finally, I offered online DBI/CBM + CLRP professional development to increase general and special education teachers' knowledge of intensive intervention and a culturally sustaining pedagogy to improve ELs' reading successes.

English Learners

The number of children learning English as a second language is rising in classrooms throughout the United States (Sandberg & Reschly, 2011). In the fall of 2017, approximately 75% of all ELs represented in K-12 public schools came from Spanish-speaking homes, followed by children whose native home language included Arabic, Chinese, Vietnamese, Somali, Russian, Portuguese, Haitian, and Hmong (NCES, 2020). Children who are born from non-English speaking families and whose home language impacts their level of English proficiency in the school environment are referred to as English as a second language (ESL) students (Clair, 1995), English language learners (ELLs; Genesee et al., 2005), ELs (Sandberg & Reschly, 2011), culturally and linguistically diverse (CLD) learners (Perez, 1998), and limited English proficient students (Khong and Saito, 2014). For this study's consistency, ELs are referred to students from non-English speaking families and are learning English in the school environment (Lesaux & Harris, 2017). Additionally, this study considers language as just one component of ELs' cultures. It acknowledges ELs vary among their linguistic backgrounds and may come from families who differ in their values, religions, behaviors, perspectives, and worldviews (Parla, 1994; Terry & Irving, 2010).

Overrepresentation of English learners in Special Education

ELs' disproportionality in special education has been recognized in educational research and federal policies over the last six decades and has continued to gain attention because of the high importance of equal educational opportunities for all students (Counts et al., 2018; Dunn, 1968; Sullivan & Bal, 2013). Research investigations of school characteristics and educational outcomes among ELs and their peers have found significant disparities in resources, opportunities to learn, and academic achievement (e.g., Brayboy et al., 2007). Despite additional resources and support special education can provide to students, it has been linked to negative outcomes, including limited access to the general education academic standards, minimal achievement growth, and low graduation rates (Chamberlain, 2005).

The reauthorization of the Individuals with Disabilities Education Act (IDEA), renamed Individuals with Disabilities Education Improvement Act (IDEIA 2004), strengthened requirements to track disproportionate representation of students by race and ethnicity in special education at the state and district levels; however, as the numbers of students with different cultural and linguistic backgrounds continue to rise in classrooms, the challenge to understand and educate a diverse student population has become a growing concern (Klingner et al., 2006; Reese et al., 2008; Sanenz et al., 2005). In 2017, approximately 718,400 ELs were identified with disabilities, representing 14.3% of the total EL student population enrolled in United States' public schools (Hussar et al., 2020). Even more, most ELs who were found eligible for special education programs qualified under the category of SLD, with reading identified as the primary concern (U.S. Department of Education, 2020).

An SLD is defined as "a disorder in one or more basic psychological processes involved in understanding or using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations" (U.S. Office of Education [USOE], 1977, p. 65083). Given ELs and students with SLDs share common learning profiles (e.g., weaknesses in receptive language, lack of motivation, lack of self-esteem; Oritz et al., 2006; Ortiz & Yates, 2001), schools may not be considering additional factors that impact ELs' responses to instruction to determine if an actual learning disability does exist. For instance, Chu and Flores (2011) found many teachers may not consider ELs' (a) prior educational experiences, (b) proficiency of their native languages, (c) understanding of English literacy, and (d) cultural backgrounds when making decisions to refer ELs to special education programs. Additionally, Chu and Flores found challenges within standardized assessments for SLDs that did not address ELs' linguistic diversities and led to assessment errors and special education identification. On top of the many challenges teachers and schools face when trying to support ELs' academic growths, the United States' education system has witnessed changes in the identification process of students with SLD that may add to the complexity of teaching reading to ELs who continue to fall below proficient levels within their general education classroom (Wagner et al., 2005).

Identification of Specific Learning Disabilities

The Education for All Handicapped Children Act (1975) identified students with SLD when a substantial discrepancy existed between their intellectual capacity and their academic achievement scores in reading, writing, spelling, or mathematics. This discrepancy model has been a topic of debate among researchers because it relies on accurate measurement of students' academic skills (Haager, 2007). Researchers found school measurements did not provide teachers with a clear depiction of the reasons why students were not responding to instruction (Haager, 2007; McCardle et al., 2005; Orosco & Klingner, 2010). In addition, Wagner et al. (2005) found a lack of comparable standardized assessments in native languages that made it difficult to gain reliable outcomes of ELs' academic knowledge. Instead, researchers contended current classroom strategies and progress monitoring of student data needed to be primary considerations when determining an SLD (Haager, 2007; McCardle et al., 2005).

Recent amendments to IDEIA 2004 shifted away from the IQ-achievement discrepancy model and now permits states to use alternative procedures based upon student outcomes to targeted, evidence-based interventions to qualify students under SLD. Originally referred to as response to intervention (RTI), this approach allows schools to identify students with SLDs who did not make sufficient progress to validated instructional practices and “exhibits patterns of strengths and weaknesses in performance, achievement, or both, relative to age, State-approved grade-level standards, or intellectual development, that is determined by the group to be relevant to the identification of SLD” (IDEA, 2004, 300.309[a][2][ii]). More recently, changes within the ESSA extended on RTI to support students’ academic and behavioral needs and became known as Multi-Tiered Systems of Support (MTSS; Zirkel, 2017).

Multi-Tiered Systems of Support

MTSS is a proactive and preventative multi-level school framework that uses data-driven instructional decisions to maximize student learning and support students’ academic, behavioral, and social-emotional needs across three tiers (Center on Multi-Tiered System of Supports, 2020). At Tier 1, all students are provided with evidence-based academic, behavioral, and social-emotional instruction aligned with grade-level standards and students’ cultural and linguistic experiences. Within Tier 2, targeted, evidence-based interventions are provided to small groups of students who need supplemental support in addition to Tier 1 instruction. At Tier 3, individualized, evidence-based instruction is provided for students with severe and persistent learning difficulties (Center on Multi-Tiered System of Supports, 2020; Preston et al., 2016). Within the three tiers, progress monitoring assessments measure student responses to instruction and determine when more intensive interventions are needed (Preston et al., 2016; Sailor, 2009).

MTSS is now an educational framework adopted by many K-12 public schools across the United States that emphasizes using evidence-based practices (EBPs) and progress monitoring for improving student outcomes in general education classrooms. It also provides a foundation to deliver targeted, individualized interventions for ELs; however, for it to be effective, teachers must be aware of the inequalities students from diverse backgrounds may face within the framework (Artiles, 2015). Instruction throughout a multi-level framework should be mindful of students' cultural and linguistic experience (Center on Multi-Tiered System of Supports, 2020), yet Artiles (2015) found many of the students in need of supplemental supports or more intensive interventions come from ethnic and linguistic minority backgrounds and are expected to meet the same academic outcomes and timelines as their peers. Given additional research is needed to determine the normal course of language and literacy development for ELs (Wagner et al., 2005), teachers need to be cautious when comparing their reading outcomes to a standard course of study and peer outcomes. Furthermore, researchers have noted a misconception that the reading practices provided to all students within Tier 1, Tier 2, and Tier 3 instruction are also effective for ELs (Gersten et al., 2007; Orosco & Klingner, 2010). For instance, phonological awareness activities are often used to help beginning readers understand the sound structure of the English language (Stanovich, 1994); however, researchers have found many teachers do not consider (a) there are English phonemes that do not exist in native languages and (b) sound placement in words can vary among languages making it difficult for ELs to manipulate the sounds in words due to differences in sounds (August & Shanahan, 2006; Cummins, 2007; Orosco & Klingner, 2010). Although direct instruction in beginning reading skills is a practice that supports reading growth among students (National Reading Panel, 2000), teachers need to understand ELs’ linguistic differences to adapt the practices to make them as successful for ELs as it is for their peers.

General and special education teachers’ understanding of ELs’ cultural, linguistic, and literacy diversities is even more crucial now due to state initiatives that have eliminated many language and bilingual programs that have placed greater demands on teachers who have not been adequately trained to (a) teach culturally and linguistically diverse students, (b) understand second language acquisition, and (c) recognize the implications of referring ELs to special education programs (Counts et al., 2018; Khong & Saito, 2014; Klingner et al., 2006; Sullivan, 2011). Despite limited research investigating the use of an MTSS framework to address the cultural and linguistic differences of ELs, research indicates it is a promising approach to help teachers identify when ELs are not responding to instruction and when more intensive, individualized instruction is needed (e.g., Chu & Flores, 2011; Orosco, 2010; Orosco & Klingner, 2010). However, researchers have cautioned additional research is warranted to determine how teachers use the framework to address ELs’ cultural and linguistic differences when minimal progress is achieved (Thorius & Sullivan, 2013; Wagner et al., 2005). One process embedded within an MTSS framework that may add to the literature on how teachers intensify and individualize ELs’ instruction when minimal progress is made is DBI.

Data-Based Individualization

In Tier 3 of schools’ multi-level frameworks, teachers provide intensive, individualized interventions to students who continue to display persistent learning, behavioral, or social-emotional difficulties. Although the method for increasing intensity of instruction for students has been referred to as several approaches (e.g., Data-Based Program Modification [DBPM; Deno & Mirkin, 1977]; experimental teaching [Casey et al., 1988]; data-based instruction [Fuchs et al., 2010]), more recently it has become known as DBI (Center on Multi-Tiered System of Supports, 2020; Jung et al., 2018, National Center on Intensive Intervention [NCII], 2013). DBI is a research-based process to support students at risk for learning difficulties and students with disabilities who need more intensive intervention (Fuchs et al., 2008). It incorporates five interactive steps to support teachers in intensifying intervention for students. First, teachers choose a validated intervention program to implement for students with persistent learning needs. Second, teachers collect ongoing progress monitoring data to analyze results to determine the level of student response. Third, if students make inadequate progress, teachers use diagnostic data to determine what changes are necessary to support student growth. Fourth, based on diagnostic data, teachers modify or adapt the intervention to meet students' needs. Finally, teachers continue collecting and analyzing student data to determine students' responses to the intervention's modifications (NCII, 2018).

DBI's process for intensifying intervention for students at risk for learning difficulties and students with disabilities has been researched over the past twenty-five years, and results of experimental studies investigating the implementation of DBI within schools have indicated stronger student academic outcomes than schools that did not (Lemons et al., 2017; Lemons et al., 2019). Additionally, Filderman et al. (2018) found that DBI displayed positive effects on reading outcomes of students at risk for reading difficulties and recognized it as a practical approach to address the needs of students not making adequate reading progress. Within the DBI process, progress monitoring tools are an essential component to allow teachers to make data-based instructional decisions in response to student outcomes (Jung et al., 2018). Performance-based measures, such as teacher-made measures or assessments at the end of instructional units, are several progress monitoring tools researchers found teachers relied heavily on to measure student progress (Sandberg & Reschly, 2011). Additionally, Jung et al. (2018) found curriculum-based measurement (CBM) as a progressing monitoring approach aligned with DBI to help teachers make reliable data-based instructional decisions based on small changes in student growth over time. Combined, the methods of DBI and CBM may provide a foundation for teachers to intensify and individualize validated reading interventions for ELs and offer a reliable assessment measure to determine if students are responding to instruction or if adaptions are needed.

Curriculum-Based Measurement

CBM is a research-based measurement process that requires repeated measurement of specific skills to allow teachers to measure student progress toward annual goals (Fuchs & Deno, 1992; Gesel & Lemons 2020; Jung et al., 2018). One of the essential components of CBM, and what separates it from other achievement measures, is the psychometric properties of the measures in meeting reliability and validity criteria through repeatedly sampling student performances across academic skills (Deno, 2003). CBM is used in schools throughout the United States to (a) screen students who are at risk for learning difficulties, (b) monitor student growth towards long-term goals, and (c) determine individualized goals for students receiving instruction in a multi-level framework (Reschly et al., 2009; Sandberg & Reschly, 2011). Research on CBM displays positive effects on the academic outcomes of students at risk for school difficulties and students with disabilities (e.g., Fuchs et al., 1984; Jung et al., 2018; Stecker et al., 2005). In addition, studies examining CBM reading tasks have found high correlations between ELs' and non-ELs' CBM scores and scores on their state assessments (e.g., Kim et al., 2016; Reschly et al., 2009; Shapiro et al., 2006).

Researchers specifically investigating CBM on ELs' reading outcomes have found CBM may avoid biases found within standardized assessments and may provide teachers with a better understanding of ELs' reading achievements (Fuchs, 2004; Sandberg & Reschly, 2011). For example, Dominguez de Ramirez and Shapiro (2006) found when oral reading fluency (ORF) CBM tasks were used with Spanish-speaking ELs across kindergarten through fifth grades, the measures were sensitive to evaluating ELs reading development in English over time and improved ELs' reading achievements. A closer examination of Dominguez de Ramirez and Shapiro's results indicated ELs' reading rates were significantly slower than non-ELs; however, the rate of reading improvement for Spanish-speaking ELs substantially grew through fifth grade. In contrast, the slope of growth for non-ELs was level across grade levels. These findings substantiate research completed by Cummins (1991) that it may take between five to seven years before ELs reach full levels of fluency in English and further supports the reliability of CBM reading tasks for ELs.

Previous research indicates CBM can be a reliable measuring tool to determine the rates of ELs' reading growths over time and are predictive of standardized test scores (e.g., Dominguez de Ramirez & Shapiro, 2011; Fuchs, 2004; Sandberg & Reschly, 2011). This is critical, given research has indicated teachers struggle to properly select reliable assessments for ELs (Counts et al., 2018; Klingner et al., 2006). CBM may ameliorate teacher difficulties in determining assessment measures to evaluate ELs' reading performances; however, for ELs to begin to display reading growth on CBMs, teachers must first implement validated interventions that will support higher reading outcomes of ELs with persistent reading difficulties.

Evidence-Based Practices

Federal mandates (i.e., NCLB 2001, IDEIA 2004, and ESSA 2015) require school systems to create evidence-based school plans to address the needs of students who fall below proficient levels (Klein, 2016). Within those plans, EBPs support higher education outcomes for students at risk for school failure (Cook & Cook, 2011; Dammann & Vaughn, 2001). EBPs are validated instructional practices or programs supported through numerous quality empirical studies that have displayed meaningful effects on student outcomes across academic, behavioral, and social-emotional skills (Burns & Ysseldyke, 2009; Cook & Cook, 2011; Cook & Odom, 2013; Cook et al., 2008). The use of EBPs have indicated higher outcomes for students across grade levels (e.g., Cook & Cook, 2011); however, as stated earlier, limited research exists if those practices are validated specifically for ELs (Haager et al., 2007). Although limited research exists establishing evidence-based reading practices for ELs, there is a growing body of research examining instructional practices that are beneficial to support ELs' academic growth (Artiles & Klingner, 2006). For example, Gersten and Baker (2000) reviewed the literature on effective instructional strategies for ELs in elementary and middle school grades and found (a) using vocabulary words across multiple content areas, (b) use of graphic organizers, (c) participation in cooperative learning groups, (d) embedding ELs' native languages into instruction, and (e) modifying cognitive and language demands based on lesson objectives were all strategies that promoted access to the general education curriculum for ELs.

Similarly, Goldenberg (2013) reviewed the literature and found several practices shown to have positive effects on ELs' academic achievements that included (a) setting clear goals; (b) selecting challenging materials; (c) providing clear instructions; (d) teacher modeling; (e) opportunities for active student engagement; (f) informative feedback; (g) practice and review; and (h) conducting frequent assessments, with reteaching as needed. The authors established four essential principles teachers should consider when designing instruction for ELs: (a) approaches generally effective for all students are likely to be effective for ELs, (b) ELs require additional instructional supports, (c) ELs' home languages can be used to promote academic development, and (d) ELs need ample opportunities to develop proficiency in English. Furthermore, Klingner et al. (2014) found teachers need to be aware of how the classrooms' sociocultural contexts (e.g., social norms, roles, social class, and assignments [Brand et al., 2006]) impact ELs responses to instruction. Researchers found teachers need to go beyond good teaching and make a thoughtful effort to build a classroom environment that incorporates all students' language, history, literature, and beliefs so teachers and students can learn from one other's socially inherited knowledge (Orosco & Klingner, 2010; Orosco & O'Connor, 2011). Linan-Thompson et al. (2018) explained to improve the literacy successes of ELs, teachers must integrate practices that strengthen ELs' cultural and linguistic experiences and affirms their identity in the classroom.

Culturally and Linguistically Responsive Practice

Paris (2012) documented that the United States education system reflects White, middle-class norms, and students whose cultural, linguistic, and literacy experience differed are viewed as unworthy within the nation's schools. Paris's statement hints at the problematic nature to which the United States' education system was initially designed to operate. Influenced by Frederick Taylor's scientific management theory (see Taylor, 1911 for further description of scientific management theory), public education was developed as a larger organization that taught the masses to maximize student outcomes (Ireh, 2016; Kaput, 2018). It represents an adult-directed education where the teacher delivers a pre-determined curriculum without considering students' experiences, interests, and cultural identities (Kaput, 2018; Rose, 2016). Today, the nation's K-12 public school system is still heavily grounded in Taylor's scientific management notion, despite a student population that is considerably different than the early 1900s (Kaput, 2018).

In the 1960s, movements to rethink teacher practice and pedagogy in the United States originated to embrace all students' cultural and linguistic backgrounds and move away from one dominant social group (Aronson & Laughter, 2015). Pedagogical approaches such as culturally appropriate (Gollnick & Chinn, 1968), culturally sensitive (Boyer, 1993), culturally congruent (Au & Kawakami, 1994), resource pedagogies (Moll & Gonzalez, 1994), and third space (Gutiérrez et al., 1999) all emerged in the literature to provide a framework to improve instruction for students marginalized by their races, ethnicities, and languages in the nation's schools (Aronson & Laughter, 2015; Lee, 2010; Paris, 2012). Additionally, culturally relevant pedagogy (Ladson-Billings, 1994), culturally responsive teaching (Gay 2002, 2010), and culturally sustaining pedagogy (Paris, 2012) are three other approaches this study leverages to empower teachers to think critically on their pedagogies and adopt instructional practices that maintain students' cultural and linguistic identities within schools' set curriculums.

The first construct, culturally relevant pedagogy, asserts teachers need to encourage students to use their cultural referents to communicate their knowledge, skills, and attitudes (Ladson-Billings, 1994). Culturally relevant pedagogy is centered on three central ideas: (a) all students must experience academic success, (b) students must maintain cultural integrity, and (c) students must develop critical consciousness to critique cultural norms and institutions that main social inequalities (Ladson-Billings, 1994). The second construct, culturally responsive teaching, highlights teachers' importance to merge ethnically diverse students' cultural knowledge, prior experiences, frames of references, and performance styles into their teaching practices to make learning more relevant to students (Gay, 2002). Culturally responsive teaching values students' cultural and linguistic diversities to make schooling engaging and representative of ethnically diverse students (Gay, 2002). The third approach draws on Ladson-Billings' culturally relevant pedagogy philosophies but uses the term culturally sustaining pedagogy as an alternative to support the sustained upholding of the cultural and linguistic pluralism of diverse communities in schools while still offering access to the dominant cultural proficiency expected in United States schools (Paris, 2012). Paris (2012) explains that culturally sustaining pedagogy supports multilingualism and multiculturalism of students' and teachers' perspectives and encompasses the past and present research in cultural pedagogy.

Ladson-Billings' (1994) culturally relevant pedagogy, Gay's (2002) culturally responsive teaching, and Paris's (2012) culturally sustaining pedagogy are three conceptual frameworks to support teachers in developing a culturally sensitive pedagogy within their classroom for improved outcomes among diverse learners. More recently, researchers (e.g., Klingner et al., 2014; Linan-Thompson et al., 2018; Lucas et al., 2008) have extended on Gay's (2002) culturally responsive teaching to specifically consider the linguistic experiences of students learning English in the school environment. Referred to as culturally and linguistically responsive practice (CLRP), this multi-dimensional approach combines effective literacy instruction with ELs' sociocultural experiences (Linan-Thompson et al., 2018). CLRP is centered on four main components: (a) instruction, (b) language, (c) social, and (d) cultural knowledge that are integrated throughout teachers' daily planning and instructional practices. Instruction refers to practices that advance student learning and include many of the instructional practices previously mentioned for ELs. For instance, Linan-Thompson et al. (2018) found systematic and explicit instruction, focused vocabulary development, strategy instruction, predictable routines, providing feedback, and ongoing assessment were all practices that facilitate ELs' learning when adapted to encompass their cultural, linguistic, and literacy experiences. Language incorporates teacher practices that demonstrate respect for English and students' native languages. Examples of this approach include flexible use of language, metalinguistic work by students, translanguaging, and making connections between cognates. Social includes practices that indicate teachers have a thorough understanding of their students and families to establish a supportive learning environment. Cultural knowledge demonstrates teachers' knowledge of students' cultures, ethnicities, and social identities. Practices might consist of using cultural and linguistic references, teacher knowledge of students' traditions, and leveraging all aspects of students' prior knowledge (Linan-Thompson et al., 2018).

Research suggests ELs' literacy achievements depend on how well teachers can integrate CLRPs with EBPs (Linan-Thompson et al., 2018). However, due to the high importance of implementing EBPs in a multi-level school framework, schools and teachers have deemphasized practices that strengthen diverse learners' experiences to implement EBPs, overlooking the essential need to combine the two approaches (Orosco, 2010). Furthermore, researchers have found many teachers lack the practices and skills to connect their instructional practices with strategies supportive of diverse students' experiences (Abedi, 2004; Khong & Saito, 2004; National Education Association, 2015; Zucker-Conde, 2009). This is corroborated by research indicating within university teacher preparation programs, teachers are often not provided with the necessary skills to teach students from culturally and linguistically diverse backgrounds (e.g., Banerjee & Luckner, 2014; Counts et al., 2018; Waitoller et al., 2010) and understand the impact learning a second language has on ELs' responses to instruction (e.g., Klingner et al., 2006; Shifrer et al., 2011). Orosco and Abdulrahim (2017) found that if professional development were provided to teachers emphasizing how to partner evidence-based skills instruction with ELs' cultural and linguistic experiences, it might be essential to equip teachers with the mindset and skills needed to restructure reading instruction for ELs.

Professional Development

Professional development could be one approach schools can take to increase teachers' knowledge and skills of pairing EBPs with CLRPs for ELs with persistent reading difficulties. Professional development is defined as a structured professional learning opportunity that results in changes in teacher practices and student learning outcomes (Darling-Hammond et al., 2017). Over the years, extensive research has displayed the benefits of professional development on teachers' knowledge and practices across content areas (e.g., Allen et al., 2011; Antoniou & Kyriakides, 2013; Clarke, 1995; Cleaver et al., 2020; Elmore, 2002; Garet et al., 2001; Gersten et al., 2010; Landry et al., 2006; Loughran, 1999; Loughran, 2014; Shaha & Ellsworth, 2013; Webster-Wright, 2009). Research has also identified professional development as one of the top school and district factors to improve teacher knowledge and practices for ELs (Casteel & Ballantyne, 2010; Goldenberg & Coleman, 2010).

Previous researchers have identified several critical content areas professional development should target to provide equitable learning opportunities for ELs. First, Voltz et al. (2003) suggested professional development should support teachers in understanding the impact of cultural diversity in the special education referral process. Second, Klingner et al. (2005) found professional development should increase teachers' awareness of (a) implementing validated instructional practices that meet the needs of ELs, (b) the role of culture in student learning, and (c) implicit biases that impact learning. Lastly, Haager (2007) suggested school administrators need to consider professional development opportunities targeted for teachers primarily responsible for instruction and assessment of ELs within their school settings. Thus, professional development is needed to increase teacher knowledge of ELs' cultural and linguistic diversities and effective instructional methods to make reliable decisions regarding referrals of ELs to special education programs.

Given the variety of approaches professional development can take to increase teachers' awareness of equitable learning opportunities for ELs, professional development in DBI/CBM frameworks may be well-suited to support teachers in focusing on the individual differences of ELs to improve academic outcomes. This type of training could provide teachers responsible for ELs' reading instruction and assessment a systematic process to integrate CLRPs with validated reading interventions and provide equal access to the general education curriculum. It can also equip teachers with reliable progress monitoring measures for ELs, thereby making data-based decisions to modify instructional practices based on ELs' needs and determine if referrals to special education programs are needed. Research on the impact of DBI-related professional development on teachers' knowledge, skills, and self-efficacy have shown significant effects on teacher outcomes (Gesel et al., 2021). However, the majority of studies included intensive researcher support guiding teachers adaptations to intensify intervention when students did not make adequate progress. Gesel et al. (2021) found limited studies provide insight into teachers' implementation of DBI within their current educational setting, particularly teachers' decision-making process for adapting validated programs to meet individual student needs. The authors suggested additional research is needed to determine the sustainability of DBI professional development on teachers' classroom practices and identify barriers to implementing instructional adaptations for improved student outcomes.

Limitations of Previous Studies

Researchers have identified several promising instructional practices, assessments, and pedagogies to advance ELs' literacy outcomes in the United States' general education curriculum. First, the advancement of theoretical frameworks such as culturally relevant pedagogy (Ladson-Billings, 1994), culturally responsive teaching (Gay 2002, 2010), and culturally sustaining pedagogy (Paris, 2012) have paved the way to help educators overcome the mindset that ELs' cultural and linguistic experiences are deficits in United States' schools. Second, researchers (e.g., Gersten & Baker, 2000; Goldenberg, 2013; Klingner et al., 2005; Linan-Thompson et al., 2018; Orosco & Abdulrahim, 2017; Snow, 2002) have identified several effective literacy strategies and CLRPs to support improved reading outcomes of ELs. Third, CBM reading tasks hold promise to be a reliable assessment tool to analyze ELs' reading growths over time (Dominguez de Ramirez & Shapiro, 2011; Fuchs, 2004; Sandberg & Reschly, 2011). Fourth, multi-level frameworks and DBI provide a structure to tailor instruction to support ELs' individual academic needs (Orosco, 2010). Finally, professional development serves as a significant element to provide teachers with the knowledge and skills to improve ELs' language and literacy achievements (Goldenberg & Coleman, 2010; Haager, 2007; Klingner et al., 2005; Voltz et al., 2003).

These contributions to the field offer an approach to sustain an equitable education system more representative of the EL student population. Yet, limited research exists on how the components combine to advance ELs' academic outcomes in the United States' K-12 public school system. Professional development targeting DBI/CBM frameworks can serve as the link to provide teachers with the knowledge of intensifying and individualizing validated reading interventions with CLRPs for ELs with persistent reading difficulties; however, research is needed to determine the effect this professional development approach would have on teachers' knowledge to make culturally responsive instructional adaptations for ELs. Furthermore, limited research exists providing structures of professional development training shown to increase teacher knowledge of language and literacy practices for ELs, and consistent with Gesel and colleague's (2021) findings, those professional development opportunities have extended training assisting teachers in adapting their practices to meet the needs of ELs (e.g., Babinski et al., 2018; Choi & Morrison, 2014). Unarguably, there are significant benefits to sustained professional development on teacher practices, even more so for changes in student achievement (Darling-Hammond et al., 2017; Guskey, 2002; Yoon et al., 2007); however, ongoing training and researcher support may not be feasible or sustainable for many school districts (Hill, 2009). Hill (2009) suggested professional development should be nationally scalable, accessible, and evaluated through rigorous research before it can have relevant and long-last impacts on teacher outcomes. Hill recommended several online learning programs that displayed promising approaches to providing sustaining learning opportunities for teachers across the nation (e.g., Math Solutions, PBS TeacherLine). However, further research is warranted to determine the advantages of online teacher professional development and the impact it has on teacher knowledge and classroom practices. Therefore, the purpose of this study was to examine a small-scale online professional development to increase K-12 general and special education teachers' knowledge of DBI/CBM to independently adapt EBPs with CLRPs for ELs with persistent reading difficulties. This study serves as a preliminary study to be evaluated and scaled up to improve and sustain instructional reading methods for ELs across K-12 schools in the United States.

Purpose of Study and Research Questions

The purpose of this study was to investigate online DBI/CBM + CLRP professional development on K-12 general and special education teachers' instructional reading adaptations for ELs in need of intensive reading intervention. The research questions to be answered in this study include:

1. What are the effects of online DBI/CBM + CLRP professional development on teachers' knowledge of the DBI/CBM process and CLRP to adapt validated reading interventions for ELs who do not make adequate progress in response to reading instruction as measured by an instructional rubric?
2. To what extent does an online DBI/CBM + CLRP professional development support teachers in maintaining their level of knowledge of data-driven instructional reading adaptations and CLRPs for ELs one month after the training has ended?
3. To what extent do teachers find online DBI/CBM + CLRP professional development appropriate, feasible, and beneficial to support their knowledge of integrating validated reading interventions with CLRPs into tiered instruction for ELs?

Significance of Study

This study draws upon and extends on DBI/CBM, CLRP, and online professional development literature to increase general and special education teachers' knowledge of instructional reading practices reflective of ELs' cultural, linguistic, and literacy experiences. This study's contributions can unify several long-standing theoretical constructs to improve ELs' reading outcomes. First, this study is grounded in a social constructivism theoretical framework supported by pedagogical work offered by Gay (2002), Ladson-Billings (1994), Linan-Thompson et al. (2018), and Paris (2012) to support teachers in designing and implementing teaching practices that incorporate students' diverse cultural, linguistic, and literacy experiences.

This study embedded these constructs within schools' multi-level frameworks to support teachers in establishing teaching practices encompassing ELs' lived experiences.

Second, this study broadens the DBI/CBM professional development research investigating teachers' knowledge of DBI/CBM to independently make instructional reading adaptations for ELs. Given the majority of studies examining DBI/CBM professional development have been completed with intensive researcher support, this study was one of the first to determine if online DBI/CBM teacher professional development will provide the foundation for teachers to adapt instructional plans for ELs with persistent reading difficulties independently. This study closely examined individual teachers' instructional decisions regarding the five steps of DBI to determine additional supports teachers may need in specific components of intensive intervention to make culturally responsive adaptations to interventions for ELs with persistent reading difficulties. Furthermore, this study is one of the first to investigate DBI/CBM professional development with an emphasis on CLRP to determine how teachers make instructional adaptations reflective of ELs' cultural, linguistic, and literacy experiences.

Finally, online DBI/CBM + CLRP professional development components incorporated in this study draws on Hill's (2009) recommendations to create a small-scale, online professional development that has the potential to be evaluated and scaled up to deliver affordable and accessible teaching practices to K-12 teachers across the nation. The study's online learning modules were developed by national technical assistance centers dedicated to improving the outcomes for students with and without disabilities through evidence-based instruction. The DBI modules were recommended explicitly by Lemons et al. (2017) to serve as a basis to help train staff members interested in implementing DBI in their schools. This study's findings can investigate the effectiveness of the online learning modules to increase teacher knowledge of intensive intervention and the likelihood of sustainable practices within school settings. Additionally, the professional development components embedded in the study drew on several teaching and online learning theoretical frameworks, including the How People Learn (HPL) theory (Bransford et al., 1999) and the Community of Inquiry framework (Garrison et al., 2000) that can contribute to the research base examining online learning frameworks to increase teacher knowledge and instructional practices.

Delimitations

It is important to acknowledge delimitations to the study to provide insight into the research design and philosophical framework (Theofanidis & Fountouki, 2019). First, this study took place during the Covid-19 global pandemic. This study was carefully planned to meet national safety guidelines. Additionally, this study's online professional development was designed to limit extra teacher responsibilities given the uncertainty of the 2020-2021 academic school year. While creating online DBI/CBM + CLRP professional development, I tried to balance components of professional development found to be effective for improved teacher knowledge and practices (e.g., incorporated active learning, feedback and reflection [Darling-Hammond et al., 2017]) with Covid-19 related factors that may impact engagement in online DBI/CBM + CLRP professional development (e.g., transitions from virtual to in-class instruction, parenting and working from home, illnesses).

Second, for a detailed examination of how individual teachers independently used the five steps of DBI to adapt reading instruction for ELs with persistent reading difficulties, this study used a single-case design methodology with three teacher participants. Single-case studies are a strong design to allow researchers to analyze individual participants' behavior and investigate the viability of a new intervention with a high level of control; however, the low number of teacher participants limits the external validity and generalizability of results to the larger K-12 teacher population.

Third, I used the participating schools' multi-level frameworks to recruit K-12 general and special education teachers who provide supplemental and/or intensive interventions for ELs. Because general and special education teachers' knowledge may fluctuate on their understanding of individualized instruction, this might impact their responses to the study's assessment probes and alter the findings of this study. However, this limitation is illustrative of many school structures. It parallels the vast differences in instruction ELs may be given depending on individual school contextual factors, further indicating the need for professional development opportunities for school personnel responsible for instruction and evaluation for ELs.

Lastly, this study used a self-reported participant survey to gather procedural fidelity for the online professional development components. Each online training embedded within the professional development provided an estimated time for completion; however, due to the virtual format and online activities offered on different websites, the online professional development platform could not capture each participants' times spent for each activity to ensure accurate completion of the entire professional development. Additionally, while the online professional development platform could capture teachers' times completing assessment probes to measure teacher knowledge, it could not report if participants used outside resources to respond to questions. Doctoral students and university faculty members field-tested assessment probes to determine a mean time of completion; however, the online learning platform does raise threats to the professional development's validity on teachers' DBI/CBM and CLRP knowledge.

Definitions of Terms

Culture

Culture is a broad term that includes the way of being for individuals (Terry & Irving, 210). Components of culture may consist of an individual’s values and behavioral styles, language and dialects, nonverbal communications, perspectives, and worldviews (Banks, 2006).

Culturally and Linguistically Responsive Practice (CLRP)

CLRP is a multi-dimensional approach that incorporates language instruction as a component of culturally responsive teaching for students learning English in the school setting. It includes instructional practices in instruction, language, social, and cultural components that affirm students’ cultural and linguistic identities (Linan-Thompson, 2018).

Culturally Relevant Pedagogy

Culturally relevant pedagogy is defined as a pedagogy “that empowers students intellectually, socially, emotionally, and politically using cultural referents to impart knowledge, skills, and attitudes” (Ladson-Billings, 1994, pp. 16-17).

Culturally Responsive Teaching

Culturally responsive teaching is “using the cultural knowledge, prior experiences, frames of reference, and performance styles of ethnically diverse students to make learning encounters more relevant to and effective for them” (Gay, 2010, p. 31).

Culturally Sustaining Pedagogy

Culturally sustaining pedagogy is one that “empowers students intellectually, socially, emotionally, and politically using cultural referents to impart knowledge, skills, and attitudes” (Ladson-Billings, 1994, pp. 16-17). It seeks to sustain diverse students’ linguistic, literacy, and cultural backgrounds into the dominant school culture (Paris, 2012).

Curriculum-Based Measurement (CBM)

CBM is a standardized measurement process that requires repeated measurement of specific skills to monitor student growth over time (Fuchs, Fuchs, & Stecker, 1989; Fuchs & Deno, 1992).

Data-Based Individualization (DBI)

DBI is an iterative process to support students in need of intensive, individualized instruction. It uses ongoing progress monitoring data to determine if and when adaptations to instruction are needed for students (Fuchs et al., 2008). It incorporates five interactive steps to support teachers in individualizing interventions for students: Step 1 - Teachers choose a validated intervention program to implement for students with persistent learning needs; Step 2 - Teachers collect ongoing progress monitoring data to analyze results to determine the level of student response; Step 3 - If students make inadequate progress, teachers use diagnostic data to determine what changes are necessary to support student growth; Step 4 - Based on diagnostic data, teachers modify or adapt the intervention to meet students' needs; Step 5 - Teachers continue to collect and analyze student data to determine students' response to modifications to the intervention (NCII, 2018).

English Learner (EL)

An EL is a student who comes from a non-English speaking family and learns English in the school environment (Lesaux & Harris, 2017). ELs may be born in the United States but come from an environment where English is not the dominant language spoken or maybe a recent immigrant with various English language levels (Chu & Flores, 2011; Lee, 2010). EL is a broad term that comprises students from language-minority communities in the United States (Lee, 2010).

Ethnicity

Ethnicity is "a multi-faceted quality that refers to the group to which people belong, and/or are perceived to belong, as a result of certain shared characteristics, including geographical and ancestral origins, but particularly cultural traditions and languages" (Bhopal, 2004, p. 441).

Evidence-Based Practices (EBPs)

EBPs are validated instructional practices or programs supported through numerous quality empirical studies that have displayed meaningful effects on student outcomes across academic and behavioral skills (Cook & Cook, 2011; Cook & Odom, 2013).

Immigrant

An immigrant is an individual who comes to live in a foreign country and has various degrees of the English language (Lee, 2010).

Intensive Intervention

Intensive intervention is a data-driven process of increasing the intensity and individualization of interventions to support the needs of students who have severe and persistent learning and behavioral needs (NCII, 2014).

Language

Language is how individuals communicate and socialize within a cultural group (Gollnick & Chinn, 2006). Language incorporates nonverbal and verbal communications and oral and written communications (Terry & Irving, 2010).

Limited English Proficiency

Limited English proficiency is a term used to reference individuals whose native language is a language other than English and whose understanding of the English language may impact difficulties in speaking, reading, or writing (Wrigley et al., 2009).

Literacy

The ability to use reading and writing to construct meaning from printed text to meet the requirements of a particular social context (Au, 1993).

Multi-Tiered Systems of Support (MTSS)

MTSS is a multi-level preventative school framework that integrates data-driven instructional decisions to maximize student learning and support all students' academic, behavioral, and social-emotional needs (Center on Multi-Tiered System of Supports, 2020).

Nationality

Country of citizenship (Support, Advanced Learning and Training Opportunities for Youth [SALTO-YOUTH], 2020).

Native Language

A native language is a language an individual learns to speak from the place they were born as a child, rather than learning it as a foreign language (Merriam-Webster, 2020). Other terms used include first language, mother tongue, or arterial language.

Professional Development

Professional development is a structured professional learning opportunity that results in a change in teacher practice and positively impacts student achievement (Darling-Hammond et al., 2017; Yoon et al., 2007).

Response to Intervention (RTI)

Before revisions of IDEIA 2004, schools qualified students with an SLD under an IQ-achievement discrepancy model; however, due to large variability in states defining what a discrepancy was and many students left struggling when they did not display a discrepancy, RTI emerged as an alternative method to the IQ-achievement model (Berkeley et al., 2009). Under RTI, a student at risk for academic failure is provided with early scientifically-based interventions, and their responsiveness to instruction is examined over several weeks through ongoing progress monitoring assessments (Fuchs & Fuchs, 2006).

Social Constructivism

A theatrical framework based on the work of Lev Vygotsky that finds mental activity is inextricably connected to its social contents (Vygotsky, 1978; Wertsch, 1991).

Sociocultural Contexts

Sociocultural contexts are the social settings in which individuals live and are educated and are influenced by family histories, cultural tools, practices, and individual tendencies (Orosco & Klingner, 2010). Sociocultural contexts derive from a Vygotskian perspective (i.e., Sociocultural theory; Vygotsky, 1978) that there is a connection between human mental functioning and individuals' everyday activities within their cultures (Orosco & Klingner, 2010).

Specific Learning Disability (SLD)

The U.S. Office of Education (USOE, 1977) defines SLD as "a disorder in one or more basic psychological processes involved in understanding or using language, spoken or written, that may manifest itself in an imperfect ability to listen, think, speak, read, write, spell, or do mathematical calculations" (p. 65083).

Translanguaging

Translanguaging is a multilingual speakers transfer between languages, treating their diverse languages as an integrated system (Canagarajah, 2011).

CHAPTER 2: REVIEW OF LITERATURE

ELs who do not make adequate reading progress in the general education curriculum may need intensive, individualized instruction reflective of their cultural, linguistic, and literacy diversities. The following chapter provides a foundation for online DBI/CBM + CLRP professional development to increase K-12 general and special education teachers' knowledge of adapting validated reading interventions with CLRPs for ELs with persistent reading difficulties. First, I provide a brief review of the history of ELs' disproportionality rates in special education programs, specifically in the area of SLD for reading. Second, I review schools' multi-level frameworks that align instruction to meet students' academic, behavioral, and social-emotional needs. Next, I describe the five steps of the DBI process, highlighting the importance of CBM to progress monitor student outcomes and make data-informed decisions regarding when adaptations to instruction are needed. Then, I review cultural, linguistic, and literacy practices that support ELs' diversities within school curriculums. Finally, I examine professional development to increase teachers' knowledge of DBI/CBM and instructional strategies to integrate CLRP into validated reading interventions for ELs with persistent reading difficulties.

As shown in Figure 1, ELs' overidentification in special education services may occur when ELs demonstrate low reading growth within schools' multi-level school frameworks. ELs' low reading growths may be due to (a) a lack of teacher knowledge of intensifying and individualizing validated reading interventions, (b) a lack of teacher knowledge of CLRP, and (c) a lack of teacher knowledge of adapting validated reading interventions with CLRPs. Therefore, it becomes challenging to provide effective instruction for ELs with persistent reading difficulties; the indication is a need for a DBI/CBM + CLRP professional development to increase teachers' knowledge of culturally and linguistically relevant instructional practices and frameworks to improve literacy instruction for ELs with persistent reading difficulties.

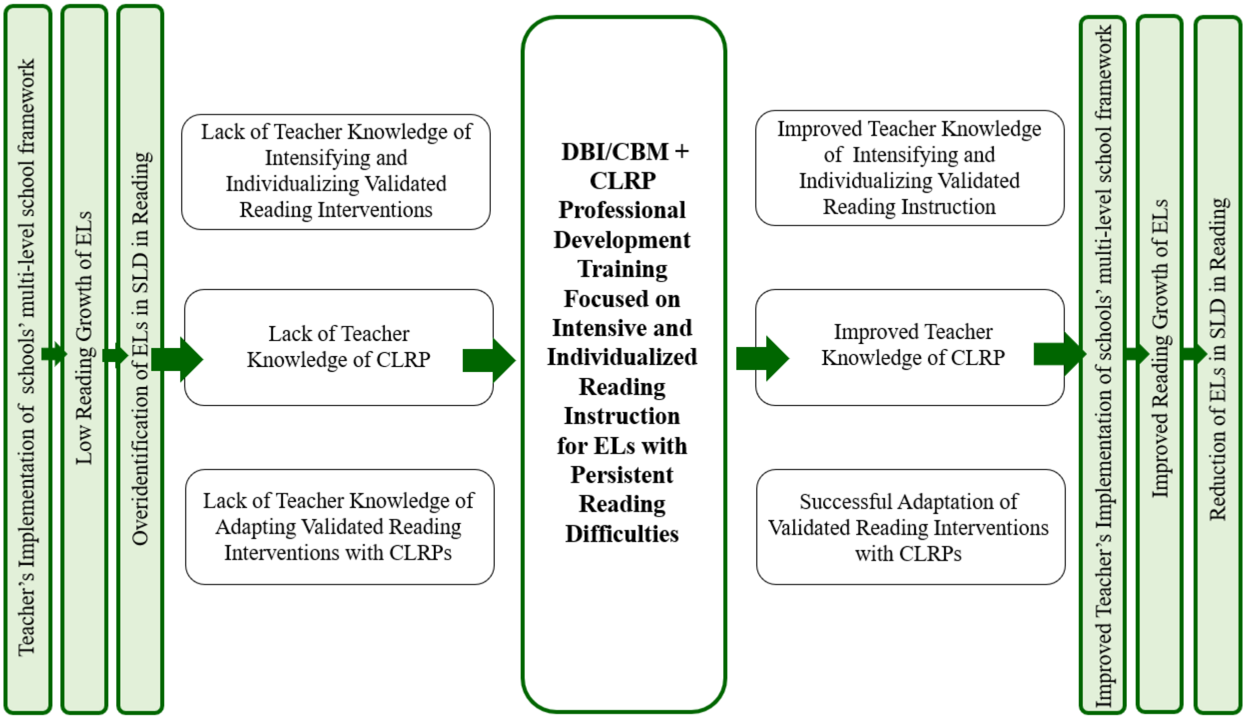

Teacher's Implementation of schools' multi-level school framework
Low Reading Growth of ELs
Overidentification of ELs in SLD in Reading
Lack of Teacher Knowledge of Intensifying and Individualizing Validated Reading Interventions
Lack of Teacher Knowledge of CLRP
Lack of Teacher Knowledge of Adapting Validated Reading Interventions with CLRPs
DBI/CBM + CLRP Professional Development Training Focused on Intensive and Individualized Reading Instruction for ELs with Persistent Reading Difficulties
Improved Teacher Knowledge of Intensifying and Individualizing Validated Reading Instruction
Improved Teacher Knowledge of CLRP
Successful Adaptation of Validated Reading Interventions with CLRPs
Improved Teacher's Implementation of schools' multi-level school framework
Improved Reading Growth of ELs
Reduction of ELs in SLD in Reading

Figure 1. Theory of Change.

Brief History of Overrepresentation of English Learners in Special Education Programs

The disproportionality of people of color in special education has been a long-debated topic with limited research to understand the issue's full complexity (Sullivan & Bal, 2013). Students' gender, race, socioeconomic status, and language status are all associated with disproportionate rates of identification, particularly in disability categories such as SLD that are subjective (i.e., based on professional educators' judgment; Donovan & Cross, 2002; Sullivan, 2011). Dunn (1968) was one of the earliest researchers to acknowledge the disproportionate rates of culturally and linguistically diverse students in special education when he found students with mild learning disabilities from culturally diverse families were placed in special education programs in more restrictive environments and often excluded from schools with students from white middle-class families. In addition, several court cases (e.g., *Brown v. Board of Education of Topeka*, 1954, *Diana v. State Board of Education*, 1970, 1973; *Guadalupe Organization v. Tempe Elementary School District No. 3,* 1978 and *Larry P. v. Riles*, 1984) recognized unequal educational opportunities for diverse students within school districts. Yet, disproportionality rates of ELs in special education programs continued to be documented across the United States.

In the 1980s, the Handicapped Minority Research Institute found Latino students were more likely to be placed in special education programs, and students' language proficiency was often linked to eligibility reasons for placement (Rueda et al., 2002). Artiles et al. (2005) found ELs with lower proficiency in their native languages and English were found to have the highest identification rates in SLD and Speech and Language Impairment (SLI) categories across California school districts. Similarly, Valenzuela et al. (2006) found ELs in schools in the southwestern United States were overrepresented in intellectual disabilities, SLDs, and SLIs by twice the number of their White peers and placed in more restrictive classroom settings. More recently, Linn and Hemmer (2011) completed a study examining the representational patterns of ELs receiving special education services in Texas. Findings suggested ELs were continually displayed as being overrepresented in special education services. Finally, Sullivan (2011) examined the extent of disproportionality in ELs' placements in special education programs compared to their White peers over eight years in the southwestern United States. Results coincided with Valenzuela and colleagues finding that ELs were more likely to be identified with SLD or intellectual disability and placed in more restrictive educational settings than white peers.

Presently, ELs continue to be referred to special education services, with researchers identifying several key educational factors that may be contributing causes (Counts et al., 2018). First, Abedi (2006) identified a lack of valid and reliable assessments in the referral process for

ELs. Second, Artiles and Klingner (2006) and Keller-Allen (2006) indicated school staff might lack the understanding of the differences between emerging English proficiency and a disability. Similarly, Abedi found ELs and students with SLD have difficulties with academic tasks with high language demands, making it difficult for schools to distinguish between the two. Lastly, Figueroa and Newsome (2006) found a lack of training in ELs' cultural and linguistic differences and a shortage of bilingual educators and school psychologists to support appropriate referral decision-making of ELs into special education programs.

Previous research (e.g., Abedi, 2006; Artiles & Kllingner, 2006; Campbell et al., 1993; Figueroa & Newsome, 2006) indicates ELs may not struggle due to a disability, but rather due to a lack of teacher training and subsequent misunderstanding of the impact of ELs' cultures and emerging English proficiency within schools' practices and assessments. To reduce the overrepresentation of ELs in special education programs, particularly in SLD, schools must first reexamine the SLD identification process for culturally and linguistically diverse students and adopt a more culturally sustaining pedagogy to support the cultural and linguistic backgrounds of ELs.

Identification of Specific Learning Disabilities

The special education referral process for SLD has been a controversial subject since amendments to IDEIA 2004 and its 2006 regulations (Haager, 2007; Zirkel et al., 2017). National committees (e.g., National Joint Committee on Learning Disabilities, 1998; President's Commission on Excellence in Special Education, 2002) and researchers (e.g., Bradley et al., 2002; Kavale & Forness, 2000; Kavale & Spaulding, 2008) have raised many concerns with the eligibility criteria for SLD and the subjective nature of the referral process. SLD was recognized by the Education of all Handicapped Children Act (1975) and later defined by the USOE as:

> A disorder in one or more of the psychological processes involved in understanding or in using language, spoken or written, which may manifest itself in an imperfect ability to listen, speak, read, write, spell, or do mathematical calculations. The term includes such conditions as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia and developmental aphasia. The term does not include children who have learning disabilities, which are primarily the result of visual, hearing, or motor handicaps, or mental retardation, or emotional disturbance, or of environmental, cultural, or economic disadvantage. (USOE, 1977, p. 65083)

The USOE (1977) further provided regulations on the eligibility criteria for SLD in special education programs and stated a student would qualify for services if a severe discrepancy existed between students' achievement and intellectual abilities; however, it did not provide clear guidelines for this discrepancy model that left many irregularities among states in the determination of students with SLD (Fuchs et al., 2003; Preston et al., 2016). For instance, in 1983, Ysseldyke et al. investigated the SLD discrepancy model by examining the number of students who qualified for SLD under 17 different operationalized definitions across states in the U.S. First, researchers applied the 17 operationalized definitions across 248 third-, fifth-, and twelfth-grade students without an SLD and found 85% of the students could be classified with SLD under any one of the 17 states operationalized definitions. Next, researchers compared achievement and intellectual scores of 99 fourth grade students with SLD and low-achieving students with the operationalized definitions and found 88% of the low-achieving students could be identified with SLD, and 4% of the students already identified did not meet any of the criteria. Ysseldyke and colleague's results highlight the SLD discrepancy model's inconsistencies across the United States and potentially mislabeling many students under an SLD.

Similarly, Fuchs et al. (2003) reviewed empirical evidence of the discrepancy model's effectiveness for diagnosing an SLD for struggling elementary readers. Authors found students with and without an intellectual-achievement discrepancy performed the same on related cognitive tasks, yet some students were found to have SLD while others were not. Furthermore, researchers found students from low-income families with low intellectual and achievement scores did not qualify for special education, despite apparent weaknesses in their cognitive and academic reading abilities. Researchers noted that the intellectual-achievement approach to SLD qualification represented a wait-to-fail model where students performing below proficiency levels were not eligible for specialized instruction until years later when their achievement scores fell below their intellectual score. This left many students repeatedly falling below grade level and widening the achievement gap between their academic achievement and their peers.

In the 1980s and 1990s, the United States witnessed an increasing number of students found eligible for an SLD, and by 2000, it was the most represented disability category of the student population (Fuchs et al., 2003; Preston et al., 2016). Factors such as (a) inaccuracies in special education assessment practices, (b) teacher bias, and (c) a lack of appropriate instruction in general education curriculum were all found to contribute to the high percentage of students being placed into special education programs under SLD (Haager, 2007). Additionally, Orosco (2010) found many of the students identified with SLD came from minority groups, including ELs, resulting from cultural and linguistic differences among the teachers and students. These factors, coupled with previous research indicating the arbitrary assignment of students under SLDs, caused educational leaders and national organizations to reexamine the discrepancy model and called for a more reliable system that would provide additional instructional supports to a variety of learners in the general education settings and measure their response to instruction before labeling them with a disability (Heller et al., 1982).

Multi-Tiered Systems of Support

In 1979, the Office of Civil Rights (OCR) joined forces with the National Research Council to create the Panel on Selection and Placement of Students in Programs for the Mentally Retarded. The panel's goal was to determine factors contributing to the disproportionate representation of minority students in special education programs. Conclusions from the panel indicated that disproportionality could result from invalid assessments and low-quality general education instruction. They outlined guidelines schools needed to consider when determining student placement into special education services. At the heart of the report, the panel called for greater responsibilities placed on general education teachers to provide alternative classroom interventions for students falling below grade level and for the use of all available school resources (e.g., remedial specialist, school psychologist, bilingual programs, staff expertise) to support instruction before referrals to special education programs were made.

Soon after, the National Commission on Excellence in Education (1983) released *A Nation at Risk: The Imperative for Educational Reform* to the United States Department of Education, calling for an educational reform to address diverse learners' needs and demanded the best performance from all students. It called for an education system, that regardless of race, class, or economic status, all students would be given a fair education and provided the tools necessary to gain employment, become independent, and contribute to society. This started other educational movements, such as the Regular Education Initiative (REI), that advocated integrating special education services into general education classrooms (Maag et al., 2019). Additionally, the National Association of School Psychologist (NASP; 1985) released a policy statement, “Advocacy for Appropriate Educational Services for All Children,” rejecting traditional methods of classifying children with disabilities and urged for a system change that provided supports to children and youth in classrooms without labeling them disabled (Reschly & Ysseldyke, 1995). The policy emphasized (a) basic intervention methods were often not used in Individualized Education Programs (IEPs) and were rarely evaluated using individualized treatment measures, (b) disproportionate minority placement in special education programs were common, and (c) unequal balance of school psychologists time resulted in special education classification and placement compared to the time allocated for individual counseling and problem-solving consultation to assess students’ abilities (Reschly & Wilson, 1995; Reschly & Ysseldyke, 1995). These movements were later reflected in the amendment of the Individuals with Education Act (IDEA; 1997), which brought system-level changes in education by requiring students with disabilities to be educated to the greatest extent possible in the general education curriculum and held states accountable for compliance and performance measures for all students (Ikeda, 2012).

As more support grew from the field of school psychology for a problem-solving and intervention approach to improve student outcomes, RTI emerged as a preventive model to reconsider how to support an identified student need rather than a referral process for special education services (Fuchs & Deshler, 2007; Reschly & Ysseldyke, 1995; Sailor, 2008). In an RTI framework, teachers evaluate student responses to interventions using a three-tiered delivery system with increasingly intensive interventions throughout the tiers (Prasse et al., 2012; Preston et al., 2016). At Tier 1, students are provided with evidence-based core instruction within their general education classroom. At Tier 2, small group, targeted, evidence-based instruction is delivered to students who need supplemental instruction alongside Tier 1 instruction. At Tier 3, individualized, intensive, evidence-based instruction is provided to students who do not make adequate progress within Tier 1 and Tier 2 intervention (Center on Multi-Tiered System of Supports, 2020).

In 2002, the President's Commission on Excellence in Special Education recognized the RTI approach as an alternative to the IQ-achievement approach for determining students with a learning disability. Soon after, RTI became an established framework emphasizing the importance of monitoring student outcomes in general and special education classrooms (Deno, 2003; Ikeda, 2012; Klein, 2016; Sugai & Horner, 2009). In addition, Cummins (2007) and Orosco (2010) believed RTI could be an approach that would allow the education field to rethink a child deficits approach and revisit how sociocultural contexts may impact ELs' responses to teacher instruction.

As states began to adopt RTI and integrate evidence-based practices to support students' academic needs, researchers also examined combining evidence-based positive behavior supports (PBS) within RTI tiers to support students with behavior challenges (Erickson et al., 2012). In 2008, the Kansas Department of Education launched an initiative called MTSS as an evidence-based, system-wide approach to support students' academic and behavioral needs through a combined RTI and PBS model (Erickson et al., 2012; Kansas Department of Education, 2011; Sailor, 2009). Today, schools throughout the United States are restructuring toward this multi-level framework and preparing to use student outcome data gathered through increasingly intensive interventions as the required approach to identify students under the category of SLD. This brings a new shift to the referral process in special education with the potential for many benefits and implications for ELs' future interventions and instruction.

Summary

Disproportionate representation of ELs in special education programs has been a critical issue in the United States' education system. Research and federal court cases can be traced back to the late 1960s, documenting ELs' unequal representation in special education programs, particularly in SLD where the referral process and eligibility criteria are highly subjective. Due to the ambiguity of placement of students in SLD and the educational biases found within the referral process for minority students, researchers and national organizations have called for an educational reform to address the issue and create a system where students are not labeled with a disability until a variety of instructional practices and interventions have been implemented and found unsuccessful (Heller et al., 1982). Through educational movements and changes in federal mandates, MTSS emerged as a three-tiered school-wide framework with increasingly rigorous interventions at each tier to evaluate students' responses to instruction. At Tier 3, intensive, individualized, evidence-based interventions and progress monitoring assessments are used for students with the most persistent learning difficulties to modify instructional strategies for each learner. More recently referred to as DBI, this intensive, individualized process offers a solution to combine CLRP with evidence-based interventions to recognize ELs' individual cultural, linguistic, and literacy experiences.

History of Data-Based Individualization

The Education for All Handicapped Children Acts (1975) placed greater accountability on schools to evaluate the outcomes of students with disabilities and for teachers to use data-making decisions to create individualized plans to address student outcomes (Fuchs et al., 1983; Gesel et al., 2021). This created a demand for an assessment procedure that could determine students' strengths and needs and drive teacher instruction for improved outcomes for students with disabilities (Gesel et al., 2021). In 1977, Deno and Mirkin developed Data-Based Program

Modification (DBPM) as a measurement and evaluation procedure teachers could regularly use to modify instruction and improve student achievement (Deno, 1985). The goal of DBPM was to support teachers in progress monitoring student's educational progress and use the data gathered for continued modifications and adaptations to student instruction (Jung et al., 2018). With additional advancements to the field of special education, researchers began to expand on DBPM to include several other approaches to support data collection for informed educational decision-making. For example, in 1988, Casey et al. extended on DBPM and used the term experimental teaching to support teachers in understanding that one intervention may produce different student achievement results. Researchers emphasized that teachers would learn to identify when more intensive changes needed to be and introduce other instructional interventions for individually tailored educational programs through experiential teaching during small group instruction. In 2013, the NCII referred to this process of individualizing and intensifying interventions for students with severe and persistent learning difficulties as DBI (Jung et al., 2018; NCII, 2013).

Funded by the Department of Education's Office of Special Education Programs (OSEP), the NCII's mission is to support schools in implementing intensive interventions in the areas of reading, mathematics, and behavior. They define DBI as a multistep, systematic process for individualizing and intensifying intervention using validated interventions, progress monitoring, assessment, and research-based adaption strategies. DBI includes five interactive steps to individualize interventions for students: (a) teachers choose a validated intervention program to implement for students with persistent learning needs; (b) teachers collect ongoing progress monitoring data and analyze results to determine the level of student response; (c) if students make inadequate progress, teachers use diagnostic data to determine what changes are necessary to support student growth; (d) based on diagnostic data, teachers modify or adapt the intervention to meet students’ needs; and (e) teachers continue to collect and analyze progress-monitoring data to determine students’ response to modifications to the intervention (NCII, 2018). Within DBI, CBM is often the identified progress monitoring approach to collect ongoing measurement of student progress over time (Jung et al., 2018). Together the DBI/CBM process is fundamental to support teachers in examining instruction for students who fail to respond to Tier 1 and Tier 2 instruction and need more intensive, individualized interventions (Lemons et al., 2019; Roehrig et al., 2008).

Over twenty-five years of research have demonstrated the effectiveness of intensifying and individualizing instruction for students with the most persistent learning difficulties (Fuchs et al., 2014; Fuchs & Stecker, 2010; Lemons et al., 2019). For example, Jung et al. (2018) completed a meta-analysis to examine the mean effect of teachers’ uses of DBI on students’ academic outcomes across academic areas and factors influencing the impact of DBI on student achievement. Fourteen studies published between 1983 and 2017 were analyzed, and 57 effect sizes were calculated among two comparison groups within the studies: DBI Only and DBI Plus. DBI Only groups examined comparisons between a DBI treatment group and a control group. In contrast, DBI Plus investigated studies in which DBI instructors had access to additional information on student performance compared to a control group. Mean effect sizes for DBI Only studies on student performance were calculated at 0.37, and the mean effect size for DBI Plus studies was 0.38. Both mean effect sizes were significantly significant for enhancing student performance across mathematics, reading, and spelling/writing. Factors influencing disparities of DBI effects on student outcomes were found depending on the use of CBM, the nature of the CBM, and the frequency of support provided to teachers to support individualization of instruction. This highlights the importance of CBM in the DBI process and ensuring teachers are effectively using CBM to evaluate instruction for students with intensive support needs.

Curriculum-Based Measurement

In 1977, Deno and Mirkin embarked on a six-year project at the University of Minnesota to develop a measurement and evaluation process to support teachers in making data-driven decisions to identify students' responses to instruction and understand when modifications to instruction were needed (Reschly et al., 2009). During that time, Deno (1985) found school methods to assess students' academic outcomes were criticized as unreliable or not valid to measure student progress. For example, Armbruster et al. (1977) and Jenkins and Pany (1979) found that traditional standardized assessments did not always correspond to schools' curriculums and did not provide information regarding instructional decisions for individual students. Fuchs et al. (1982) and Salmon-Cox (1981) found many teachers relied heavily on informal observations to evaluate student progress; however, teacher observations of student progress were found to vary depending on teachers and indicated biases in student scores. Consequently, Deno and Mirkin (1977) set out to develop a reliable and valid system to connect school measurement to instruction and provide teachers with assessment materials to monitor student progress toward school curriculum routinely. By the end of the six-year project, CBM was established as a long-term measurement process that requires repeated measurement of an academic skill to measure student growth over time (Deno, 1985).

Research investigating CBM on students' educational outcomes can be dated back to 1984 when Fuchs et al. provided a seminal study examining the effects of a repeated reading CBM on student reading outcomes. In their randomized controlled trial study, 39 special education teachers in a large urban school district were randomly assigned to a repeated CBM treatment group or a traditional special education evaluation control group. Each teacher selected three to four students with mild to moderate disabilities and provided either a CBM reading task that matched students' IEP reading goals or monitored students' reading progress using periodic teacher-made assessments, observation, or worksheets. Results indicated students whose teachers used CBM achieved statistically significant reading growth compared to the control group on a standardized, norm-referenced reading achievement assessment. Furthermore, results showed students who were administered the CBM tasks were more knowledgeable about their learning and made accurate estimations if they could meet their IEP goals.

Since then, several research studies have documented higher student academic growth using CBM in mathematics, spelling/writing, and reading. For instance, Fuchs et al. (1989b) examined the effects of alternative goal structures within CBM on math skills for students with disabilities. Thirty special education teachers were randomly assigned to a dynamic goal CBM (goals were adjusted based on student progress), static goal CBM (teachers measured a fixed annual goal), or a control group. Teachers chose two students diagnosed with mild to moderate disabilities in grades 2-9 and measured their math computation and math concept skills over 15 weeks. The randomized controlled trial results suggested a statistically significant difference in math achievement scores between students in the dynamic goal CBM treatment group and students in the control. No statistically significant results were found between students in the static goal CBM group and the control group. This indicates that adjusting student goals from data collected with CBM tasks may support higher student achievement and goal attainment than not using ongoing data to assess and adapt student goals continuously.

In another study, Fuchs, Fuchs, Hamlett, and Ferguson (1991) assessed the effects of an expert computer-generated program within CBM to help teachers adjust their instructional methods for students with below proficient spelling achievement. In this randomized controlled trial study, 30 special education teachers in 16 schools in the southeastern metropolitan area were randomly assigned to one of three groups: CBM with expert system advice (CBM-ES), CBM with no expert system advice (CBM-NES), or a control group. Participants included students (a) in second through eighth grades, (b) were diagnosed with a mild to moderate disability, and (c) had an IEP goal in the area of spelling. Findings indicated statistically significant differences in spelling achievement scores between students in the CBM-ES and CBM-NES and students in the control group. Further results showed no reliable differences between CBM-ES and CBM-NES groups; however, additional results suggested teachers in the CBM-ES utilized more drill and practice, whereas teachers in the CBM-NES group provided more direct instruction on skills.

In a follow-up study, Fuchs, Fuchs, Hamlett, and Allinder (1991) examined teachers' uses of diagnostic spelling data to improve their quality of spelling instruction with an ongoing skills analysis embedded within CBM. Researchers conducted a randomized controlled trial, randomly assigning 30 special education teachers to a CBM skills analysis group (Group 1), CBM without skills analysis (Group 2), and a control group (Group 3). Each CBM teacher selected four students with mild to moderate disabilities in third through ninth grades to participate. Additionally, two of the four students from each of the CBM groups were randomly assigned to subgroups (subgroup A or subgroup B). Group 1 teachers used the CBM and skills analysis for both subgroups. In contrast, Group 2 teachers used the CBM alone for subgroup A and the CBM in and ordered lists of student spelling words for subgroup B. Teachers in the control group selected only two student participants and used no CBM or skills analysis. Results found statistically significant differences in student's spelling achievement scores in Group 1 compared to Group 2 and the control group. Group 2's subgroup who received ordered word lists revealed statistically significant scores compared to the control group, but not statistically significant different from Group 1. This suggests if teachers do not have opportunities to analyze individual student responses, they found it challenging to use CBM to develop appropriate individualized instruction for students.

To extend on the results of the previous two studies, Fuchs et al. (1992) investigated the effects of the expert computer-generated program that provided systematic instructional consultation to teachers when students' CBM graphs indicated inadequate reading growth and a need for instructional modifications. For this study, 33 special education teachers and 63 students with mild to moderate disabilities in grades 1-9 were randomly assigned to three groups: (a) CBM with expert computer instructional recommendations, (b) CBM with no expert consultation, or (c) control group with no CBM or expert consultation. The randomized controlled trial results suggested that students in both CBM groups achieved higher reading scores across several reading measures than the control group. Statistically significant scores were found for decoding, fluency, and sight word. Further results indicated CBM teachers who received expert consultation planned more diverse, individualized instruction for students than CBM teachers who did not receive a consultation.

To examine factors that influence the effectiveness and feasibility of using CBM to advance student achievement in mathematics and reading, Stecker et al. (2005) reviewed the literature examining experimental-contrast studies using a pre- and post-test design for at least one CBM mathematic or reading measure with students with mild to moderate disabilities. The study's findings demonstrated statistically significant gains in student achievement when teachers used CBM; however, teachers' collections of CBM data were not significant to affect student achievement alone. Instead, researchers found that systematic data-based decision rules, skills analysis feedback, and instructional recommendations through computer-generated programs supported teachers in making program modifications to improve students' academic achievement. Stecker and colleagues noted using CBM to modify instruction for individual students and understand what adaptations needed to be made for students with various learning experiences continued to be a challenge for teachers. Recommendations for future research suggested systematically investigating CBM with teachers to support appropriate planning and instruction through the use of assessment data for students with varying learning histories.

Curriculum-Based Measurement and English Learners

Researchers have expanded on the use of CBM for students with varying learning histories with ELs. This line of research was guided by (a) a lack of standardized assessments that included all the languages and dialects spoken among ELs, (b) standardized assessments that solely reflected the American culture, and (c) difficulty distinguishing between ELs who struggled academically because of learning a second language or due to a disability (Deno, 2003). Although limited studies exist investigating CBM across subject areas for ELs, several studies have examined CBM Maze and ORF tasks to determine if the procedures are valid and reliable for students learning the English language and English literacy skills simultaneously (Deno, 2006; Dominguez de Ramirez & Shapiro, 2006). Maze tasks are reading comprehension probes that assess student's comprehension skills while reading. Students are provided short reading passages with selected words deleted, and students are to replace the missing word with a word that makes sense within the sentence (Hale et al., 2011). ORF tasks are a set of standardized passages students are instructed to read for one minute while their correct words per minute are recorded to assess reading fluency skills (University of Oregon, 2020). Baker and Good (1995) were one of the first researchers to examine the reliability, validity, and sensitivity of ORF reading passages for ELs. In their study, ORF reading measures were administered to 76 second-grade students, of whom 50 were bilingual Spanish-speaking students, and the remaining 26 students spoke only English. Over ten weeks, students were administered ORF passages twice a week. The reliability, validity, and sensitivity were measured through student performance, rate of student progress, and criterion measures of English reading and language proficiency. The study's findings suggested that ORF measures were reliable and valid for bilingual Spanish-spekaing students as for English-only students. Additionally, ORF passages in English were found to be a sensitive measure of the reading proficiency of bilingual students.

In addition to Baker and Good's (1995) study, two doctoral dissertations were completed in the late 1990s to add to the literature base investigating the validity of ORF and Maze measures for students learning English in the school environment. The first study was completed by Englebert-Johnson (1997) to compare the performance levels of third- through sixth-grade students using Maze and ORF reading tasks. All students were enrolled in an international school in Belgium. Students were placed into groups depending on the number of years they received English instruction or received special education services under the category of a learning disability. Students were administered two Maze passages and 10 ORF passages over 11 weeks. Overall, results indicated students with less English instruction scored lower on their ORF and Maze passages across the groups; however, all students showed growth over time. Students with learning disabilities displayed the lowest Maze and ORF scores among all groups. Providing evidence Maze and ORF tasks help teachers make appropriate decisions when determining if students who are learning English may or may not have a learning disability depending on growth patterns within CBM measures.

In the second dissertation study, Moore (1997) investigated whether ORF measures provided in Spanish and English would be sensitive for measuring the reading growth of 368 bilingual Hispanic students. The study's results indicated the rate of student reading progress obtained from ORF passages in English was not significantly different from the rate of student progress in Spanish, with moderate correlations found between ORF scores in English and Spanish. The study's additional findings indicated that English and Spanish ORF scores were moderately correlated with schools' standardized English assessments. Authors noted the moderate correlations between English and Spanish ORF scores and standardized test scores provided evidence ORF measures were an appropriate assessment tool for measuring ELs reading growths; however, researchers noted more research is needed.

Since then, researchers have continued investigating the reliability and validity of Maze and ORF tasks for ELs with varying levels of literacy and English proficiency. For example, Graves et al. (2005) investigated the impact of ORF and nonsense word reading fluency (NWF) tasks for ELs with low, middle, and high achievement levels. Participants included nine first-grade teachers in three elementary schools who taught in classrooms where the primary language was English, but students spoke at least one other native language. English ORF scores were obtained from 134 students to support the determination of low, middle, and high readers. After continued administration of ORF passages over six weeks, results indicated a strong correlation ($r = .85$) between end-of-year scores for ORF and NWF among all groups; however, a weak correlation ($r = -.034$) was found between fluency scores and ratings of language proficiency. Additionally, the examination of students' achievement levels displayed different performance patterns on ORF and NWF by low, middle, and high readers. All groups performed in an expected pattern on NWF measures, but on ORF measures, ELs' slopes in the low- and middle-achieving groups were higher than ELs’ slopes in the high-achieving groups. This suggests higher-achieving ELs’ English proficiencies grew at a slower pace than students in low- and middle-achieving groups.

In a similar study expanding the literature base on the predictive power of ORF and Maze scores to state reading assessments scores for ELs, Wiley and Deno (2005) completed a study with 69 third and fifth grade ELs and non-ELs from an urban elementary school in the Midwest of the United States. Every two weeks over seven months, teachers administered the Maze and ORF passages to students. The study’s results showed moderate to moderately strong correlations between CBM scores and state reading assessment scores for ELs and non-ELs; however, combining Maze and ORF measures only increased predictive power for non-ELs.

McMaster et al. (2006) extended research on the reliability and stability of CBM measures for 25 ELs in eighth through 12th grades in an urban school district in the Midwest of the United States. Students were identified as those in the highest need for reading and had the school’s lowest language proficiency levels. Students were administered two reading measures once every three weeks for 13 weeks, including a Maze and an ORF assessment. Results displayed all students had statistically significant reading growth; however, standard errors of estimate indicated instability across CBM administration. Both CBM measures showed strong alternate-form reliability and stability across different reading assessments over time and correlated moderately to strongly with academic language proficiency measures.

In another study examining ORF passages for ELs, Dominguez de Ramirez and Shapiro (2006) examined the expected ORF growth among 145 Spanish-speaking ELs and non-ELs. Students were in Grades 1-5 in an elementary school in the southwestern United States. Students were stratified into two samples: one representing the Spanish-speaking EL population in a bilingual education classroom and the other representing students in an English general education classroom. After students were stratified according to their classrooms, the authors stratified those groups into students who met grade-level reading standards and fell below proficient levels. Random selection of each subgroup was taken to represent the overall student population. Students were assessed in reading three times a year using ORF passages in English. Results showed Spanish-speaking ELs fell below general education students across grade levels and during testing periods using ORF English passages; however, all students showed statistically significant reading growth throughout the year, suggesting ORF measures may be a sustainable method for analyzing reading progress for Spanish-speaking ELs.

Dominguez de Ramirez and Shapiro (2007) extended on previous findings and examined whether ORF passage scores administered in Spanish were related to ORF scores in English for 68 bilingual students in Grades 1-5 in the southwestern United States. First, researchers divided students into groups based upon who met district reading standards and those who did not. Then, a random sample from each subgroup was drawn to determine the final selection of students. All students were assessed in the fall, winter, and spring semesters in Spanish and English ORF probes. Findings indicated positive correlations between Spanish and English ORF outcomes across languages and grades, except for fourth grade. Furthermore, students who read more fluently in Spanish at the beginning of the year were more likely to read more fluently in English by the end of the year, indicating ORF measures may be a valuable assessment for evaluating relationships between reading fluency skills in students’ first and second languages.

To further examine the rates of CBM ORF tasks for ELs, Keller-Margulis et al. (2012) investigated growth patterns for students in third through fifth grades using tri-annual screenings and multi-level modeling. Researchers collected data from 6,321 students across 15 elementary schools in a large urban school district in the southeast region of the United States. Students were categorized into three subgroups: ELs, ELs exited from bilingual instruction, and non-ELs. ORF reading passages were administered to students during the fall, winter, and spring assessment windows. Results indicated more rapid growth of ORF skills between fall and winter assessments across subgroups and grades, except for students in fifth grade who demonstrated consistent growth rates across the year. When examining reading patterns among ELs and ELs who had been exited from bilingual programs, authors found reading growth scores were not always consistent. They concluded further investigations were warranted to examine ORF growth patterns for students who are not native English speakers.

In a final study, Kim et al. (2016) examined the predictive validity of DORF (DIBELS ORF measure) and DAZE (DIBELS Maze measure) on Spanish-speaking EL's performance levels on their statewide reading assessments. A total of 23 third-grade classrooms in six schools across Southern California participated in the study. Student participants included 522 Spanish-speaking ELs with various English proficiency levels (i.e., beginning/early intermediate, intermediate, early advanced/advanced). At the beginning of the school year, students were screened using the two CBMs and then were placed in subgroups according to their English proficiency scores. Researchers examined the predictive validity between fall CBM outcomes and spring statewide assessment outcomes. Results indicated DORF was a stronger predictor ($r = .59$) of reading outcomes on state assessments compared to DAZE ($r = .39$); however, DAZE was found to be a significant predictor when examined individually. Furthermore, depending on the students' English proficiency groups, DORF and DAZE predictive accuracy varied. DORF correctly identified 69% of students in the beginning/early intermediate who did not reach proficient scores on their state reading assessment. The DAZE identified 72% of beginning/early intermediate who did not reach proficient levels. For students in the intermediate group, sensitivity was 54% for DORF and 63% for DAZE. Sensitivity values were lower for students in the early advanced/advanced English proficiency, with sensitivity at 26% for DORF and 47% for DAZE. The authors noted several takeaways from the varied sensitivity values. First, both DORF and DAZE predictive accuracy decreased as students gained more advanced English proficiency levels, indicating the measures may be better predictors for scores on statewide assessments for at-risk Spanish-speaking ELs with early intermediate English proficiency. Second, due to the lower predictive accuracy levels of ELs with higher English proficiency levels, the authors suggested ELs may have better reading fluency and comprehension at the sentence level and struggle to read and comprehend more comprehensive reading passages fluently.

The literature review on ORF and Maze tasks indicates they are a reliable assessment tool to evaluate ELs' reading performances and predict performance levels on statewide assessments. In addition, research has shown that ORF tasks may be a helpful assessment tool to assess the relationship between reading fluency skills in students' first and student languages (e.g., Dominguez de Ramirez & Shapiro, 2007). Despite these findings, research does remain limited, particularly for ELs who speak native languages other than Spanish, and researchers have found inconsistent scores of reading growth using Maze and ORF tasks among ELs with different levels of English proficiency (Keller-Margulis et al., 2012; Kim et al., 2016; Wiley & Deno, 2005). For example, Kim et al. (2016) indicated ORF and Maze measures might be a better assessment tool for measuring reading growth for ELs who have early intermediate English proficiency skills compared to ELs who have displayed proficient English proficiency levels. Furthermore, research has indicated ELs do not grow at the rate of non-ELs when evaluating student's scores on CBM tasks (e.g., Dominguez de Ramirez & Shapiro, 2006) and found conflicting findings on the use of Maze and ORF tasks in relationship to language proficiency (e.g., Graves et al., 2005; McMaster et al., 2006). This indicates ELs may need additional instructional strategies to target their linguistic differences compared to their non-ELs to support their reading growth and English proficiency levels. This may also provide ELs with equitable opportunities to access the general education curriculum and achieve comparable reading growths as non-ELs.

Summary

DBI is a research-based process shown to display positive academic results for students with persistent learning difficulties. DBI includes several fundamental components, including CBM and data-driven adaptations to meet individual student learning needs (Deno & Mirkin, 1977; Fuchs et al., 1984; Zumeta, 2015). CBM is an essential progress-monitoring assessment method frequently used with schools' multi-level frameworks to measure student outcomes. Research indicates CBM supports higher student outcomes for students at risk for reading difficulties (e.g., Jenkins et al., 2017; Stecker et al., 2005) and is a promising approach for assessing the reading performances of ELs (e.g., Baker & Good, 1995; Dominguez de Ramirez & Shapiro, 2006; Sandberg & Reschly, 2011). In addition, the DBI/CBM processes could provide teachers with a method to analyze student data and integrate CLRPs with validated reading interventions to support the cultural, linguistic, and literacy diversities of ELs.

Culturally and Linguistically Responsive Practice

Throughout K-12 classrooms in the United States, teachers are witnessing an increase of ELs in their student populations. While some ELs can transition smoothly into the classroom setting, others come with sufficient learning challenges due to cultural differences and learning two languages (Lucas et al., 2008). Differences between students' and teachers' cultural and linguistic experiences have contributed to ELs' low academic growth and referrals to special education programs (Counts et al., 2018; Ford, 2012; Harry & Klingner, 2007). Furthermore, given less than 20% of teachers and administrators in the United States' public schools come from culturally and linguistically diverse backgrounds themselves (Counts et al., 2018; U.S. Department of Education, 2016), it is essential to provide teachers with the knowledge and skills to connect ELs' lived experience with academic content (Aceves & Orosco, 2014; Lucas et al., 2008).

To address this issue, research has started to focus on instructional strategies to combine ELs' diverse perspectives and cultural and linguistic customs with schools' academic content (Linan-Thompson et al., 2018). Known as CLRP, this multi-dimensional approach assists teachers in connecting students' lived experiences with everyday instruction (Linan-Thompson, 2018). Teaching practices embedded within CLRP are organized into four components aligned with Gay's (2002) culturally responsive teaching elements: (a) instruction, (b) language, (c) social, and (d) cultural knowledge. Examples of instructional practices include explicit and systematic instruction, focused vocabulary development, strategy instruction, predictable routines, and ongoing assessment. Language practices might consist of flexible use of language, metalinguistic work by students, and making connections to cognates. Examples of social practices include building a respecting classroom culture and teacher understanding of students' home lives. Cultural knowledge practices are classroom strategies that use cultural and linguistic references, use students' traditions within instruction, and leverage all aspects of students' prior knowledge (Linan-Thompson et al., 2018).

Although limited empirical studies have investigated CLRP and the impact on ELs' educational outcomes, several descriptive and case studies have described teachers' implementations of CLRP components to reflect ELs' cultural and linguistic backgrounds in schools' curriculums. For example, García and Gaddes (2012) described an after-school writing project with 12 adolescent Latina students in a university-based literacy clinic in the northeast. Students who participated in the project were exposed to a body of culturally relevant literature that expressed varying worldviews on race, power, voice, and linguistic identity. The teacher and students held discussions, using code-switching between students' native languages and English to clarify essential themes throughout the literature. Students used written expression to communicate their own cultural and linguistic perspectives. After analyzing students' written responses, the authors noted two emerging themes: (a) students became their authors to tell their individual stories and (b) students expressed transnational views across many different cultures.

In a more recent case study, Palmer et al. (2014) explored the academic instruction of two bilingual teachers who taught dual-language classrooms in pre-kindergarten and first grade in a public school in Texas. The study included interviews, field notes, and classroom videos of the teacher's instructional practices. Findings from the case study found teachers regularly (a) modeled bilingual language practices, (b) accepted and acknowledged students were bilingual, and (c) highlighted language crossing (i.e., use of spoken language not native to a speaker; Rampton, 1998). Researchers indicated when the teachers combined all of these strategies, their students took more academic risks to express themselves in their native languages and engaged in sensitive educational topics (e.g., immigration).

In a similar case study, Orosco and O'Connor (2014) focused on one elementary special education teacher's understanding of culturally responsive instruction and its impact on classroom instruction for 35 Latino ELs with learning disabilities. After completing a series of classroom observations, conducting one teacher interview, and collecting teacher and student artifacts, researchers identified three emerging themes implemented by the special education teacher to support student's cultural and linguistic needs: (a) Cultural Aspects of Teaching Reading (i.e., instruction needed to be rooted in student's cultural and linguistic experiences and heritages), (b) Culturally Relevant Skills-Based Instruction (i.e., intensive, interactive instruction focused on the core reading elements with added oral language opportunities), and (c) Collaborative Agency Time (i.e., connecting students home environment and prior knowledge to the school setting).

Lastly, Kelley et al. (2015) investigated a culturally responsive teaching pedagogy on the reading performances and self-efficacy of 43 seventh-grade students in an urban middle school in the southwest. Student participants included students with culturally and linguistically diverse backgrounds, the majority of students stating they were either Hispanic or multiracial with Hispanic origins. Students were asked to read a series of culturally familiar passages and culturally unfamiliar reading passages and respond to a set of comprehension questions. In addition, self-efficacy scales were provided to students after completing each set of comprehension questions to access their self-efficacy beliefs. Results of the counterbalanced within-subject research design indicated statistically significant scores between students' answers to comprehension questions between the culturally relevant passages and unfamiliar reading passages. Furthermore, results showed a statistically significant difference in students' self-efficacy scores when given a culturally relevant reading passage versus a culturally unfamiliar reading passage.

A key element of previous studies investigating effective practices to support ELs' cultural and linguistic experiences was integrating students' native languages into academic instruction. Many school districts contest the amount and frequency in which ELs should use their native languages within United States' public schools (Barrow & Markman-Pithers, 2016). Barrow and Markman-Pithers (2016) found this primarily stems from questions in the field if the goal for ELs is to become fluent in their native languages and English (i.e., bilingual education) or solely focus on learning English (i.e., monolingual education). Customarily, a monolingual language perspective has been adopted by policymakers and educators in the United States (Lui & Fang, 2020). However, researchers in the fields of second language acquisition and literacy have stressed the importance of supporting the full range of ELs' linguistic repertoires and encouraging multilingualism within school settings (Daniel et al., 2017). Researchers also argue that the United States' public schools undermine the advantages of bi/multilingualism education and often do not acknowledge the strengths of students and families who speak multiple languages (Hornberger, 2006; Hornberger & Link, 2012 Menken, 2009). For instance, supporting a native language of an EL alongside English can lead to greater economic advantages and social opportunities within the United States (Barrow & Markman-Pithers, 2016; Ferguson & Heath, 1981; Hornberger & Link, 2012; Surrain, 2018).

Cummins (1980) and Grosjean (1989) viewed bi/multilingualism education as an integrated system that supports ELs in switching between many different languages, commonly referred to as code-switching. More recently, the term translanguaging has been adopted to illustrate bi/multilingual speakers' language practices (Lui & Fang, 2020). García (2009) defined translanguaging as "multiple discursive practices in which bilinguals engage to make sense of their bilingual worlds" (p. 45). García and Li (2014) further describe a translanguaging perspective as one that supports bi/multilingual speakers' full linguistic repertoires where they purposefully select language features for better communication. Translanguaging can include sounds, words, gestures, objects, visual cues, touches, and tones that allow bi/multilingual speakers to communicate across contexts and develop their creative linguistic practices (García & Li, 2014).

Student’s linguistic practices support students in building strong social identities within the school environment (García-Mateus & Palmer, 2017; Lee et al., 2011; Palmer, 2008; Sayer, 2013); however, few studies have investigated how translanguaging practices in instruction can support ELs in building positive identities for improved academic success (García-Mateus & Palmer, 2017). In 2017, García-Mateus and Palmer were one of the first researchers to explore a first-grade teacher’s translanguaging pedagogy in a two-way bilingual education classroom and its impact on building positive social identities for two emergent bilingual students in Spanish and English. During a six-week period, García-Mateus and the teacher planned and implemented read-aloud lessons to engage students in critical discussions over societal issues related to equity. Students were paired with a student whose native language differed, and students were encouraged to use translanguaging practices to communicate when topics were unclear. Using a close discourse analysis of data collected through (a) audio and video recordings of the lessons, (b) researcher field notes, and (c) teacher interview notes, researchers found translanguaging practices provided equitable learning opportunities for bilingual students. Also, students were able to develop greater metalinguistic awareness to build positive bilingual identities.

In a similar study, Osorio (2020) sought to create a culturally sustaining pedagogy in her dual-language classroom by promoting translanguaging practices during interactive read-aloud lessons. Osorio taught first grade in an urban elementary school in the Midwest. Students in her classroom spoke English and Spanish, with three additional students speaking a third language that included Chinese or a Guatemalan indigenous dialect. Using observational notes, field notes, student artifacts, and audio and video recordings of read-aloud discussions, Osorio found when students engaged in translanguaging practices, it enriched classroom discussions and supported students in making meaning of texts. Furthermore, Osorio noted allowing students to engage in their creative linguistic methods created a classroom space that welcomed the whole child. Students were able to embrace their personal and family experiences to learn from one another.

Prior educational research has included several effective instructional practices embedded within the four components of CLRP that can be integrated across content areas to support teachers in linking ELs' cultural and linguistic backgrounds with academic instruction. In addition, research has focused on integrating evidence-based reading practices with CLRP for improved literacy outcomes among ELs.

Evidence-Based Practices and Culturally and Linguistically Responsive Practice

Before NCLB, instructional practices typically delivered in educational settings were based upon teachers' personal experiences and school administration preferences (Cook & Cook, 2011). Cook and Cook (2011) found that although these practices can be beneficial, little was known to determine effective teaching methods from ineffective ones across educational settings. To ensure the most valuable teaching practices were being implemented for a variety of learners, researchers moved toward a validated process to determine the best educational strategies that worked for students. Drawing from the field of medicine (e.g., Sackett et al., 1996), the field of education adopted EBP to establish a reliable procedure to identify effective practices through rigorous bodies of research (Cook & Cook, 2011; Slavin, 2002). EBPs are defined as validated practices shown through high-quality research to have meaningful effects on student outcomes (Cook & Odom, 2013). Although the process for identifying EBPs varies within and across fields, professional education associations (e.g., Council for Exceptional Children) and national technical assistance centers (e.g., National Professional Development Center on Autism

Spectrum Disorders, National Secondary Transition Technical Assistance Center) have introduced several different guidelines for researchers to use to determine EBP instructional practices (e.g., Gersten et al., 2005; Horner et al., 2005).

School districts are now required by federal laws to deliver evidence-based instruction; however, researchers caution that not every EBP will not work for all students. Like any other instructional practice, EBPs need to be systematically monitored to validate effectiveness for individual students (Cook & Odom, 2013). Regarding ELs who display reading difficulties, EBPs are a good place to start for reading practices; however, teachers must be aware of how students' diverse cultural backgrounds and emerging English proficiency impact instructional strategies embedded within an EBP. As mentioned previously, many of the research studies examining EBPs to improve student reading outcomes have been conducted with monolingual English-speaking students. Orosco and Klingner (2010) found the educational field may be flawed in their view that EBPs meet all students' needs and do not need to be adapted to meet individual student needs. One instructional reading practice researchers have focused on as a starting point for ELs is systemic, direct instruction in basic reading skills.

In 2000, Gunn et al. examined if direct instruction in beginning English skills would produce higher reading growth in reading fluency, vocabulary, and comprehension for ELs. Researchers specifically investigated the effects of teachers' supplemental reading instruction on direct instruction in phonological awareness and decoding skills for Hispanic and non-Hispanic students in kindergarten through third grades. Students were randomly assigned to a supplemental reading group or to a control group where students received no reading remediation outside of the typical classroom reading instruction. Results indicated students who received the supplemental reading instruction performed statistically significantly higher on measures of word attack skills (i.e., word identification, oral reading fluency, vocabulary, reading comprehension) than the control group. Additional findings revealed no significant differences in the effects of instruction due to Hispanic students' reading level, English proficiency, gender, or grade. Overall, students who received direct instruction in beginning reading skills performed higher on reading measures than those who did not.

In a similar study examining supplemental reading instruction for ELs in primary grades, Denton et al. (2004) examined the difference between two reading interventions for Spanish-dominant bilingual students in first through fifth grades. The first intervention combined systematic phonics instruction with reinforcement in decodable texts. The other used a version of a published reading program providing instruction in repeated reading, contextualized vocabulary, and reading comprehension. Students with similar pretest reading scores were randomly assigned to one of the two supplemental reading groups. Results indicated students who received systematic phonics instruction made statistically significant higher reading gains in word identification post-test scores than the repeated reading group, but no significant differences in scores on word attack or comprehension subtests. Findings indicated further research is needed on strategies to support the acquisition of vocabulary and comprehension skills for non-native speakers.

To examine a systemic and direct reading intervention to increase ELs' oral language and reading skills, Vaughn et al. (2005) completed a randomized controlled trial study with first-grade bilingual students at risk for an SLD. Students were placed into groups according to students who were learning to read in Spanish and read in English. Then, students in each group were randomly assigned to a reading intervention group or a control group. The reading intervention was adapted from a previous reading program with a comprehensive reading curriculum that (a) taught teachers how to teach phonemic awareness and phonics explicitly and systematically, (b) connected words to text through story retelling and vocabulary development, and (c) engaged students in making meaning from what they read with embedded listening comprehension skills. Students were administered pre- and post-tests in oral language and reading skills in Spanish and English. Scores from students in the Spanish intervention group displayed statistically significant differences in phonological awareness, word attack, passage comprehension, and oral language skills on Spanish measures compared to the control group. No statistically significant differences were found on the English measures for students in the Spanish intervention. Scores gathered from the English intervention group favored the intervention group on English measures; however, the only statistically significant difference found between the intervention group and the control group was on the rapid letter naming subtest. Fewer differences were observed on the Spanish outcomes measures for the English intervention group. Overall, systematic and direct instruction in reading skills, whether through Spanish or English instruction, indicated higher reading outcomes. In addition, researchers noted due to differences in the order of sounds and pace of reading words in Spanish, it is critical teachers provide explicit instruction in word study and phonics that systematically teachers these skills and the differences between sounds.

Kamps et al. (2007) investigated Tier 2, evidence-based reading interventions focused on direct instruction in phonemic awareness, phonics, alphabetic principles, fluency, and reading comprehension skills implemented within schools’ multi-level frameworks for ELs and native English speakers. Participants included first and second-grade English-speaking students and ELs at risk for reading difficulties or not at risk in six urban elementary schools. Schools were randomly assigned to the intervention model group or a control group. The intervention group received Tier 1 core reading instruction and the supplemental direct instruction reading interventions. The control group continued receiving their core reading instruction and ESL reading instruction that included a balanced literacy approach focusing on word study, group and individual story reading, and writing activities. Results indicated ELs in Tier 2, direct instruction intervention groups achieved higher reading outcomes on word attack and reading fluency measures. Additionally, higher percentages of ELs in the intervention group responded to the Tier 2 supplemental instruction compared to the control group's ESL program. Kamps and colleague's findings reinforce promising results for schools' multi-level frameworks for ELs and the benefits of small-group, evidence-based reading instruction.

Finally, to synthesize high-quality experimental research on the effects of delivering direct instruction and published reading programs to ELs at risk and diagnosed with a reading disability, Richards-Tutor et al. (2016) reviewed empirical studies from 2000 to 2012 that (a) were published in a peer-referred journal, (b) included an intervention for ELs at risk for reading difficulties or with a learning disability, (c) had data that was disaggregated by EL status, (d) used a randomized controlled trial experimental design, and (e) provided fidelity procedures of the intervention. Researchers found 12 studies that met the criteria and included at least one of the following reading interventions: (a) comprehensive intervention that covered at least one of the five main areas of literacy (i.e., phonemic awareness, phonics, fluency, vocabulary, comprehension); (b) listening comprehension instruction (i.e., an instructional practice in which listeners are actively involved in constructing meaning to support the attainment of learning a second language; Gilakjani & Sabouri, 2016); or (c) published research-based reading programs. Results of the literature review indicated of the seven studies conducted in kindergarten and first grade, significant moderate-to-large effect sizes were found for interventions targeting direct instruction in beginning reading skills (i.e., phonemic awareness and phonics). Additionally, five of the 12 studies found significant moderate-to-large effects for interventions that included direct instruction with listening comprehension skills for ELs in kindergarten through twelfth grade. The combination of direct instruction (a documented EBP; Carnine et al., 2004) with listening comprehension skills reemphasizes the importance of combining EBPs with the instruction and language aspects of CLRP for higher reading outcomes for ELs and verifies the importance of the integration of EBPs with CLRP; however, school systems have been slow to adopt this framework.

Orosco and Abdulrahim (2017) found one reason for the slow integration of EBPs with CLRPs could stem from political concerns over the types of reading programs ELs should receive (e.g., bilingual versus monolingual literacy instruction). Orosco and Abdulrahim found teachers are often instructed to use teaching techniques that promote reading development, not students' cultural and linguistic diversities. Still, research has pressed forward examining classroom approaches to integrate EBPs with practices that embrace ELs' linguistic and cultural experiences. For example, Orosco and Abdulrahim completed a qualitative case study of a special education teacher's instruction, situated in a culturally responsive, evidence-based teaching framework, and its impact on the reading outcomes of ELs with SLDs. The framework consisted of culturally mediated instruction that corresponded with ELs' language abilities and cultural values. The teacher utilized direct instruction in teaching basic reading skills with peer-learning opportunities, cooperative learning, and a gradual release of responsibility in a culturally rich text environment. The teacher also incorporated culturally relevant materials with familiar images and characters of her students' heritages. Overall, the case study findings indicated that student success relied heavily on how well the teacher could combine culturally responsive and evidence-based instruction with ELs' cultural experiences.

In one other study, Linan-Thompson et al. (2018) observed teachers in multilingual classrooms across several states to better understand how teachers combined EBPs with CLRPs. Based on observations, researchers found four common strategies. First, all teachers implemented reading EBPs that included explicit instruction to ensure students could access the lesson objectives. Second, combined with explicit instruction, teachers used modeling, questioning, responsive feedback, and scaffolding to support student's language proficiency. Next, teachers built authentic relationships with students and established trusting classroom communities where all students' perspectives were valued. Finally, all teachers were knowledgeable about students' language backgrounds and designed instruction based on their home environment and cultural experiences. Teachers also allowed for flexibility in language practices and combined students' native languages into academic concepts to reinforce English vocabulary.

Summary

Implementing CLRP within school contexts is vital to provide equal learning opportunities for ELs. Additionally, pairing EBPs with CLRPs is critical for improved literacy outcomes for ELs (Linan-Thompson et al., 2018); however, research suggests that many teachers have limited knowledge of effective literacy practices for ELs and CLRP to sustain a pedagogy supportive of ELs reading growths. To combine these separate yet interrelated instructional elements, professional development may serve as the stepping stone to provide teachers with the knowledge of the impact of ELs' cultural and linguistic diversity and how to pair evidence-based reading practices with CLRP.

Professional Development

Prior educational research suggests many teacher preparation programs in the United States offer little training to teach ELs, particularly for content-area teachers responsible for ELs' general education instruction (Smith, 2014). Research also indicates many pre- and inservice teachers lack pedagogical content knowledge to improve educational outcomes for students who display persistent learning difficulties (Brownell et al., 2010; Brownell et al., 2020; Leko et al., 2015). For teachers to gain knowledge of effective teaching practices and skills to support a variety of learners, professional development has been identified as a vital component for improved classroom instruction and student achievement (Cleaver et al., 2020; Cohen & Hill, 2000; Darling-Hammond & McLaughlin, 1995; Yoon et al., 2007). Professional development is a planned professional learning opportunity that prepares teachers to implement current teaching practices and results in educational advancements and improved student learning outcomes (Avalos, 2011; Darling-Hammond et al., 2017). Professional development can come in various forms and include continued education, pre- and in-service teacher preparation, team curriculum development, peer collaboration, and peer support (Vrasidas & Glass, 2004). Over the years, extensive research has demonstrated the value professional development opportunities have had on teacher knowledge and instructional outcomes in the classroom (e.g., Allen et al., 2011; Antoniou & Kyriakides, 2013; Clarke, 1995; Cleaver et al., 2020; Elmore, 2002; Garet et al., 2001; Gersten et al., 2010; Landry et al., 2006; Loughran, 1999; Loughran, 2014; Shaha & Ellsworth, 2013; Webster-Wright, 2009). Furthermore, researchers have identified several critical components of professional development to support increased teacher knowledge and changes in classroom practices. For example, Garet et al. (2001) investigated different professional development characteristics that resulted in positive effects of teachers' self-reported knowledge, skills, and changes in practice. Using survey data collected from a sample of 1,027 science and math teachers who attended federal-funded professional development activities, researchers found professional development focused on content knowledge, opportunities for active learning, and coherence with other learning activities had significant positive effects on teachers' reported outcomes. In addition, results from the survey suggested teachers had significant changes in practice when activities embedded into professional development aligned with other school reforms and were given opportunities for collaboration with colleagues from the same school, subject, or grade.

Guskey (2002) found for professional development to be the most effective, training must be designed to consider (a) what motivates teachers to engage in professional development and (b) the process by which change in teachers typically occurs. Guskey noted teachers' participation in professional development is generally required by the school district and designed to change teachers' beliefs about teaching or promote a particular instructional strategy. Guskey's (1985, 1986, 1989, 2002) research explains that it is not necessarily the professional development that changes teachers' beliefs but teachers' experience of their students' successful outcomes. Guskey's (2002) framework for professional development centers on the idea that changes in teacher practice occur when there is evidence differences will be found in student learning outcomes.

In a more recent review of effective professional development components, Darling-Hammond et al. (2017) reviewed 35 high-quality professional development studies that demonstrated a positive relation between teacher professional development, teaching practices, and student outcomes. In their review, researchers found seven shared features of effective professional development training: (a) content-focused, (b) incorporated active learning, (c) supported collaboration, (d) used models of effective practice, (e) provided coaching and expert support, (f) offered feedback and reflection, and (g) had a sustained duration. Researchers concluded if professional development opportunities were going to results in stronger teacher practices and student achievement, they should be well-designed with most or all of the seven effective components and relate directly to teaching standards and evaluations.

Previous research demonstrates that professional development provides teachers with opportunities to increase content knowledge and skills for changes in classroom practice. Additionally, researchers have identified several effective professional development components that correlate with improved teacher and student outcomes. Many of these components have also been found in professional development aimed to improve teacher practices for ELs.

Culturally and Linguistically Responsive Practice Professional Development

To improve ELs' learning outcomes in the United States' schools, teachers working with ELs need professional development to acquire a strong understanding of ELs' cultural and linguistic experiences and their impact on students' responses to instruction. Although limited, previous studies have provided professional development frameworks for teachers working with ELs. For example, Voltz et al. (2003) described an in-person professional development program developed to instruct elementary and middle school teachers on the impact of cultural diversity on student learning and behavior outcomes. Voltz and colleagues drew from a conceptualized framework of multicultural education that included instruction in (a) cultural integration, (b) the knowledge construction process, (c) prejudice reduction, (d) empowering school culture, and (e) equity pedagogy. Over a three-day interactive seminar, teachers participated in various activities, including (a) hands-on activities and demonstrations, (b) small-group discussions, and (c) planning with school-based team members. Teacher interviews and pre- and post-questionnaires were distributed to gather teachers' perceptions of the training. Results suggested before the professional development, many teachers felt unprepared to teach to the educational needs of culturally diverse students; however, after the professional development, teachers were significantly more likely to agree that they were more knowledgeable on cultural differences and were prepared to teach diverse students. Additionally, teachers responded they had a better understanding of cultural differences among students and distinguished between students' cultural needs and that of a disability.

In 2010, Casteel and Ballantyne provided a monograph of professional development projects (e.g., Building Community for English Language Acquisition; CLASSIC ESL/Dual Language program; Project EQUAL; Strategies for Teaching English Language Learners At Risk [STELLAR]) offered by school districts and higher education faculty members to train teachers to work with ELs across the nation. All professional development projects included the following core principles: (a) built on a foundation of skills, knowledge, and expertise; (b) engage participants as learners; (c) provide practice, feedback, and follow-up; (d) measure changes in teacher knowledge and skills; and (e) measure changes in student performance. Additionally, researchers found a vital component of the projects was an ongoing collaboration with educational institutions through coaching, mentoring, and observations to sustain learned knowledge into classroom practice. Researchers reported all projects showed beneficial impacts on teacher knowledge and changes in instructional practices after professional development.

The Quality Teaching English Learners (QTEL) program is one other professional development created by researchers at WestEd (i.e., a research, development, and service agency) to advance the quality of instruction for ELs in middle school mainstream classrooms (Bos et al., 2012). QTEL consists of three crucial professional development supports: Summer

Institutes, Individualized Teacher Coaching, and Collaborative Lesson Design Meetings. In 2012, Bos et al. completed a randomized controlled trial to evaluate the effectiveness of QTEL on (a) ELs' achievement scores in English language arts and (b) teacher knowledge, attitudes, and instructional practices to develop lesson plans to support academic and language development for ELs. A total of 52 middle schools took part in the study and were randomly assigned to the QTEL professional development or a control group. Results indicated no statistically significant effect on middle school ELs' academic outcomes in English language arts, nor did it produce a statistically significant impact on teacher knowledge, attitudes, and instructional practices for ELs. Researchers noted a weakness of the QTEL professional development was a disconnect to theatrical learning frameworks and a scripted intervention that can be tailored to the individual teacher and student need. Further recommendations for the professional development included training staff members who could support the sustainability of instructional practices over several years.

In a similar randomized controlled trial study, Babinski et al. (2018) investigated the Developing Collaboration and Consultation Skills (DCCS) professional development program to increase Latino ELs' language and literacy skills. The DCCS professional development drew on multiple theories from research in the areas of professional development (e.g., Garet et al., 2001; Pearson & Gallagher, 1983; Vygotsky, 1978), collaboration and coaching (e.g., Homan, 2004; Vangrieken et al., 2015), and literacy teaching and learning (e.g., August & Shanahan, 2006; National Reading Panel, 2000). The program included a five-day summer institute, four content modules, on-site instructional coaching by a researcher over the following academic school year, and weekly teacher collaboration meetings. Forty-five teachers and their EL students in 12 elementary schools in the Southeast participated in the study. Schools were matched by the percentage of students eligible for free or reduced-price lunch and randomly assigned to the DCCS intervention or control groups. Teachers were observed three times a year using observation tools to measure teacher practices in cultural wealth, high-impact instructional strategies, and collaboration. Students' language and literacy skills were assessed using a standardized assessment in English and Spanish. Observation measures revealed no significant differences in the overall quality of instruction between the DCCS intervention and control group; however, there was a statistically significant difference between the groups on adapted strategies and DCCS strategies gained from the professional development. Statistically significant differences were also found on students' oral language skills (i.e.., listening skills, memory, expressive language) and verbal analogies subtest measures between the intervention and control group. Further findings indicated students with lower English proficiency levels benefited the most from teachers who participated in the professional development.

Finally, Shea et al. (2017) completed a randomized controlled trial study investigating a school-wide professional development that integrated language with math and science contents and school-level collaboration to address ELs' learning needs. The professional development program was offered over two years in 17 high-needs elementary schools in California. Teachers who participated in the professional development were provided two workshops during each academic school year and weekend mini-conferences. The professional development's main components included (a) strategies for infusing student-talk into grade-level math and science lessons and (b) school-level learning communities focused on readings and discussions of student-talk research. ELs' English language arts (ELA) and mathematic state assessment scores were analyzed before the professional development and at the end of each professional development year. At the end of the two years, results indicated statistically significant differences in ELA and mathematics between ELs scores for students whose teachers participated in the professional development and those whose teachers did not. Additionally, teachers reported increased knowledge of effective strategies for ELs and the value of integrating language and literacy development into academic content.

Previous studies indicate the significance of professional development to increase teacher knowledge of instructional practices for ELs. Researchers have also provided several effective frameworks to build professional development activities to improve teacher knowledge and practices supportive of ELs. In addition to professional development aimed to increase teacher knowledge of instructional practices for ELs, there is an extensive literature base on the value of professional development in DBI/CBM frameworks to support teachers in individualizing interventions for students in need of intensive instruction.

Data-Based Individualization Professional Development

DBI is a research-based process with forty years of evidence supporting the process of individualizing and intensifying instruction on student outcomes. In 2021, Gesel et al. synthesized research on the effect of DBI-related professional development on teachers' knowledge, skills, and self-efficacy when determining instructional decision-making gathered from CBMs. In the meta-analysis, 28 studies completed between 1984 and 2019 were identified that included professional development or training in DBI/CBM across K-12 math, reading, or spelling/writing academic content. A total of 311 general education teachers and 496 special education teachers were included across the studies. Specifically addressing instruction in reading, 12 out of the 28 studies included randomized controlled trials or quasi-experimental studies that focused on professional development in DBI/CBM on reading outcomes. Professional opportunities provided to teachers in the reading studies were comprised of (a) expert consultation (i.e., direct in-person consultation, consultation through email exchanges, computer-assisted software programs); (b) colleague support and collaboration; or (c) teacher workshops. Professional development in the form of expert consultation (e.g., Capizzi & Fuchs, 2005; Fuchs et al., 1984; Fuchs et al., 1988; Fuchs et al., 1989; Fuchs et al., 1992; Garnes, 2004) on the DBI/CBM process and students' CBMs data supported teachers in determining students' reading strengths and areas of need to design individualized reading instruction. In studies examining the effect of colleague collaboration (e.g., McCullum, 1999; Mathes et al., 1998) on analyzing CBM data, planning instruction, and evaluating the effectiveness of instruction, researchers found teachers' self-efficacy to modify reading instruction rose. Teachers were also more likely to plan and implement reading interventions after collaboration opportunities. Finally, in studies that provided teacher workshops (e.g., Cappizzi & Fuchs, 2005; Fuchs et al., 1984; Fuchs et al., 1988; Fuchs & Fuchs, 1993) to coach teachers on academic goal setting, creating student data graphs, learning CBM procedures, interpreting CBM assessments, and modifying instructional strategies, results indicated teachers reported higher knowledge of DBI/CBM and improved capabilities to provide and assess CBMs for appropriate adaptations to instruction. Overall, Gesel and colleague's meta-analysis examining DBI-related professional development on teachers' knowledge, skills, and self-efficacy indicated moderate and statistically significant effect sizes across math, reading, and spelling/writing studies. Results from the meta-analysis suggest DBI-related professional development targeting intensive interventions can provide teachers with the fundamental knowledge, skills, and confidence to implement intensive reading interventions and use CBMs to determine when to adapt instruction for students with persistent learning difficulties.

Summary

Professional development has been identified as a crucial factor to support teachers in acquiring effective practices and skills for improved instruction and higher student outcomes (Darling-Hammond & McLaughlin, 1995; Yoon et al., 2007). Previous research examining professional development on teachers' awareness of cultural diversity has displayed positive effects on teachers' readiness to teach students from culturally and linguistically diverse backgrounds. Additionally, research suggests professional development positively impacts teachers' knowledge, skills, and self-efficacy in adapting instruction using DBI/CBM frameworks. Despite the promising results of professional development on teacher outcomes, most studies have been conducted in traditional face-to-face professional development training. Previous research indicates online professional development may offer an affordable approach to scale up professional development opportunities across the nation and may serve as an alternative method to ensure teachers continue to gain valuable opportunities to improve instructional practices and increase student achievement (Hill, 2009).

Online Professional Development Learning

As technology advances our educational system, online professional development has emerged as an alternative method to deliver instructional content to teachers through virtual platforms (Dash et al., 2012; Vrasidas & Glass, 2004). Online professional development offers many advantages to schools and teachers including (a) the ability to connect teachers across schools, districts, and states (Russell et al., 2009), (b) flexibility in time management between work and home life (Davis, 2009; Vrasidas & Glass, 2004); (c) opportunities for reflection through asynchronous interactions (Dede et al., 2009); (d) access to resources that are financially burdening to schools (Dede, 2006; Strother, 2002), and (e) reducing the need for substitute teachers that may result in loss of quality instruction for students (Smith, 2014). Another advantage to online professional development is the flexibility technology offers to deliver content to teachers. For example, online professional development can be completed through video conferencing, asynchronous interactions, or self-paced online courses (Russell et al., 2009).

In contrast to the vast literature examining effective components of in-person professional development, fewer studies have examined theoretical frameworks to support online professional development on teaching and learning (Dash et al., 2012; Vrasidas & Glass, 2004). To develop their own online learning theoretical framework, Vrasidas and Glass (2004) completed a series of studies investigating the strengths and challenges of online learning to support educators in developing effective online learning modules and instructional strategies. Over ten years, authors constructed a framework that drew on three interconnected areas: (a) personal and social constructivism, (b) situated and distributed cognition, and (c) communities of practice. Personal and social constructivism centers on the belief that knowledge is constructed through social interactions and the learner’s mind. Situated and distributed cognition draws on the principle that the tools and socio-technical environments in online learning can be designed and evaluated to encourage learning. In online learning, communities of practice draw on the notion that there is a shared commitment for a particular practice that promotes knowledge and sharing (Hoadley and Pea, 2002; Wegner et al., 2002). After reviews of two online learning projects developed from their framework, Vrasidas and Glass noted the strengths of their framework supported teachers and learners in building a community through (a) sharing a common sense of responsibility towards activities, (b) constructing connections to offline learning, (c) sharing of responsibilities, (d) defined activities, and (e) supportive teacher to facilitate learning. Further, the authors noted the use of technology that online learning provides does not sustain effective professional development by itself. Teachers need to acknowledge teaching methods consistent with constructivist learning and recognize the value of professional communities of practice.

Building on a constructivist learning theory and a situated cognitive theory, Signer (2008) developed an online teacher professional development that integrated the best practices of teacher education, technology professional development, and online learning. Signer's professional development model was used to develop courses in several subject areas, including multicultural education and English as a second language. Activities embedded within Signer's professional development include: (a) assignments aligned with state and national standards, (b) opportunities for reflection and collaboration with teachers from other schools, (c) the use of the internet to inform teaching practices, (d) assignments that integrated existing practices with application of new knowledge, (e) clear and structured activities and objectives, and (f) content that is challenging and relevant to participants' experiences. Evaluations of Signer's online professional development revealed in-service teachers held positive views about the training and its impact on their teaching.

One additional theoretical framework the IRIS Center (2020; i.e., a technical assistance center that offers high-quality online professional development resources on evidence-based instructional practices for a variety of students) built their online professional development learning modules on was the How People Learn (HPL) theory. The IRIS Center's modules align with professional standards and use the HPL theory to deliver a challenge-based approach to learning that allows teachers to gain a broader understanding of classroom challenges. The HLP framework is built upon four lenses: (a) learner centeredness (i.e., instruction is tailored based on consideration of learners' prior knowledge and previous experiences); (b) knowledge centeredness (i.e., rigorous content is provided and teachers are helped to understand the material rather than memorize it); (c) assessment centeredness (i.e., frequent opportunities for monitoring students' progress toward the learning goal; and (d) community-centered (i.e., teachers are members of multiple communities and these communities offer opportunities for teachers and instructors to share and learn from one another; Bransford et al., 1999; Harris et al., 2002). To determine the communication effectiveness and stimulating interest of the HLP theory on learning outcomes, Roselli and Brophy (2003) conducted structured observations of college courses that used the HLP theory and courses that used a traditional taxonomy-based instruction. After comparing the two models, the researchers found (a) college students favored the communication strategies of the HLP theory and (b) activities embedded in the HLP theory were more motivating. Furthermore, students indicated higher evaluation scores for both the course and instructor when the HLP theoretical framework was embedded into course instruction.

Online learning within higher educational settings also provides additional theoretical frameworks applicable for online professional development for teachers. For example, Garrison et al. (2000) developed the Community of Inquiry framework after investigating the impact of computer-mediated communication (e.g., computer conferencing) in higher education on the quality of the learning process and its outcomes. The Community of Inquiry framework suggests a sense of community can be created online through three core elements associated with perceived learning: social presence, cognitive presence, and teaching presence (Garrison & Arbaugh, 2007; Shea, 2006; Shea et al., 2006). Garrison and Arbaugh (2007) described social presence as the learners' ability to be seen as real people socially and emotionally. Cognitive presence is the learners' ability to make their meaning through reflections and discourses (Garrison et al., 2001). Teaching presence facilitates cognitive and social processes to achieve meaningful learning outcomes (Garrison et al., 2000). Teaching presence is established through (a) instructional design and organization of online learning activities, (b) facilitation discourse, and (c) direct instruction (Anderson et al., 2001). Several studies (e.g., Arbaugh et al., 2008; Garrison & Arbaugh, 2007) have provided validation of the Community of Inquiry framework; however, Garrison et al. (2010) found work remains limited in substantiating the framework's three core presences across colleges, professional development training, and high school settings.

As comprehensive theoretical frameworks advance in the literature to support the development of effective online professional development and online learning, additional research is needed to determine the effects of online professional development on teacher quality and student achievement (Dash et al., 2012; Lawless & Pellegrino, 2007; Whitehouse et al., 2006). Ginsburg et al. (2004) were among the first researchers to review 40 online professional development sites for math teachers and compared the sites' quality and effectiveness to traditional face-to-face professional development. Using the HPL theory, researchers assessed the quality of online professional development math sites that were either (a) certificated programs delivered synchronously or asynchronously or (b) resource sites that provided online courses, videos, lesson plans, and instructional materials. The online professional development sites' effectiveness was evaluated by examining teacher practices and student outcomes following the online training. Results of the review indicated there was a lack of evidence supporting the efficacy of the online professional development math sites, and many of the sites had weaknesses in the HLP theory's community-centered and assessment-centered lenses. Researchers suggested future online professional development should be created by professional organizations with federal or state support to develop professional development models using a standard format. Future research should be conducted to systematically determine effective and ineffective methods for providing online professional development training.

In 2012, Dash et al. extended the work of Ginsburg et al. (2004) to examine the impact of mathematical online professional development on both teacher and student outcomes. Researchers recruited 79 fifth-grade math teachers and their students from across the United States and randomly assigned the teachers and students to a control or experimental group. Teachers within the experimental group participated in 70 hours of online professional development activities spread out over three academic semesters. Online professional development activities included: (a) readings, (b) web-based resources, (c) videos, and (d) virtual peer discussions. The study results indicated teachers exposed to online professional development showed statistically significant differences in scores on pedagogical content knowledge and practices compared to control group teachers; however, no meaningful differences were found in students' mathematical achievement outcomes. Recommendations for future research suggested follow-up studies investigating if teacher pedagogical gains persevered over time to allow for improved changes in student learning.

Researchers have also extended online professional development for teachers of ELs. For example, Smith (2014) developed an online professional development aimed to (a) empower K-12 teachers to adapt teaching methods to the needs of ELs and (b) determine if online professional development was a feasible option instead of school-based training to instruct teachers in successful practices for ELs. Smith designed an online program comprised of four, 5-week courses that included (a) Understanding Language and Language Learning, (b) Methods and Approaches in Teaching ESL, (c) ESL Curriculum and Assessment, and (d) Literacy for ELLs. Activities embedded in the training included learning modules containing readings, video lectures, discussions, and weekly assignments. Smith drew on several frameworks to guide the design and facilitation of online professional development, including the Community of Inquiry framework (Garrison et al., 2000) and the concept of reflection (Dewey, 1944). The Community of Inquiry's three core elements (i.e., teaching presence, social presence, cognitive presence) were embedded throughout the professional development training. Additionally, Smith drew on previous work with colleagues (i.e., Shea et al., 2013) to suggest learning presence as a fourth element to integrate into her online program. Shea et al. (2014) define learning presence as a "self-regulatory process, such as planning, monitoring, and reflection, that learners bring to the learning environment to maximize their learning" (p. 453). The concept of reflection was applied to present online learning materials for teachers to formulate hypotheses and then test their ideas through an engaging course curriculum. Overall, Smith found the online professional development successful, and teachers who took part in the training provided positive feedback.

In one other study, Choi and Morrison (2014) examined a five-year hybrid (a combination of online and in-person instruction) professional development targeted to teachers in Oregon to meet language minority and immigrant students' needs. The professional development program was designed based on the Center for Language Minority Education and Research (CLMER) professional development emphasizing a social constructivism framework. Thirty-three elementary, middle, and high school teachers took part in the program and completed the following activities: (a) met three times a month for in-person training led by a researcher; (b) received site-based training once a month by a mentor coaches; (c) participated in online discussions twice a week focused on research-based strategies, lesson planning, and curriculum that embodied best practices for ELs. Classroom observation data and results of online discussion postings revealed positive changes in teachers' lesson plans and discussions to adapt their practices to meet ELs' needs. Researchers noted teachers could link theories of practice into their lessons and define lesson goals to reflect ELs' language needs.

Choi and Morrison (2014) and Smith (2014) provide promising structures and theoretical frameworks for future online professional development to support teachers in gaining knowledge of effective language and literacy practices for ELs. Combined with previous research investigating critical components of online learning, Choi and Morrison and Smith offer effective professional development frameworks to increase teacher knowledge and change teacher practices for ELs.

General Summary of the Literature

Low academic performance and the disproportionate representation of ELs in special education programs under SLD in reading have been an educational issue in the nation's school systems for decades. Prior research has investigated several factors for the disproportionate rates, including teacher biases, invalid assessments, lack of teacher knowledge, and shortage of practices reflective of ELs' cultural and linguistic experiences. Subsequently, issues regarding students' identification process into special education programs under SLD have surfaced due to the process's subjective nature and high student placements under the category. More recently, MTSS has emerged as a preventative, multi-level educational framework that uses evidence-based practices and progress monitoring of student data to tailor instruction to students' needs before special education referrals are made. MTSS serves as a promising framework to support ELs' individual cultural and linguistic experiences and ensure ELs are receiving instruction to meet their individual experiences; however, future work is needed to examine how teachers integrate practices supportive of ELs' diverse backgrounds within a multi-level framework and how teachers adapt their instructional practices when inadequate progress is made.

The DBI/CBM process embedded within Tier 3 of MTSS provides a framework for teachers to systematically use validated interventions and reliable assessment tools to measure ELs’ reading progress over time. It also provides a framework for teachers to analyze ELs’ progress monitoring data and individualize interventions with CLRPs. Yet, few studies have examined DBI/CBM with the integration of CLRP to determine if DBI provides a structure that supports teachers in adapting validated interventions with practices reflective of ELs’ cultural, linguistic, and literacy diversities. As national scores continue to display learning gaps among ELs and non-ELs, and higher percentages of ELs are found eligible for special education programs, the implication is teachers are not considering ELs’ cultural, linguistic, and literacy experiences throughout schools’ multi-level frameworks to provide equitable learning opportunities for ELs.

Professional development in (a) DBI/CBM frameworks and (b) CLRP can serve as the connecting entity to increase teacher knowledge of making data-informed, culturally responsive instructional adaptations to improve outcomes for ELs with persistent reading difficulties. Furthermore, as technology advances communication methods, online professional development can serve as a feasible option to provide DBI/CBM + CLRP learning opportunities to K-12 teachers across the United States. By providing K-12 general and special education teachers with online DBI/CBM + CLRP professional development, this study can provide additional research on teachers’ instructional adaptations for ELs and increase teacher knowledge of equitable learning opportunities for diverse learners.

CHAPTER 3: METHOD

This online DBI/CBM + CLRP professional development provided teachers with training to increase their knowledge of a research-based method to systematically intensify and individualize validated reading interventions with CLRPs for ELs with persistent reading difficulties. This study sought to investigate: (a) the effect of an online DBI/CBM + CLRP training on teachers' knowledge of the DBI/CBM to intensify and adapt validated reading interventions for ELs in tiered instruction, (b) the extent to which teachers maintain their level of knowledge to make data-informed instructional adaptions to validated interventions for ELs without training and researcher feedback one month after training, and (c) the extent to which teachers found online DBI/CBM + CLRP professional development effective to support their knowledge of ELs' cultural, linguistic, and literacy experiences to adapt reading instruction for ELs with persistent reading difficulties. This chapter provides detailed information about the participants, setting, materials, variables, data collection procedures, social validity, and procedural validity.

Participants and Setting

Three classroom teachers in K-12 public or K-12 public charter schools in the United States were recruited based on the following criteria: (a) were K-12 general or special education teachers; (b) were full or part-time employees; (c) were responsible for providing small group, reading intervention (Tier 2) or intensive, individualized reading intervention (Tier 3); and (d) were personally invested in improving their knowledge of instructional practices to improve literacy instruction for ELs with persistent reading difficulties. Practitioners or staff members who had previously been exposed to the online learning modules or did not hold a teaching license were not eligible to participate. Before data collection, approval for conducting research with human subjects was obtained from the University of North Carolina at Charlotte's Instructional Review Board. Additionally, written consent was obtained from teacher participants. Teachers were informed of their rights and given the option to withdraw from the study at any time. See Appendix A for the teacher consent form.

Teacher Participants

Harper. Harper was a White female general education teacher between the ages of 31-40. Harper taught fourth grade English Language Arts and Social Studies in a public charter school in the Southeastern United States. Harper was responsible for providing small group, Tier 2 reading support. Harper received a bachelor's degree in Elementary Education (K-6) and had seven years of prior experience teaching kindergarten through fourth-grade general education instruction. This was Harper's fifth year teaching at the public charter school.

Riley. Riley was a White female special education teacher between the ages of 31-40. Riley taught literacy resource classes for sixth-, seventh-, and eighth-grade students with disabilities and co-taught an English 8 general education class in a public middle school in the Southeastern United States. Riley was responsible for providing intensive, individualized reading intervention to students with disabilities on her caseload. Riley also provided supplemental reading support for students in the English 8 inclusion class. Riley received a master's degree in Special Education and taught middle school special education resource and inclusion classes for the previous six years. This was Riley's first year teaching at the current public middle school.

Taylor. Taylor was a White female general education teacher between the ages of 20-30. Taylor taught third grade in a public charter school in the Southeastern United States. Taylor was responsible for providing small group, supplement reading support. Taylor received her bachelor's degree in Elementary Education (K-6) and had one year of prior experience teaching third-grade general education instruction. This was Taylor's second year teaching third grade at the public charter school.

Materials

Online DBI/CBM + CLRP professional development contained five structured learning components to increase teachers' knowledge of making culturally responsive reading adaptations to validated reading interventions for ELs through DBI and CBM frameworks. I identified three intensive intervention online learning modules recommended by Lemons et al. (2017) to support trainers in providing foundational knowledge of the five steps of DBI for successful implementation of intensive intervention. One CLRP learning module focused on effective instructional practices and assessments for students learning to speak English was embedded in the training to increase teachers' awareness of practices that provide equitable learning opportunities for ELs (Haager, 2007; Klingner et al., 2005; Orosco & Abdulrahim, 2017). Additionally, two asynchronous DBI/CBM + CLRP PowerPoint© recordings were used to include direct instruction in DBI, CBM, and CLRP, with an emphasis on how ELs' cultural, linguistic, and prior literacy experiences may impact their responses to teachers' instructional practices (Haager, 2007; Klingner et al., 2005; Voltz et al., 2003).

Online DBI/CBM Learning Modules

One online learning module developed by NCII (n.d.) and two online learning modules developed by the IRIS Center (2015) in collaboration with the NCII and the Center for Collaboration for Effective Educator Development, Accountability and Reform Center (CEEDAR) were used to provide explicit instruction on (a) intensive interventions in schools' tiered instruction, (b) the DBI process, and (c) collecting and analyzing progressing monitoring and diagnostic data. The NCII, IRIS Center, and CEEDAR are technical assistance centers supported by the U.S. Department of Education, Office of Special Education Programs to build a university and local education agencies' capacity to prepare school personnel to implement evidence-based practices for struggling learners and students with disabilities. All learning modules were self-paced and incorporated interactive, application-based learning to extend teachers' knowledge of the DBI process. The IRIS modules embed the principles of the HPL theoretical framework and provide individuals opportunities to (a) build upon their existing knowledge to enhance learning, (b) engage in case-based scenarios, (c) access outside resources to augment learning, (d) review content embedded in instruction, and (d) assess their learning (IRIS Center, 2020). Additionally, to ensure instructor balance of the HPL theory's four lenses (i.e., learner centeredness, knowledge centeredness, assessment centeredness, community-centered), the IRIS Center adopted the *Software Technology for Action and Reflection* (*STAR*) *Legacy* cycle to design their online learning modules (Smith et al., 2005). The *Stary Legacy* cycle incorporates five components that organize learning activities into an inquiry cycle to encourage problem-solving and critical thinking: Challenge, Initial Thoughts, Perspectives and Resources, Assessment, and Wrap Up (Schwartz et al., 1999a). The five components within the inquiry cycle are pedagogically sound and recognized in educational research as critical components to facilitate learning (Schwartz et al., 1999b). The IRIS modules also aligned with program standards from the Council for the Accreditation of Educator Preparation, Council for Exceptional Children, Interstate Teacher Assessment and Support Consortium, and National Council for Accreditation of Teacher Education supporting previous research (Darling-Hammong et al., 2017) that professional development opportunities connected to teaching standards and evaluations result in stronger teacher practices and student outcomes. The estimated time NCII suggested to complete their learning module ranges from 30-45 minutes, and IRIS Center recommended 180 minutes for each of their online learning modules. All learning modules were accessible through teacher accounts on Canvas (https://www.instructure.com/canvas/). Canvas is an online learning platform with 12 years of research supporting its effectiveness of a high-quality learning management system that meets teacher and learner needs. It is a secure online password-protected platform designed to elevate learning through a virtual podium.

Online CLRP Learning Module

One CLRP learning module, developed by the IRIS Center (2011), was used to deliver instruction on effective cultural and linguistic teaching strategies for ELs. The learning module included information on (a) levels of EL language proficiency, (b) instructional strategies that are effective when teaching ELs, and (c) implications for assessing ELs. Similarly, as with the DBI/CBM modules, the CLRP module aligned with features of the HPL theory, *STAR Legacy* Cycle, and program standards from the Council for the Accreditation of Educator Preparation, Council for Exceptional Children, Interstate Teacher Assessment and Support Consortium, and National Council for Accreditation of Teacher Education. The approximate time IRIS Center provided to complete the learning module was 120 minutes. Access to the module was also available through teachers' accounts on Canvas.

Asynchronous DBI/CBM + CLRP Teacher Professional Development Sessions

Two approximately 90-minute asynchronous DBI/CBM + CLRP professional development sessions were provided to teachers to (a) reinforce concepts presented in the NCII and IRIS's online learning modules, (b) review DBI within an MTSS framework, (c) present Fuchs et al. (2017) *Taxonomy of Intervention Intensity* to aide teachers in identifying an appropriate validated reading intervention and support their instructional decisions in adapting reading interventions, (d) review CBM, (e) discuss how ELs' cultural and linguistic diversities may impact their responses to instruction, (f) examine instructional strategies in each of the four components of CLRP, and (g) practice using the DBI/CBM process to intensify and adapt evidence-based reading interventions with CLRP for ELs with persistent reading difficulties. The PowerPoint© presentations developed for the online professional development sessions were adapted from professional development materials from NCII (2014), NCII (2019), and National Center on Response to Intervention (NCRTI; 2012). All original NCII PowerPoint© presentations are available on NCII's website (https://intensiveintervention.org/audience/trainers-coaches) to support intensive intervention implementation within schools. The asynchronous sessions drew upon the Community of Inquiry's teaching presence component to facilitate course content gained from the online learning modules and allow me to make personal connections with the learners. Teachers accessed the asynchronous sessions through Canvas.

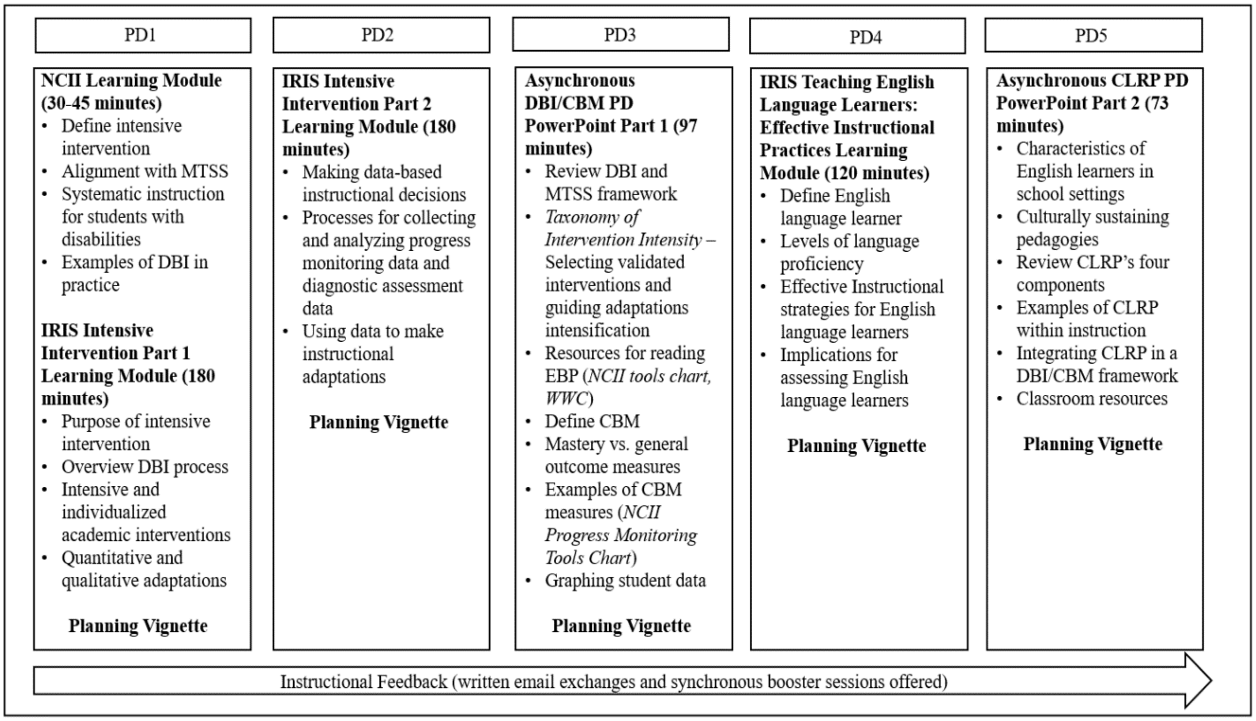
Online Professional Development Instructional Feedback

Drawing upon the Community of Inquiry's social and teaching components, instructional feedback was incorporated into online DBI/CBM + CLRP professional development to allow for personal connections with the teacher participants and to help guide the learning process. After teachers completed a professional development component and submitted a planning vignette knowledge probe, instructional feedback was provided on teachers' responses that corresponded with information gained from the activity that they had previously engaged in. All instructional feedback was provided through email exchanges to the teachers' school email addresses. In the study's original design, if teachers did not display an increase in knowledge after an online DBI/CBM + CLRP professional development component, teachers were to participate in a one-on-one synchronous booster session for more explicit and in-depth instruction in content where low knowledge growth was observed. However, due to teachers declining to meet in the synchronous booster sessions, additional follow-up emails were provided asking if teachers had questions or needed clarification on any of the DBI/CBM or CLRP content delivered within the online learning modules or asynchronous recordings. To ensure teachers received all instructional feedback and follow-up emails, participants were asked to reply to the emails for a receipt of confirmation. If a confirmation email was not received after one week, another email was sent to confirm teachers received the instructional feedback and determine if they had any additional questions.

Planning Vignettes

Fifteen planning vignettes were developed for the study and were randomized and administered to teachers to collect data on teachers' knowledge of DBI/CBM and integrating CLRP within tiered instruction. Planning vignettes are widely used in research studies to serve as a way to closely resemble a real-life decision-making process (Alexander & Becker, 1978; Skilling & Stylianides, 2020). The planning vignettes served as the Community of Inquiry framework's cognitive component to make meaning of the professional development content through written discourse and reflection. The planning vignettes' designs were based on Skilling and Stylianides' (2020) planning vignette framework organized into three key elements: Concept, Design, and Administration. Each vignette ranged between 200 and 300 words and contained a hypothetical situation of an EL making inadequate reading progress within a K-12 multi-level framework. The reading topics incorporated into the vignettes included: (a) alphabetics (i.e., phonemic awareness and phonics); (b) fluency; (c) vocabulary and comprehension that aligned with essential elements of reading designated by the National

Research Council Committee’s report, *Preventing Reading Difficulties in Young Children* (Snow et al., 1998). Teachers had to respond to open-ended questions using the DBI/CBM frameworks to integrate CLRP to target the ELs’ reading need described in the vignette. Appendix B provides the planning vignettes used in the study. Additionally, refer to the dependent variable section for further information regarding the planning vignettes and the related knowledge probe. Figure 2 provides an overview of all online DBI/CBM + CLRP professional development components and materials.



PD1	PD2	PD3	PD4	PD5
NCII Learning Module (30-45 minutes) • Define intensive intervention • Alignment with MTSS • Systematic instruction for students with disabilities • Examples of DBI in practice **IRIS Intensive Intervention Part 1 Learning Module (180 minutes)** • Purpose of intensive intervention • Overview DBI process • Intensive and individualized academic interventions • Quantitative and qualitative adaptations **Planning Vignette**	**IRIS Intensive Intervention Part 2 Learning Module (180 minutes)** • Making data-based instructional decisions • Processes for collecting and analyzing progress monitoring data and diagnostic assessment data • Using data to make instructional adaptations **Planning Vignette**	**Asynchronous DBI/CBM PD PowerPoint Part 1 (97 minutes)** • Review DBI and MTSS framework • *Taxonomy of Intervention Intensity* – Selecting validated interventions and guiding adaptations intensification • Resources for reading EBP (*NCII tools chart, WWC*) • Define CBM • Mastery vs. general outcome measures • Examples of CBM measures (*NCII Progress Monitoring Tools Chart*) • Graphing student data **Planning Vignette**	**IRIS Teaching English Language Learners: Effective Instructional Practices Learning Module (120 minutes)** • Define English language learner • Levels of language proficiency • Effective Instructional strategies for English language learners • Implications for assessing English language learners **Planning Vignette**	**Asynchronous CLRP PD PowerPoint Part 2 (73 minutes)** • Characteristics of English learners in school settings • Culturally sustaining pedagogies • Review CLRP’s four components • Examples of CLRP within instruction • Integrating CLRP in a DBI/CBM framework • Classroom resources **Planning Vignette**

Instructional Feedback (written email exchanges and synchronous booster sessions offered)

Figure 2. Online DBI/CBM + CLRP professional development components and materials.

Researcher and Secondary Observer

The researcher for the study was a third-year doctoral candidate and research assistant with over ten years of experience teaching reading to students with disabilities, including ELs with disabilities and at risk for reading difficulties. The researcher had a bachelor’s degree in Elementary Education (K-6) and a master’s degree in Special Education, Cross Categorical (K-

12). The researcher was a former special education resource and inclusion teacher for students with high incidence disabilities and an Exceptional Children's facilitator. Within her educational experience, the researcher served on the school district's Problem Solving Teams to support teachers in (a) implementation of intensive interventions, (b) collecting and analyzing progressing monitoring data, (c) developing individualized goals, and (d) supporting teachers in the use of culturally and linguistically responsive practices and assessments. As the principal investigator, the researcher was the primary data collector and was responsible for (a) communication with teachers in completing professional development activities, (b) dissemination of planning vignettes and knowledge probes, and (c) leading the online DBI/CBM + CLRP professional development.

The secondary observer was a first-year doctoral student in the Special Education Ph.D. program who had previous experience working with ELs and implementing tiered interventions within schools' MTSS frameworks. The secondary observer was trained to collect interrater reliability (IRR) and procedural fidelity data for the study.

Experimental Design

A multiple probe across participants design (Gast et al., 2018) was used to determine the effects of online DBI/CBM + CLRP professional development on teachers' knowledge of the DBI/CBM process and CLRP to intensify reading instruction for ELs with persistent reading difficulties. Phases of the design included baseline, intervention, and maintenance. After a stable baseline, with a minimum of three data points to avoid testing fatigue, the first teacher with the lowest mean on their baseline planning vignettes' knowledge probes entered intervention. After the first teacher entered intervention, the remaining two teachers in baseline did not receive a new vignette and knowledge probe until a change in level and trend was observed on the first teacher’s score on the vignette knowledge probes. Once a change in level and trend had been observed, the next teacher with the lowest mean across baseline planning vignette knowledge probes was administered a new planning vignette and knowledge probe and entered intervention. Then, once a change in level and trend was observed for the second teacher, the third teacher received a new planning vignette and knowledge probe and entered intervention. All planning vignettes with related knowledge probes were randomized across participants before starting the study using a randomization number app (Charaka, 2018) on the researcher’s iPhone.

Dependent Variables

One primary dependent variable based on the planning vignettes and related to teachers’ knowledge of the DBI/CBM process was measured in this study. Two supplementary outcomes variables included a pre- and post-DBI/CBM + CLRP practice assessment and a teacher perception survey. These three variables are described in detail in the following sections.

DBI/CBM + CLRP Planning Vignette Knowledge Probe

The study’s primary dependent was a 5-item open response knowledge probe based on each of the 15 planning vignette student profiles developed for the study. The knowledge probes were adapted from the NCII (2013) and focused on the five steps of the DBI/CBM frameworks with the integration of CLRP to intensify instruction for ELs with persistent reading needs. Within the knowledge probe, teachers had to respond to questions on each of the five steps of the DBI process (i.e., validated intervention program, progress monitoring, diagnostic data, intervention adaptation, and progress monitor), and how they would make data-informed instructional decisions for an ELs with an identified reading need (e.g., “Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student’s reading need” and “Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support the student's reading need."). See Appendix B for the planning vignette knowledge probes measuring teachers' instructional adaptations for ELs using DBI/CBM. To support the reliability and validity of the planning vignettes and knowledge probes, each vignette and related knowledge probe were field-tested by doctoral students in the Special Education Ph.D. program and professors in the Department of Special Education with research interests and expertise in DBI and teaching reading and assessment. During field testing, doctoral students and professors reviewed the planning vignettes and related knowledge probe to (a) clarify the wording of questions, (b) provide example responses, and (c) record the mean time spent on completion of the vignette knowledge probe. Additionally, a doctoral student in the Special Education Ph.D. program with over 30 years of experience in the special education field working as a (a) special education teacher, (b) program specialist, (c) instructional program manager, and (d) state instructor for a Reading Research to Classroom Practice project reviewed all planning vignettes and provided feedback to help equate the level of difficulty across all vignettes. Knowledge probes were scored using a scoring guide developed by the researcher. The study's scoring guide aligned with the five open-ended questions on the knowledge probe and provided specific criteria the teachers must state to receive a score of either 2, 1, or 0 for a total of 10 points. See Appendix C for the knowledge probe scoring guide.

Pre- and Post-DBI/CBM + CLRP Practice Assessment

A pre- and post-DBI/CBM + CLRP practice assessment was used to measure the impact of the online professional development on teachers' knowledge of the DBI/CBM process and CLRP. The practice assessments were provided to teachers after all their baseline knowledge probes were completed and immediately after all professional development components. The assessment included seven questions relating to DBI/CBM essential elements and CLRP. Questions were in the form of fill-in-the-blank, with each question having between two and seven required correct responses for a total of 23 responses (e.g., “The five steps of the Data-Based Individualization process are?” and List two research-based culturally and linguistically responsive practices.”) Each response was worth one point, for a total of 23 points across all seven questions. See Appendix D for the pre- and post-DBI/CBM + CLRP practice assessment.

Teacher Perceptions

Teacher perceptions were measured using a social validity questionnaire (see Appendix E). The questionnaire consisted of eight questions on a 5-point Likert rating scale ranging from 1 (strongly disagree) to 5 (strongly agree). Questions measured teacher insight on the DBI/CBM + CLRP professional development’s social significance, specifically targeting the professional development’s appropriateness, feasibility, and future outcomes.

Procedural Reliability and Fidelity

To ensure procedural reliability and fidelity across the asynchronous professional development sessions and planning vignette knowledge probes, the secondary observer viewed the asynchronous professional development recordings and scored the teachers’ vignette knowledge probes across phases for IRR. The sections below further describe IRR and procedural fidelity procedures and measures for this study.

Interrater Reliability

IRR on the primary dependent variable was completed to measure the degree to which two researchers agree on the same outcome when measuring the same event (Cooper et al., 2020). This was to ensure accurate interpretation of the teachers’ understanding of the DBI/CBM process with integration of CLRP within the planning vignettes. Prior to the study, the secondary observer was trained on scoring the planning vignette knowledge probes by the researcher. The secondary observer and I scored the knowledge probes completed by the doctoral students and university professors until we received a consistent score of 80% agreement or greater using an item-by-item method across three knowledge probes. The secondary observer and I engaged in a discussion of the responses and reached a consensus on scoring a given response for any discrepancies found. IRR was conducted across 100% of the planning vignette's knowledge probes completed by teachers during baseline, intervention, and maintenance, and calculated using an item-by-item method by adding the number of items agreed upon and then dividing that sum by the total number of items to determine a percentage of agreements (Cooper et al., 2020). Additionally, IRR on teachers' pre- and post-DBI/CBM + CLRP practice assessments were conducted across 100% of the assessments using an item-by-item method. Throughout IRR, teacher names were removed from the vignettes and pre- and post-DBI/CBM + CLRP practice assessment before the secondary observer scored them to avoid any researcher bias and ensure fair and accurate results. If a discrepancy was found, the secondary observer and I met to review disagreements and reached a consensus on the percentage correct.

Procedural Fidelity

Procedural fidelity of the asynchronous DBI/CBM + CLRP professional development sessions was collected using a 13-item procedural checklist. I checked off each step on the list after its completion while recording the asynchronous professional development sessions. Then, the secondary observer viewed the asynchronous recordings and completed the same procedural fidelity checklist to ensure all actions of the asynchronous professional development sessions were provided. See Appendix F for the professional development procedural fidelity checklist. Procedural fidelity was calculated by comparing my fidelity checklist with the secondary observers. I counted the number of training steps instructed across the asynchronous professional development sessions and divided by the total number of steps and multiplied by 100 for the total percentage. If teacher participants had agreed to participate in the synchronous professional development booster sessions, the same 13-item procedural fidelity checklist would have been used. I would highlight the DBI/CBM and CLRP content teachers scored low and explicitly teach the learning objectives in the original plan. Then, the secondary observer would view the booster session to ensure accurate content delivery and complete the highlighted portion of the procedural fidelity checklist. Since all teacher participants declined to meet in the synchronous booster sessions, this plan was not executed.

Further procedural fidelity of the four online learning modules and asynchronous professional development sessions were collected through self-reported procedural fidelity statements and back-end data gathered through my Canvas account. I recorded whether the teachers accessed the modules and asynchronous professional development sessions in Canvas and compared the teachers' self-reported completion statements with the estimated times provided for each professional development activity. See Appendix G for the self-reported procedural fidelity statements. Fidelity was met if teachers (a) accessed each training within the window of availability, (b) spent the estimated time engaged in the learning modules suggested by NCII (n.d.) and IRIS Center (2015), and (c) reviewed the full two asynchronous professional development sessions. If a discrepancy was found among the times, teachers were sent an email inquiring if they had questions over the professional development content or needed additional support in understanding content material.

Procedures

Data collection started at the beginning of December 2020. All three teacher participants were provided with three sequential planning vignettes and knowledge probes to determine teachers' present knowledge of intensifying instruction through a DBI process and practices reflective of ELs' cultural, linguistic, and literacy experiences. After all teachers' planning vignettes and knowledge probes were completed, Harper began the online DBI/CBM + CLRP professional development early January 2021. Riley started the online professional development in early February 2021, and Taylor began in late March 2021. During the online training, teachers were encouraged to complete each professional development component within a week of being assigned to reinforce learned concepts; however, due to the flexibility online professional development provides, teachers completed the activities given the demands of their work and home lives. The following sections provide detailed information on the conditions across the study's baseline, intervention, and maintenance phases.

Baseline

Prior to baseline, teachers were not provided with the links to the online learning modules or had researcher instruction in the DBI/CBM frameworks and CLRP. Teachers used their existing knowledge of intensifying instruction for ELs with persistent reading difficulties to respond to the planning vignette knowledge probes. Once teachers entered baseline, three randomized planning vignettes with related knowledge probes were posted on teachers' Canvas accounts to measure teachers' knowledge of the DBI/CBM process to adapt validated reading interventions for ELs. Planning vignettes and knowledge probes were posted one at a time; once teachers submitted their first planning vignette knowledge probe, the following planning vignette and knowledge probe was posted, and so forth. Teachers received an email to their school's email address notifying them when the planning vignettes and knowledge probes were available on their Canvas account and clear directions on accessing and responding to the knowledge probes. During completion of each knowledge probe, teachers were asked (a) not to use outside resources to help them respond to the probe and (b) to complete knowledge probes in one setting (e.g., once teachers log on to start the probe, they should submit during that interval and not log off and finish the next day). Back-end data were collected through Canvas to determine the length of time each teacher took to complete the knowledge probes and compared it to the doctoral students and the professor's mean times of completion.

Intervention

The first teacher with the lowest mean score across the baseline knowledge probes entered intervention and was administered a pre- DBI/CBM + CLRP practice assessment. After the teacher submitted the pre-assessment to Canvas, teachers received an email to their school email address announcing they were ready to begin the first DBI/CBM + CLRP professional development component. First, teachers were assigned the NCII (n.d.) learning module and the first IRIS (2015) module on intensive intervention. Upon completion, teachers were asked to complete their self-reported procedural fidelity module statements. Once the procedural fidelity module statements were completed, the first randomized planning vignette and knowledge probe were posted to the teachers' Canvas accounts. Next, the second IRIS (2015) learning module providing instruction on collecting and analyzing progress monitoring data was posted on Canvas for teachers to access and complete. Once submitted, a new randomized vignette and knowledge probe were posted on Canvas. Then, the first asynchronous professional development session covering researcher instruction on the DBI/CBM process was posted on Canvas. Teachers were asked to watch the asynchronous session and completed their procedural fidelity module statements. Then, a new randomized planning vignette and knowledge probe were assigned. Fourth, the final IRIS (2011) learning module covering effective strategies for ELs was posted on Canvas. Teachers accessed the learning module and completed their planning vignette knowledge probe and procedural fidelity statement. Finally, the second asynchronous professional development session reviewing CLRP and how practices can be integrated into the DBI process was posted on Canvas. Teachers watched the asynchronous session. Then, teachers completed their final randomized planning vignette with a knowledge probe and submitted their procedural fidelity statement. Throughout the intervention phase, teachers were provided with instructional feedback through email exchanges on their submitted planning vignette knowledge probes. Instructional feedback was only provided on the planning vignette knowledge probe questions that teachers had previously been exposed to in the DBI/CBM + CLRP professional development. If teachers displayed low growth in any of the five planning vignette knowledge probe questions that had been introduced in the previous professional development components, teachers were offered to participate in a collaborative one-on-one synchronous professional development booster session for (a) explicit instruction in the content the teachers did not show growth in and (b) clarification of any questions teachers may have. Because all teachers declined to meet in the synchronous booster sessions, follow-up emails were provided to teachers to determine if they had questions over the professional development activities they had engaged in and to clarify any misunderstandings. After completing all professional development components, teachers were administered the post-DBI/CBM + CLRP practice assessment to measure the professional development’s impact on teachers’ knowledge of the DBI/CBM process and CLRP.

Maintenance

Maintenance data were collected approximately one month after teachers completed their post-DBI/CBM + CLRP practice assessment. The original design involved collecting maintenance data about four, six, and eight weeks after intervention. However, due to the end of the study, maintenance was only collected for Harper approximately four weeks after she completed online DBI/CBM + CLRP professional development. Harper received an email from me notifying her that a new planning vignette and knowledge probe was added to her Canvas account. Within the month timeframe, Harper did not receive researcher support or was exposed to additional training to adapt validated reading interventions with CLRPs. After maintenance data were collected, teachers received final feedback on their growth throughout the online professional development. Teachers were also notified they would have access to the Canvas course to review and download training materials to support DBI/CBM frameworks and CLRP within their school and classroom instruction.

CHAPTER 4: RESULTS

This study investigated the effects of online DBI/CBM + CLRP professional development on general and special education teachers' knowledge of instructional reading adaptations for ELs in need of intensive reading interventions. The online DBI/CBM + CLRP professional development consisted of five professional development components supporting teachers in gaining knowledge of DBI to systematically intensify and individualize reading instruction with CLRPs to target ELs' cultural, linguistic, and academic experiences. This study began in December 2020 and ended in May 2021, approximately one month before the end of the 2020-2021 traditional academic school year. Figure 3 provides the timelines of the DBI/CBM + CLRP professional development components across all three teacher participants in the study. Results indicated increased teacher knowledge of DBI and adapted reading instruction with CLRPs after participation in online DBI/CBM + CLRP professional development; however, a functional relation could not be determined due to the study ending before all the teachers could complete the professional development components. In the following sections, outcomes of the study are presented. First, results for IRR and procedural fidelity are described, followed by results for each research question.

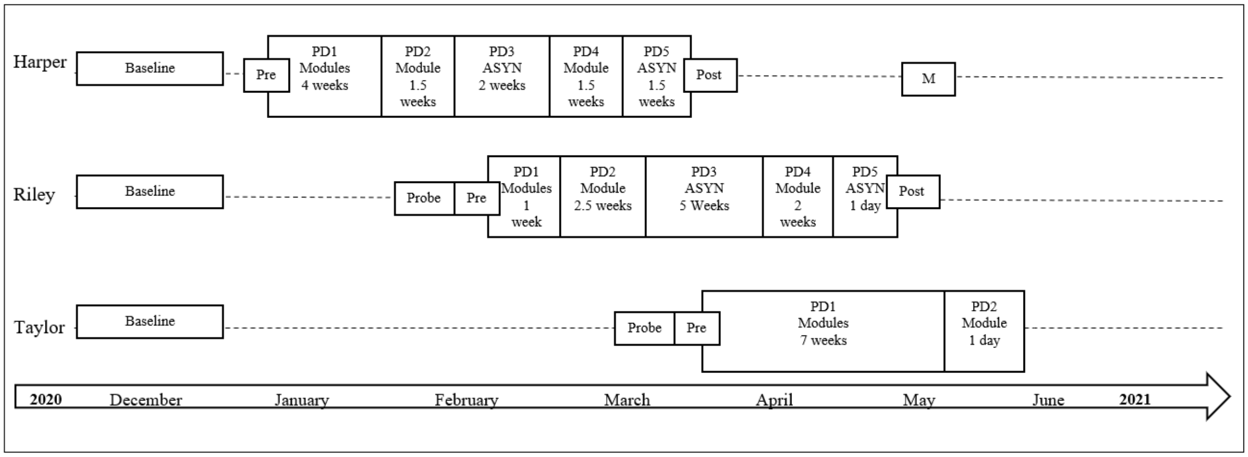

Harper
Baseline
Pre
PD1 Modules 4 weeks
PD2 Module 1.5 weeks
PD3 ASYN 2 weeks
PD4 Module 1.5 weeks
PD5 ASYN 1.5 weeks
Post
M
Riley
Baseline
Probe
Pre
PD1 Modules 1 week
PD2 Module 2.5 weeks
PD3 ASYN 5 Weeks
PD4 Module 2 weeks
PD5 ASYN 1 day
Post
Taylor
Baseline
Probe
Pre
PD1 Modules 7 weeks
PD2 Module 1 day
2020
December
January
February
March
April
May
June
2021

Figure 3. Timeline of online DBI/CBM + CLRP professional development components.

Note. Pre = Pre-DBI/CBM + CLRP Practice Assessment; PD = Professional Development; Probe = Baseline Data Probe; Post = Post-DBI/CBM + CLRP Practice Assessment; M = Maintenance.

Interrater Reliability

Before the secondary observer completed IRR, teacher names were removed from the planning vignette knowledge probes and practice assessments across phases to decrease openings for researcher bias. IRR was collected across 100% of teachers' planning vignette knowledge probes in baseline, intervention, and maintenance. IRR was conducted using an item-by-item analysis in which the number of agreements for each knowledge probe question was divided by the total number of disagreements and agreements multiplied by 100 (Cooper et al., 2020). If a discrepancy was found, the secondary observer and I met to discuss their reasoning for their scores and reached a consensus on the percentage correct. IRR across teachers' baseline planning vignette knowledge probes indicated 83.66% agreement (range: 80%-86%). IRR across intervention planning vignette knowledge probes indicated 80% agreement (range: 60%-100%). The low IRR scores within the intervention planning vignette knowledge probes primarily centered around teachers' responses to the first and fifth question (i.e., "Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student’s reading need,” and “Next, adapt the Tier 2 instructional plan to address the student’s reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?”).

IRR across maintenance planning vignette knowledge probes indicated 100% agreement (range: 100%). Table 1 provides the ranges and means of IRR for planning vignette knowledge probes across baseline, intervention, and maintenance for Harper, Riley, and Taylor.

An item-by-item method was also used to determine the mean IRR across all pre- and post-DBI/CBM + CLRP practice assessments. The secondary observer collected IRR across 100% of teachers’ pre- and post-DBI/CBM + CLRP practice assessments. The mean IRR for teachers’ pre- and post-assessment was 96.52% (range: 91.3%-100%).

Finally, to gather an estimated time of completion to help determine the degree to which teacher participants engaged in the planning vignettes and knowledge probes, the planning vignettes were field-tested across doctoral students and professors at the University’s Department of Special Education. The mean time doctoral students and professors reported completing the planning vignette knowledge probes was approximately 17 minutes. Table 2 provides the ranges and means of completion times on the planning vignette knowledge probes for Harper, Riley, and Taylor across baseline, intervention, and maintenance phases. The documented mean time of completion across all teachers’ planning vignette knowledge probes was approximately 43 minutes.

Table 1:

Planning vignette knowledge probe interrater reliability

	Harper	Riley	Taylor
Baseline	Range: 80%-100% Mean: 86.66%	Range: 60%-100% Mean: 80%	Range: 80%-100% Mean: 85%
Intervention	Range: 80%-100% Mean: 84%	Range: 60%-80% Mean: 76%	-
Maintenance	Range: 100% Mean: 100%	-	-

Table 2:

Mean time spent on planning vignette knowledge probes across phases

Harper	Harper	Riley	Taylor
Baseline	Range: 25-49 min Mean: 38 min	Range: 18-65 min Mean: 38 min	Range: 15-110 min Mean: 47 min
Intervention	Range: 30-55 min Mean: 44 min	Range: 15-46 min Mean: 29 min	-
Maintenance	Time: 131 min	-	-

Procedural Fidelity

To determine the degree to which the online DBI/CBM + CLRP professional development was implemented as intended, the secondary observer and I completed a professional development procedural fidelity checklist (see Appendix F) across the two asynchronous DBI/CBM + CLRP professional development sessions. Procedural fidelity was calculated by dividing the number of training steps instructed by the total number of training steps in the checklist and multiplying by 100. I checked off each instructional step during the recordings of the asynchronous sessions. Then, the recordings were sent to the secondary observer who viewed the sessions and completed the same professional development procedural fidelity checklist. Procedural fidelity data indicated a 100 % agreement across both DBI/CBM + CLRP asynchronous recordings.

To verify the degree to which the four online DBI/CBM and CLRP learning modules and the two DBI/CBM + CLRP asynchronous professional development sessions were implemented as designed, back-end data on Canvas was collected to confirm teachers accessed the professional development activities on the dates available. In addition, teachers completed a self-reported procedural fidelity statement (see Appendix G) for each professional development component to determine the total amount of teacher engagement. Teachers' reported times of engagement for each learning module and asynchronous session were compared to the estimated times provided by the module developers and recorded asynchronous sessions to determine the degree to which teachers fully engaged in the activities. Harper, Riley, and Taylor's self-reported procedural fidelity times are presented below and in Table 3. Additionally, back-end data retrieved from Canvas indicated all teachers accessed the learning modules and asynchronous sessions on the dates provided by the teachers.

National Center on Intensive Intervention DBI Learning Module

The estimated time for the National Center on Intensive Intervention's DBI learning module was 30 to 45 minutes. Harper's reported time was 50 minutes. Riley's reported time was 35 minutes. Taylor's reported time was 50 minutes. The mean time across all teacher participants was 45 minutes.

IRIS Center Intensive Intervention Learning Module

The estimated time for the IRIS Center’s intensive intervention learning module was 180 minutes. Harper’s reported time was 90 minutes. Riley’s reported time was 90 minutes. Taylor’s reported time was 60 minutes. The mean time across all teacher participants was 80 minutes.

IRIS Center Collecting and Analyzing Data Learning Module

The estimated time for the IRIS Center’s collecting and analyzing data learning module was 180 minutes. Harper’s reported time was 80 minutes. Riley’s reported time was 80 minutes. Taylor’s reported time was 30 minutes. The mean time across all teacher participants was 63.33 minutes.

DBI/CBM Asynchronous Professional Development Session

The prerecording of the first DBI/CBM asynchronous professional development session equaled a total of 97 minutes. Harper’s reported time was 90 minutes. Riley’s reported time was 120 minutes. The study ended before Taylor completed the DBI/CBM asynchronous session. The mean time across teacher participants was 105 minutes.

IRIS Center CLRP Learning Module

The estimated time for the National Center on Intensive Intervention was 120 minutes. Harper’s reported time was 120 minutes. Riley’s reported time was 90 minutes. The study ended before Taylor completed the CLRP learning module. The mean time across teacher participants was 105 minutes.

CLRP Asynchronous Professional Development Session

The prerecording of the second CLRP asynchronous professional development session equaled a total of 73 minutes, with additional time provided for teachers to review DBI/CBM and CLRP resources embedded within the recording. Harper’s reported time was 70 minutes.

Riley's reported time was 90 minutes. The study ended before Taylor completed the CLRP asynchronous session. The mean time across teacher participants was 80 minutes.

Table 3:

Procedural fidelity of professional development components

	Recommended Time	Harper Reported Time	Riley Reported Time	Taylor Reported Time
Module 1 (PD1)	30-45 minutes	50 minutes	35 minutes	50 minutes
Module 2 (PD1)	180 minutes	90 minutes	90 minutes	60 minutes
Module 3 (PD2)	180 minutes	80 minutes	80 minutes	30 minutes
Asynchronous Session 1(PD3)	97 minutes	90 minutes	120 minutes	-
Module 4 (PD4)	120 minutes	120 minutes	90 minutes	-
Asynchronous Session 2(PD5)	73 minutes	70 minutes	90 minutes	-

Results for Research Question 1: What are the effects of online DBI/CBM + CLRP professional development on teachers' knowledge of the DBI/CBM process and CLRP to adapt validated reading instruction for ELs who do not make adequate progress in response to reading instruction as measured by an instructional rubric?

Figure 4 shows the effects of online DBI/CBM + CLRP professional development on the percentages correct on planning vignette knowledge probes measuring Harper's, Riley's, and Taylor's knowledge of DBI/CBM and CLRP to adapt reading interventions for ELs with a persistent reading need. During baseline, the teachers' performances on the planning vignette knowledge probes displayed a low to moderate level of knowledge of intensive intervention and integrating CLRPs within reading instruction for ELs, with variability in teachers' percentages correct across planning vignette knowledge probes. During intervention, the teachers' performances on the planning vignette knowledge probes displayed an increasingly stable trend with moderate to high levels of percentages correct; however, a functional relation was not determined due to the study ending before all teachers finished the online DBI/CBM + CLRP professional development. Results for Harper, Riley, and Taylor are described below. See Figure 3 for the timelines of the study phases and each professional development component across teacher participants.

Harper

During baseline, Harper's performance on the planning vignette knowledge probes displayed a decreasing moderate to low-level trend with some variability. Harper's percentage correct on baseline planning vignette knowledge probes ranged from 20% to 50% (M = 36.66%). Back-end data retrieved from Canvas indicated Harper's times of completion for each baseline planning vignette knowledge probe ranged from 25 to 49 minutes (M = 38 minutes). Despite variability in baseline data, I determined to begin Harper in intervention due to testing fatigue concerns and the number of days participants took to complete each of the three baseline planning vignette knowledge probes. Harper's performance during baseline also indicated the lowest mean across the baseline knowledge probes.

Harper began intervention in early January 2021 and finished in late March 2021. The length of time it took Harper to complete each of the five online DBI/CBM + CLRP professional development components ranged from 10 to 28 days (M = 14.4 days). After the first DBI professional development activity, Harper's performance on the planning vignette knowledge probe resulted in an immediacy of effect. Harper's performance indicated an increasing, moderate level trend at 60% correct. Back-end data retrieved from Canvas indicated it took Harper 28 days to complete the first DBI professional development component and approximately 52 minutes to complete the first intervention planning vignette knowledge probe. Harper stopped viewing the Canvas knowledge probe page several times throughout completion.

Next, Harper participated in the second professional development activity on CBM. Harper's performance displayed a high-level score of 80% correct, a 20% increase from the first intervention planning vignette knowledge probe. It took Harper 10 days to complete the CBM professional development component and approximately 55 minutes to complete the second planning vignette knowledge probe. Harper left the Canvas knowledge probe page one time during completion.

After the third online professional development synchronous session on DBI and CBM, Harper's performance on the planning vignette knowledge probe remained stable at 80% correct. I provided Harper with instructional feedback reinforcing DBI and CBM concepts; however, she was not offered to meet in a synchronous booster session due to the area of growth needed was in content that had not yet been introduced in the online DBI/CBL + CLRP professional development. Harper took 14 days to complete the professional development components and approximately 41 minutes to complete the planning vignette knowledge probe. Harper left the Canvas knowledge probe page one time during completion.

After the fourth online CLRP professional development activity, Harper's performance on the planning vignette knowledge probe slightly decreased but remained at a moderate level of 70% correct. Harper indicated improved knowledge on CLRP content provided in the fourth professional development activity; however, the percentage correct on the DBI-related content within the knowledge probe caused her overall percentage to decrease slightly. It took Harper 10 days to complete the professional development component and approximately 30 minutes to complete the fourth planning vignette knowledge probe. Harper was provided with targeted instructional feedback in DBI-related concepts and was offered to meet in a synchronous booster session. Harper thanked me for the instructional feedback and noted it was helpful information. Harper declined to participate in the synchronous booster session. I provided follow-up emails to ensure Harper had not further questions over DBI content.

On Harper's last online CLRP asynchronous professional development activity, Harper's performance on the planning vignette knowledge probe slightly increased to 90% correct. It took Harper 10 days to complete the last DBI/CBM + CLRP professional development component and approximately 42 minutes to complete the last planning vignette knowledge probe. Harper left the Canvas planning vignette knowledge probe one time during completion.

Overall, Harper's percentage correct on the planning vignette knowledge probes throughout intervention displayed an increasing, moderate to high-level trend, with performance scores ranging from 60% to 90% correct (M = 76%). Harper's percentages correct on planning vignette knowledge probes displayed no overlap in data across baseline and intervention phases. Harper's completion times for each planning vignette ranged from 30 to 52 minutes (M = 44 minutes).

Approximately one month after intervention, Harper was administered a planning vignette and knowledge probe to collect maintenance data. Harper's performance on the planning vignette knowledge probe remained at a moderate level with a percentage of 70% correct. This was a slight decrease from Harper's final intervention knowledge probe; however, Harper's performance during maintenance remained stable with the mean percentage correct across planning vignette knowledge probes during intervention (M = 76%). Back-end data retrieved from Canvas indicated it took Harper approximately 131 minutes to complete the maintenance knowledge probe. Harper did stop viewing the Canvas knowledge probe page several times; however, the longer length of time it took Harper to complete the maintenance knowledge probe could result from Harper viewing available resources from online DBI/CBM + CLRP professional development. The study ended before additional maintenance data were collected six and eight weeks out from intervention.

Riley

During baseline, Riley's performance on the planning vignette knowledge probes indicated a stable, low-level trend. Riley's percentage correct on baseline planning vignette knowledge probes ranged from 20% to 40% (M = 35%). Back-end data retrieved from Canvas indicated Riley's completion times for each baseline planning vignette knowledge probe ranged from 18 to 65 minutes (M = 38 minutes).

Riley began intervention in early February 2021 and finished in late April 2021. The length of time it took Riley to complete each of the five online DBI/CBM + CLRP professional development components ranged from 1 to 35 days (M = 14.8 days). After Riley's first DBI professional development activity, Riley's percentage correct on the planning vignette knowledge probe increased to a moderate level of 50%, a 30 % increase from Riley's previous and lowest baseline knowledge probe. It took Riley 7 days to complete the first DBI professional development component and approximately 19 minutes to complete the first planning vignette knowledge probe in intervention. Riley stopped viewing the Canvas planning vignette knowledge probe page several times during the completion of the knowledge probe.

After the second online CBM professional development activity, Riley's performance on the planning vignette knowledge probe increased by 10% and remained at a moderate level at

60% correct. Riley took 17 days to complete the CBM professional development component and approximately 15 minutes to complete the second planning vignette knowledge probe.

After Riley's third DBI/CBM asynchronous professional development session, Riley's performance on the planning vignette knowledge probe remained at a stable, moderate level of 60%. It took Riley 35 days to complete the professional development component and approximately 42 minutes to complete the third planning vignette knowledge probe. Riley was provided with DBI/CBM-related instructional feedback in low areas of growth indicated by Riley's performance on the planning vignette knowledge probe and offered to meet in a synchronous booster session. Riley declined to meet and was provided with follow-up emails.

Next, Riley participated in the fourth CLRP learning module. Riley's performance on the planning vignette knowledge probe remained stable at 60% correct. It took Riley 14 days to complete the CLRP professional development component and approximately 24 minutes to complete the planning vignette knowledge probe. I provided Riley with instructional feedback over CBM and CLRP content where percentages correct remained low on the planning vignette knowledge probe and offered to meet in a synchronous booster session. I did not receive a confirmation from Riley until after Riley completed her fifth professional development activity and planning vignette knowledge probe.

After Riley's last online CLRP asynchronous professional development activity, Riley's performance on the planning vignette knowledge slightly decreased to 40% correct. It took Riley one day to complete the final professional development component and approximately 46 minutes to complete the last planning vignette knowledge probe. Riley was provided with instructional feedback in DBI/CBM and CLRP content and offered to meet in a synchronous booster session. Riley thanked me and noted she enjoyed participating in the training. She never indicated if she would like to meet in a synchronous booster session. Follow-up emails indicated Riley had no additional questions on content provided in online DBI/CBM + CLRP professional development.

Overall, Riley's performance on the planning vignette knowledge probes during intervention remained stable, moderate level with scores ranging from 40% to 60% (M = 54%). This was a slight increase from Riley's baseline mean of 35%. Riley's completion times for each planning vignette ranged from 15 to 46 minutes (M = 29 minutes). Due to Riley finishing intervention as the study was ending, I did not collect maintenance data for Riley.

Taylor

During baseline, Taylor's performance on the planning vignette knowledge probes indicated a moderate level with some variability. Taylor's percentage correct on baseline planning vignette knowledge probes ranged from 30% to 70% (M = 52.5%). Back-end data retrieved from Canvas indicated Taylor's completion times for each baseline planning vignette knowledge probe ranged from 15 to 110 minutes (M = 47 minutes). Despite the variability in baseline data, I was concerned with the study's timeline and began Taylor in intervention to provide maximal time for the five online DBI/CBM + CLRP professional development components.

Taylor began intervention in late March 2021. Taylor completed the first two online DBI/CBM + CLRP professional development components toward the middle of May as the study was ending. It took Taylor approximately 50 days to complete the first two DBI/CBM online learning modules. Back-end data gathered from Taylor indicated she completed the first two DBI and CBM professional development components within one day of each other. Taylor did not submit a planning vignette after the first DBI professional development component.

Therefore, no intervention data is reported for Taylor. Additionally, maintenance data are not reported for Taylor.

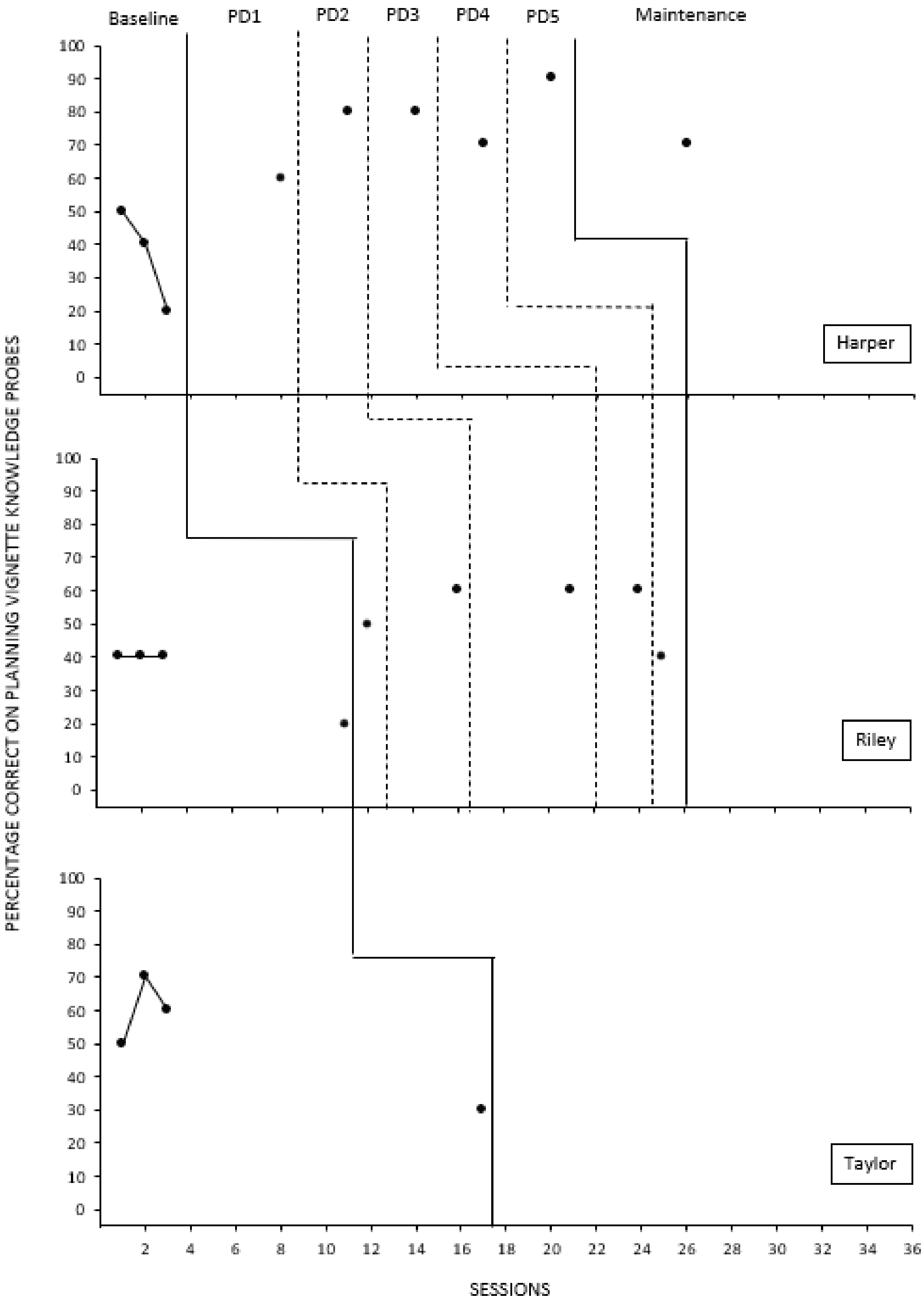


Figure 4. Graph of the percentage correct on planning vignette knowledge probes.

Note. PD1, PD2, PD3, PD4, PD5 = Five professional development activities of online DBI/CBM + CLRP professional development.

Visual analysis of the graph indicated there was evidence of an increase in level and trend on Harper and Riley's percentages correct on their planning vignette knowledge probes between baseline and intervention. Despite variability in Harper's baseline data, Harper's performance predicts without intervention, her knowledge would continue to fall within a low to moderate level. As Harper was introduced to each online DBI/CBM + CLRP professional development component, her performances on the planning vignette knowledge probes indicated a gradual increase in trend. Riley's baseline data verifies Harper's low to moderate level of percentages correct on baseline knowledge probes; however, Riley's intervention data suggest a slight change in level that remained stable, except for her last intervention data point. Without intervention data from Taylor, it is difficult to determine further verification of change in level and trend and replication of effects across participants. Thus, a functional relation could not be established.

To complement visual analysis of data presented in Figure 4, effect sizes were calculated to summarize the study's findings between and within baseline and intervention phases for Harper and Riley. Although there are several effect size indices used to summarize findings of single-case research (e.g., standardized mean difference, nonparametric approaches, parametric approaches), Tau-*U* (Parker et al., 2011) was selected as the effect size measure for this study due to the study's small data set. Tau-*U* is a nonparametric, nonoverlap statistical method that examines intervention effects on both between-phase differences and within-phase trends while controlling for undesirable baseline trends (Brossart et al., 2018). Tau-*U* was calculated using a free online calculator (Vannest et al., 2016) to report the magnitude of effect of online DBI/CBM + CLRP professional development on Harper and Riley's knowledge and an aggregated effect size. Tau-*U* scores range from -1 to 1, and scores can be interpreted using the following criteria; (a) less than 0.20 indicates a small change in magnitude, (b) 0.20 to 0.60 indicates a moderate change, (c) 0.60 to 0.80 suggests a large change, and (d) above 0.80 suggest a very large change (Vannest & Ninci, 2015). The Tau-*U* effect size for Harper's percentage correct on planning vignette knowledge probes was 1 (CI90 = [0.26, 1]), indicating a very large effect size. The Tau-*U* effect size for Riley's percentage correct on planning vignette knowledge probes indicated a very large effect size of 0.85 (CI90 = [0.17, 1]). Due to Taylor having incomplete data, her Tau-*U* effect size is not reported. The omnibus effect size of online DBI/CBM + CLRP professional development on teachers' percentage correct on planning vignette knowledge probes suggests a very large effect size of 0.92 (CI95 = [0.32, 1]).

Pre- and Post-DBI/CBM + CLRP Practice Assessment

Table 4 presents the results of the pre- and post-DBI/CBM + CLRP practice assessments for Harper, Riley, and Taylor. Harper's performance on the DBI/CBM + CLRP practice assessments showed significant knowledge gains with a pre-assessment score of 30.43% correct and a post-assessment score of 82.6% correct. Riley also demonstrated significant knowledge gains on the DBI/CBM + CLRP practice assessments with a pre-assessment score of 17.39% correct and a post-assessment score of 91.3% correct. Taylor's performance on the pre-DBI/CBM + CLRP practice assessment verifies teachers' low knowledge in DBI/CBM and CLRPs with a percentage correct of 17.39%. Due to the study end, Taylor was not administered the post-DBI/CBM + CLRP practice assessment. Therefore, her score is not reported.

Table 4:

Pre- and post-DBI/CBM + CLRP practice assessment results across participants

	Harper	Riley	Taylor
Pre-assessment	30.43%	17.39%	17.39%
Post-assessment	82.6%	91.3%	-

Results for Research Question 2: To what extent does an online DBI/CBM + CLRP professional development support teachers in maintaining their level of knowledge of data-driven instructional reading adaptations and CLRP for ELs one month after the training has ended?

Maintenance data were collected approximately one month after Harper completed all online DBI/CBM + CLRP professional development components to determine the extent to which she was able to maintain her level of knowledge of data-driven instructional reading adaptations for ELs without researcher support and additional training. Since Harper was the only teacher to complete all professional development components within the study's timeframe, maintenance data are only reported for Harper.

Harper's knowledge of the DBI/CBM frameworks to adapt validated reading interventions with CLRPs for ELs with persistent reading difficulties slightly increased as Harper completed each of the five online professional development components. Harper's mean percentage correct on planning vignette knowledge probes in intervention was 76%. One month after completing online DBI/CBM + CLRP professional development, Harper was administered a new randomized planning vignette and knowledge probe. During the one-month timeframe, Harper received no instruction for the primary research or additional professional development; however, she did have access to the resources provided in online DBI/CBM + CLRP professional development. Harper’s performance on the maintenance planning vignette knowledge probe demonstrated a percentage correct of 70%. This was slightly lower than the last data point collected during intervention; however, her performance on the maintenance planning vignette knowledge probe remained at a moderate level aligned with her intervention performance. Harper’s maintenance data suggest that Harper maintained her mean level of knowledge to adapt validated reading interventions for ELs with persistent reading difficulties using DBI approximately one month after training. Due to the study end, no additional maintenance data were collected to determine if Harper could maintain her level of knowledge gained from online DBI/CBM + CLRP professional development over extended periods of time.

Results for Research Question 3: To what extent do teachers find online DBI/CBM + CLRP professional development appropriate, feasible, and beneficial to support their knowledge of integrating evidence-based reading interventions with CLRP into tiered instruction for ELs?

After completing the online DBI/CBM + CLRP professional development, Harper and Riley completed a social validity questionnaire to gather their perceptions on the social significance of the professional development training. Taylor was not provided with the social validity questionnaire due to not completing all online DBI/CBM and CLRP professional development components to gather her perspective on the full training. Table 5 shows the results of the social validity questionnaire for Harper and Riley.

Harper

Harper rated all items on the social validity questionnaire with a “strongly agree,” suggesting high regard for the appropriateness, feasibility, and outcomes of the online DBI/CBM + CLRP professional development. Under the comments section, Harper noted she loved participating in the study, and the professional development components helped improve her knowledge of intensive intervention, particularly for ELs in her classroom going through the special education referral process. Harper noted she had a small amount of knowledge of tiered instruction but was unfamiliar with DBI before the training. She also commented that the online professional development provided her with tools that she implemented with ELs during her classroom instruction.

Riley

Overall, Riley agreed that she enjoyed participating in the online DBI/CBM + CLRP professional development training. Riley also agreed that the training improved her knowledge of validated reading practices for ELs and integrating CLRPs into instruction; however, she indicated a “neutral” scale rating for the online DBI/CBM + CLRP professional development improved my knowledge of the DBI/CBM process. In addition, Riley agreed that the training was provided in a reasonable time to support her learning and indicated a “neutral” for the professional development being easily accessible.

Table 5:

Results from social validity questionnaire

	Harper	Riley	Taylor
I enjoyed participating in the DBI/CBM + CLRP professional development.	5	4	-
The professional development improved my knowledge of the DBI/CBM process.	5	3	-
The professional development improved my knowledge of validated reading practices for ELs.	5	4	-
The professional development improved my knowledge of integrating CLRP into instruction for ELs.	5	4	-
The professional development was easily accessible.	5	3	-
The professional development was offered in a reasonable amount of time to support my learning.	5	4	-
The strategies I gained from the professional development can be easily integrated into instruction.	5	5	-
I will use the strategies gained form the professional development in the future.	5	5	-

Note. The social validity questionnaire consisted of seven questions based on a 5-point Likert scale which ranged from 1 (strongly disagree) to 5 (strongly agree).

CHAPTER 5: DISCUSSION

The purpose of this study was to investigate the effects of online DBI/CBM + CLRP professional development on general and special education teachers’ knowledge of instructional reading adaptations for ELs with persistent reading difficulties. This online professional development provided five structured learning opportunities for teachers to learn the essential components of DBI, CBM, and CLRP to intensify and individualize validated reading interventions for ELs with persistent reading difficulties. Effects of online DBI/CBM + CLRP professional development on teachers’ knowledge of instructional reading adaptations for ELs using a DBI process were measured by the percentage correct across participants’ planning vignette knowledge probes during baseline, intervention, and maintenance phases. A pre- and post-DBI/CBM + CLRP practice assessment provided additional evidence of the impact of the online DBI/CBM + CLRP professional development on teachers’ knowledge of DBI/CBM and CLRP. Procedural fidelity was measured using an item-by-item analysis of the steps completed during the asynchronous DBI/CBM + CLRP professional development sessions and self-reported participant completion statements. Back-end end data retrieved from Canvas, the online learning platform, provided further documentation of the procedural integrity of online DBI/CBM + CLRP professional development on teachers’ knowledge. Social validity questionnaires were also administered to provide insight into teachers’ perceptions of the appropriateness, feasibility, and outcomes of online DBI/CBM + CLRP professional development. In this chapter, the study outcomes are examined according to each of the research questions with themes that emerged from the effect of the intervention in relation to DBI/CBM, CLRP, and online professional development. Finally, limitations, suggestions for future research, and implications for practice are provided.

Online DBI/CBM + CLRP Professional Development Teacher Knowledge

Visual analysis of results indicated increased teacher knowledge of adapting validated reading interventions with CLRPs for ELs with persistent reading difficulties after teacher engagement in online DBI/CBM + CLRP professional development. However, a functional relation could not be determined due to the study ending before all participants completed the five structured online professional development components. Teachers' performances on the baseline planning vignette knowledge probes indicated some variability, with low to moderate levels of teacher knowledge of adapting validated reading interventions with CLRPs for ELs. After examining teachers' responses to questions within the baseline planning vignette knowledge probes, teachers' low to moderate level of knowledge before intervention may be attributed to teachers having a preexisting understanding of schools' multi-level frameworks (e.g., MTSS, RTI) to support ELs' academic needs but not a clear understanding of how to individualize instruction when ELs demonstrate minimal progress (Thorius & Sullivan, 2013; Wagner et al., 2005).

During intervention, Harper and Riley's knowledge slightly increased as they were exposed to online DBI/CBM + CLRP professional development components (see Figure 4). Harper and Riley's most evident increase in knowledge was displayed after the second professional development component (i.e., IRIS Intensive Intervention Part 2 Learning Module). This indicates the potential promise of the effectiveness of the intensive intervention online learning modules recommended by Lemons et al. (2017) to improve teacher knowledge on the essential components of DBI (see Figure 2 for a description of the online learning modules). Although Harper's performance on the planning vignette knowledge probe steadily increased throughout intervention, Riley's data indicated a stable, moderate trend with a slight decrease in performance after the fifth and final asynchronous CLRP professional development component. While both teachers indicated they spent the provided completion time on the final asynchronous CLRP professional development component, Riley's decrease in knowledge might have stemmed from completing the activity one day after the previous component and not receiving the primary's researchers email with targeted instructional feedback on the previous professional development component. It is essential to note that Riley was provided with instructional feedback on previous knowledge probes, and the feedback did not seem to influence Riley's performance. For example, when Riley displayed low knowledge growth in making quantitative changes (e.g., increasing session length) to change the intensity of the reading intervention for the EL, instructional feedback was provided targeting Fuchs et al. (2017) *Taxonomy of Intervention Intensity* to help guide the decision-making process to adapt the reading intervention to better meet individual students' needs. This instructional feedback led to several follow-up email exchanges on the difficulties of special education teachers to make quantitative adaptations, such as increasing the session length, to interventions within special education resource classrooms. Riley noted that she could not intensify the session length, frequency of intervention, or size of her grouping because of the school's schedule and the number of students with disabilities who require literacy resource instruction. Despite the instructional feedback and more in-depth follow-up emails on making quantitative changes to adapt reading interventions to target ELs' individual needs, these changes remained absent on Riley's following knowledge probes. This suggests Riley may have understood the need to make quantitative changes to help individualize reading instruction for ELs; however, Riley made instructional decisions based upon her own classroom experience and her school's contextual factors. Thus, this could explain why Riley’s performance on the planning vignette knowledge probes remained at a stable level after DBI/CBM professional development components.

Overall, Harper and Riley’s performances on the planning vignette knowledge probes indicated increased knowledge of DBI and CBM to intensify and individualize instruction for ELs. However, more data are needed to determine the effect of online DBI/CBM + CLRP professional development on teachers’ knowledge of adapting validated reading interventions with CLRPs for ELs with persistent reading difficulties. This data will provide additional evidence of the effectiveness of online DBI/CBM + CLRP professional development on teachers’ knowledge of integrating practices reflective of ELs’ cultural, linguistic, and literacy experiences with validated reading interventions.

In addition to the knowledge growth observed on teachers’ planning vignette knowledge probes, teachers’ pre- and post-DBI/CBM + CLRP practice assessment also indicated improved teacher knowledge of DBI/CBM and CLRP after engagement in online DBI/CBM + CLRP professional development. Harper’s percentage correct on her post-assessment after intervention increased by 50%, and Riley displayed a 74% increase between her pre- and post-assessments. These significant knowledge gains illustrate the effectiveness of online DBI/CBM + CLRP professional development to provide teachers with the foundational knowledge of DBI/CBM and CLRP to adapt validated reading interventions with CLRP; however, the large differences in percentages correct on teachers’ practice assessment scores compared to smaller and more variability percentages correct on baseline and intervention planning vignette knowledge probes suggests teachers need additional support to apply knowledge gained from the professional development to actual implementation of practices. These results support similar findings that without external support to help teachers make data-based instructional decisions for instructional adaptations, it remains a challenge for teachers to adapt and individualize interventions for students with persistent learning difficulties (Stecker et al., 2005).

Finally, Tau-*U* effect sizes were calculated to measure the magnitude and direction of change on teachers' percentage correct on the planning vignette knowledge probes between and within phases. The Tau-*U* effect sizes for Harper and Riley's percentage correct on planning vignette knowledge probes ranged from 0.85 to 1, with a very large omnibus effect size of 0.92 (CI95 = [0.32, 1]). This strong effect size may support the credibility of the professional development on increased teacher knowledge; however, it does not replace visual analysis. The study's results should be interpreted upon careful examination of graphed data and the fact that a functional relation was not established.

Online DBI/CBM + CLRP Professional Development Knowledge Maintenance

To determine the extent to which online DBI/CBM + CLRP professional development supported teachers in maintaining their level of knowledge of data-driven instructional reading adaptations for ELs with persistent reading difficulties, Harper was provided a new planning vignette and knowledge probe approximately one month after she finished the professional development training. During that one month, Harper had no contact with me and was not provided with any additional researcher support; however, a benefit of online professional development was Harper could easily access the online learning modules and professional development resources through the internet (Dede, 2006).

On Harper's maintenance data, Harper displayed a 70% correct on the planning vignette knowledge probe. This was a slight decrease from her final knowledge probe collected during intervention at 90% correct. However, her performance remained at a moderate level with her mean during intervention (M = 76%). There were large disparities found on Harper's completion times for the knowledge probes between intervention and maintenance (see Table 2). Additionally, Harper stopped viewing the knowledge probe several more times during maintenance than intervention. This could suggest Harper viewed professional development resources while completing the maintenance knowledge probe to boost her knowledge on concepts she may have forgotten after professional development ended. This reinforces research that found one advantage of online professional development is the accessibility of resources that are not easily obtainable (Dede, 2006; Strother, 2002). However, this cannot be determined due to back-end data not identifying other pages users viewed outside of the Canvas platform.

After examining Harper's responses on the maintenance knowledge probe, Harper adapted the reading intervention with practices supportive of ELs' linguistic experiences but displayed a slight decrease in knowledge of intensifying and individualizing interventions through the DBI process. Given that only one maintenance planning vignette knowledge probe was collected, more data are needed to provide a clearer understanding of the extent to which Harper maintained her level of knowledge of DBI/CBM to make data-driven instructional reading adaptations for ELs after online DBI/CBM + CLRP professional development had ended.

Online DBI/CBM + CLRP Professional Development Social Significance

The results of Harper and Riley's social validity questionnaires showed positive outcomes of the online DBI/CBM + CLRP professional development to support teachers' knowledge of integrating validated reading interventions with CLRPs for ELs with persistent reading difficulties. Both teachers indicated that they strongly agreed that the professional development provided strategies that can be easily integrated into instruction and could be used in the future. These perspectives are critical given this study did not examine teachers' implementation of DBI/CBM and CLRP to adapt interventions outside of the planning vignette knowledge probes. Harper, in particular, commented that she was able to use the strategies to help identify a student in her classroom in need of intensive intervention.

In addition, Harper and Riley provided high ratings for the appropriateness and feasibility of the professional development. Both teachers indicated they agreed to strongly agreed that they enjoyed participating in DBI/CBM + CLRP professional development, and it was provided in a reasonable time to support their learning. These high ratings verify research investigating the benefits of online professional development and its flexibility for teachers to manage work and home life (Davis, 2009; Vrasidas & Glass, 2004).

When gathering teachers' perspectives on the appropriateness of online DBI/CBM + CLRP professional development to increase teacher knowledge in DBI/CBM frameworks, Harper strongly agreed that the professional development improved her knowledge. Harper shared, "I knew a small amount of intervention going into the study but wasn't familiar with DBI. The training modules helped me understand how intervention should look and run within a school setting." On the other hand, Riley indicated a "neutral" rating for increased knowledge of DBI/CBM frameworks. This again may be attributed to Riley's educational training in special education and six years of teaching specialized instruction for students with disabilities. Riley's insights offer valuable information for future training to help schools and special education teachers understand how the DBI process can be implemented within special education programs and overcome barriers to DBI implementation.

When teachers were asked to rate the appropriateness of the professional development to improve teacher knowledge of validated reading practices for ELs, Harper provided a rating of "strongly agree," and Riley indicated a rating of "agree." These ratings were evident in differences between teachers' responses on their baseline and intervention planning vignette knowledge probes. For example, during baseline, teachers displayed a difficult time stating a validated reading intervention to support an ELs' identified reading need within the planning vignette. Teachers would often reiterate that the EL needed instruction in the area of reading weakness (e.g., reading fluency); however, most of the time, teachers did not state a specific validated reading intervention to support the reading need. After teachers were exposed to websites in the professional development that provided validated reading interventions for ELs (i.e., What Works Clearinghouse [https://ies.ed.gov/ncee/wwc/], IRIS Center Resource Locator [https://iris.peabody.vanderbilt.edu/resources/iris-resource-locator], and Best Evidence Encyclopedia [https://bestevidence.org/], teachers began providing specific interventions or practices with evidence supporting their effectiveness for ELs. For instance, Repeated Reading and Enhanced Proactive Reading were interventions or practices teachers stated during intervention. In addition, teachers stated intervention or practices such as explicit instruction and Corrective Reading that had evidence supporting its effectiveness in the area of need for students and then integrated CLRPs into intervention adaptions to reflect ELs' cultural, linguistic, and literacy experiences.

On that statement that asked teachers to rate the appropriateness of the professional development to improve teacher knowledge to integrate CLRP into intervention for ELs, Harper provided a rating of "strongly agree," and Riley provided a rating of "agree." Although Riley's rating was not reflected on her performance on the planning vignette knowledge probes, Riley's increased knowledge of CLRP was demonstrated on her post-DBI/CBM + CLRP practice assessment. Therefore, Riley may have increased her knowledge of CLRPs but needs additional coaching or training to apply the knowledge gained into classroom practice. This finding supports previous research on the importance of sustained duration of professional development for lasting changes in teacher practice and significant impacts on student outcomes (Babinski et al., 2018, Darling-Hammond et al., 2017; Yoon et al., 2007).

Outcome Themes

DBI Teacher Knowledge

This study extended the work of Gesel et al. (2021) to examine a DBI-related professional development on teachers' knowledge of intensive intervention to adapt validated reading interventions with CLRPs for ELs with persistent learning difficulties without intensive researcher support. This study served as a preliminary study to be evaluated and scaled up to increase larger numbers of K-12 teachers' knowledge of reading instruction and assessment that are supportive of ELs' cultural, linguistic, and literacy experiences. The study's findings revealed several critical themes on teachers' knowledge of DBI that lays the groundwork for future online DBI/CBM + CLRP professional development. First, teachers' baseline data indicated that teachers had a good understanding of a multi-level framework that combines instruction and assessment to maximize student achievement and support students' academic, behavioral, and social-emotional needs (Center on Multi-Tiered System of Supports, 2020). This is critical given DBI has been found to be the most effective in schools with strong Tier 1 and Tier 2 instruction (Lemons et al., 2017). Furthermore, Taylor, who just recently graduated with a bachelor's degree in Elementary Education (K-6), displayed the highest mean across baseline knowledge probes than teachers who had several years of teaching experiences ahead of her. This suggests that teacher preparation programs are now preparing preservice teachers with the knowledge and skills to teach within a multi-level framework and provide the most current instructional practices to improve student achievement (Slanda & Little, 2020).

Teachers’ demonstrated strengths in DBI/CBM before the start of intervention were (a) an awareness of progress monitoring, (b) developing hypotheses on the student need, and (c) collecting diagnostic data. Areas of teacher growth in baseline included (a) stating validated reading interventions, (b) determining a clear progress monitoring plan that outlines how instruction and assessment will be provided, and (c) adapting interventions when ELs displayed inadequate reading growth. After online DBI/CBM + CLRP professional development ended, teachers demonstrated an increase in knowledge when (a) determining validated reading interventions for ELs and (b) identifying appropriate CBMs for progress monitoring. Continued areas of teacher growth were found within teachers’ responses to (a) developing a progress monitoring plan to assess students’ responsiveness to validated reading intervention and (b) adapting the intervention to better meet ELs’ individual needs. More specifically, teachers’ performances on the planning vignette knowledge probes indicated teachers were often vague when they developed their progressing monitoring plan and did not state (a) the frequency of intervention, (b) session length, (c) group size, (d) student goal, or (e) how often progress monitoring would occur. Additionally, when teachers made adaptations to the intervention, they rarely provided specific qualitative changes (e.g., changing the delivery of instructional content, adjusting teacher feedback, changing how students respond to intervention) in addition to quantitative changes (e.g., increasing session length) to better meet ELs’ cultural, linguistic, and literacy experiences.

Overall, the analysis of teachers’ responses on their planning vignette knowledge probes closely aligns with previous research suggesting without researcher support helping teachers guide the decision-making process to adapt validated reading interventions, it remains challenging for teachers to intensify and individualize instruction to meet the needs of individual students (Stecker et al., 2005). In agreement with Gesel et al. (2021), a continued aim for DBI-related professional development research is to investigate how to provide the support necessary within teachers' instructional setting to change teacher practices without continual researcher support. For online DBI/CBM + CLRP professional development, embedding additional professional development approaches that might help translate knowledge into practice is vital to ensure the integration of CLRPs into validated reading interventions and improve the reading outcomes of ELs with persistent reading difficulties.

Culturally and Linguistically Responsive Practice Adaptions

This study broadened work completed by Linan-Thompson et al. (2018) to empirically examine the extent to which teachers combined validated reading interventions with CLRPs for ELs experiencing reading difficulties. Before intervention, teachers' performances on planning vignette knowledge probes indicated they had limited knowledge of ELs' cultural, linguistic, or literacy experiences and the impact that they may have on instruction (Abedi, 2006; Artiles & Klingner, 2006; Campbell et al., 1993; Figueroa & Newsome, 2006). In addition, teachers' responses on the pre-DBI/CBM + CLRP practice assessments showed teachers were unclear on how CLRPs differ from generally good teaching practices. For example, one teacher stated, "know your students," but did not connect why this is important for ELs who may come from homes where the cultures celebrated differ from their teachers and peers (Orosco, 2010).

After teachers engaged in online CLRP professional development components, Harper's responses on her planning vignette knowledge probes indicated increased awareness of adapting intervention with CLRPs. Specifically, Harper made qualitative changes to better align reading instruction with ELs' linguistic experiences. For example, she incorporated explicit instruction in letters and sounds that differed between English and other native languages. She also focused on using cognates to display how words in two languages can share a similar meaning, spelling, and pronunciation. Harper became more aware of how differences in English and native languages may hinder ELs' attainment of beginning reading skills (August & Shanahan, 2006; Cummins, 2007). On the other hand, Riley's performance on her knowledge probes after CLRP professional development components displayed little knowledge growth on adapting validated reading interventions with CLRPs for ELs. After the two CLRP professional development components, Riley provided responses that indicated she would adapt instruction to provide instruction in areas of need; however, she did not describe how she would modify the intervention to make it more culturally and linguistically responsive.

The results of Harper and Riley's performance on CLRP components of online DBI/CBM + CLRP professional development suggest teachers may need continued training to adapt interventions with CLRPs, particularly in the cultural element of CLRP. This added level of professional development is similar to research completed by Babinski et al. (2018), Choi and Morrison (2014), and Voltz et al. (2003), who found increased teacher awareness of cultural diversity within instruction when professional development provided in-person or through a hybrid method embedded on-site instructional coaching and extended planning opportunities with colleagues. Therefore, the next phase of online DBI/CBM + CLRP professional development is to examine how to embed these constructs within asynchronous learning opportunities.

Online Teacher Professional Development

Over the last several years, online professional development has emerged as an alternative method to provide instructional content to teachers through a virtual platform (Dash et al., 2012; Vrasidas & Glass, 2004). Due to this study taking place during the Covid-19 global pandemic, online professional development was essential to provide teachers with learning opportunities to advance their knowledge and gain new teaching practices and skills for ELs. All teacher participants expressed interest in the study for their personal growth and expressed excitement to participate virtually (Hill, 2009). One concern that did emerge among the teachers was the requirement for the one-on-one synchronous booster sessions. Two out of the three teachers expressed apprehension in joining the sessions due to the time constraint it may provide (Park & Bonk, 2007). In particular, one teacher commented she was worried about the time commitment given the demands of her work schedule and teaching in a hybrid setting. This suggests teachers may be more open to online professional development without the strain of meeting with teachers in real-time, furthering support the flexibility online professional development provides to teachers (Davis, 2009).

Given teachers' reluctance to engage in synchronous online learning activities, the HPL theory (Bransford et al., 1999) and the Community of Inquiry framework (Garrison et al., 2000) were essential in establishing a learning community within online DBI/CBM + CLRP professional development. The HPL theory and the Community of Inquiry's framework have several overlapping components that helped develop an online professional development to support improved teacher outcomes. For example, the Community of Inquiry's three core elements (i.e., social presence, cognitive presence, and teaching presence) in the asynchronous PowerPoint© recording sessions were used to strengthen instruction provided in the online learning module's that included the HPL theory's components (i.e., learner centeredness, knowledge centeredness, assessment centeredness, and community-centered). Together, these learning frameworks laid the foundation to develop an online professional development framework to build a learning community to support increased teacher knowledge.

Another theme that surfaced during online DBI/CBM + CLRP professional development was the length of time it took teachers to complete each of the five components of the training. The recommended time provided to teachers to complete the professional development components was within one week of each other to help reinforce content from one online DBI/CBM + CLRP professional development component to the next. However, because it was an online learning opportunity, participants were given the flexibility to manage the components between their work and home schedules (Davis, 2009; Vrasidas & Glass, 2004). Teachers' completion times to complete each online DBI/CBM + CLRP professional development ranged from one to approximately 50 days (see Figure 3). With the exception of Riley's fifth and final intervention data point, there appeared to be no clear connection that the number of days that passed between teachers' completion of professional development components impacted their knowledge gained from the previous component. As mentioned previously, Riley's decrease in performance on her final knowledge probe may be attributed to not receiving my instructional feedback or felt rushed to complete the component as the study's timeline was drawing to an end.

Despite providing several months for Riley and Taylor to complete all DBI/CBM + CLRP professional development components, Riley and Taylor's timelines to complete the activities suggest that it might be beneficial for developers of asynchronous learning opportunities to integrate time management strategies within online professional development. For example, having teachers create a schedule when they will complete each professional development activity might help teachers manage their home and work schedules and allow for full engagement to maximize learning.

Specific Contributions of the Study

This study contributes to the DBI/CBM, CLRP, and teacher professional development literature base in several ways. First, due to the limited DBI/CBM professional development studies without intensive researcher support guiding the decision-making process for intensifying and individualizing interventions, this study provides an online DBI/CBM professional development that more closely aligns with support given within school contexts to determine the potential sustainability of DBI implementation in school settings. This study specifically used learning modules recommended by Lemons et al. (2017) to familiarize teachers with the core elements of DBI and examining progress monitoring and diagnostic data to inform instructional decisions for intensifying intervention. Additionally, this study was one of the first to investigate Fuchs et al. (2017) *Taxonomy of Intervention Intensity* to determine if it provides the structure to assist teachers in selecting a validated Tier 2 reading intervention and making systematic instructional adaptations to meet ELs' individual needs. This study's findings show promising results of the online learning modules and resources to provide foundational knowledge to train teachers and schools in the DBI process. In addition, this study offers critical details into teachers' awareness of intensive intervention within multi-level frameworks and special education services to design future professional development to target barriers to DBI implementation within the whole school setting.

Second, this study contributes to the CLRP literature base by providing empirical data on teachers' integration of validated reading interventions with CLRPs. Findings from this study suggest teachers gained awareness of CLRP after participation in professional development; however, integrating practices reflective of ELs' cultural, linguistic, and literacy experiences within validated reading intervention remained difficult. As the United States' student population continues to become increasingly diverse, professional development and strong teacher preparation programs are needed to sustain pedagogies that make learning relevant and combine best practices to advance outcomes of ELs.

Third, this study provides an online professional development framework that has the potential to scale up effective strategies to improve the reading outcomes of ELs with persistent learning difficulties. Preliminary results of online DBI/CBM + CLRP professional development provide promising results of increased teacher knowledge of DBI/CBM frameworks that lay the foundation for teachers to intensify and individualize validated reading interventions with CLRPs for ELs with reading difficulties. Online DBI/CBM + CLRP professional development may provide the field with instructional content that could be used at the college, district, school, or classroom level to provide training to address the reading needs of ELs. Furthermore, online DBI/CBM + CLRP professional development offers a structure that could be adapted to address the academic, behavioral, and social-emotional needs of all students who come from culturally and linguistically diverse backgrounds.

Limitations

This study was not without limitations. First, despite trying to provide maximal time for teachers to complete online DBI/CBM + CLRP professional development components, one teacher could not complete all the professional development components. Therefore, a functional relation could not be determined between online DBI/CBM + CLRP professional development and teacher knowledge. Additionally, only three teacher participants took part in this study. The low number of teachers makes it difficult to generalize the results to the larger K-12 teacher population.

Second, although the planning vignette knowledge probes gathered insights into how teachers would make instructional adaptations to validated reading interventions for ELs, this study did not examine teachers' actual implementation of those instructional changes in practice. For online DBI/CBM + CLRP professional development to be effective, it is critical to understand how teachers apply the knowledge gained from the training to the implementation of practices in the classroom.

Third, to reduce testing fatigue of teacher participants and provide maximal time for the professional development, only three baseline planning vignettes knowledge probes were administered to Harper, Riley, and Taylor. In addition, Riley and Taylor were administered only one additional baseline planning vignette and knowledge probe immediately before they entered intervention to verify their prior knowledge of DBI/CBM and CLRP before exposure to the online professional development components. Guidelines provided by Gast et al. (2018) suggest introducing the intervention when there is a demonstration of acceptable stability in level and trend. Given teachers' baseline scores displayed variability, administering additional baseline planning vignettes and knowledge probes may have provided further evidence to verify teachers' prior knowledge of DBI/CBM and CLRP and the effect of online DBI/CBM + CLRP professional development on teachers' knowledge.

Fourth, there were limitations relating to the procedural fidelity of the online professional development components. Due to teachers accessing the online learning modules through websites outside of Canvas, this study could not document teachers' engagement with the resources nor capture if they viewed the asynchronous DBI/CBM and CLRP recording sessions in their entirety. Teachers did submit an online completion statement for each online learning activity; however, it was a self-reported measure and should be interpreted with that in mind. Furthermore, teachers provided significantly less time spent on three of the five professional development components compared to the estimated times provided. Teachers may not have engaged fully in the professional development components, impacting the validity of online DBI/CBM + CLRP professional development.

Fifth, Harper and Riley’s performances on the pre- and post-DBI/CBM + CLRP practice assessment displayed significant knowledge gains after participation in online DBI/CBM + CLRP professional development. However, the results were not compared to a control group to determine the extent to which online DBI/CBM + CLRP professional development increased teacher knowledge of instructional reading adaptations for ELs outside of external variables (e.g., other school-level professional development).

Sixth, there are concerns relating to the reliability and validity of the planning vignette knowledge probes. The planning vignette and knowledge probes were developed over the summer, prior to the start of the 2020-2021 academic school and the start of the study. The planning vignettes and knowledge probes were designed I learned that most K-12 public schools would provide instruction virtually or through a hybrid model due to the Covid-19 global pandemic. With the uncertainty of what instruction would look like, coupled with the extra stress and responsibilities added to teachers’ workloads and home lives, the planning vignettes and knowledge probes were developed to try to capture teachers’ instructional adaptations without implementing new practices and processes in their instruction in an already uncertain academic school year.

Due to the planning vignettes and knowledge probe development over the summer, I was only able to field test 10 of the 15 planning vignettes and knowledge probes with doctoral students and professors within the University’s Department of Special Education. I asked the doctoral students and professors to provide information regarding (a) clarity around the wording of questions, (b) example responses, and (c) reported times of completion. I gained valuable input from the students and professors; however, their knowledge and expertise in intensive intervention and teaching ELs may differ from inservice teachers. Thus, not displaying an accurate representation of how inservice teachers might respond.

Despite attempts to receive feedback from inservice general and special education teachers, I could not obtain the planning vignette and knowledge probes from teachers before starting the study. Furthermore, although the Department of Special Education professors had expertise in DBI and teaching reading to diverse learners, I did not receive planning vignettes and knowledge probes back from professors with expertise in teaching reading to ELs. This feedback would have provided additional reliability and validity of the planning vignettes and knowledge probes for questions regarding instructional adaptations for ELs.

Despite not field testing the planning vignette knowledge probes over time across K-12 general and special education teachers for test-retest reliability (Kottner et al., 2011), teachers' performances on the same knowledge probes within a phase indicated similar scores. For example, two teachers received Luis's planning vignette and knowledge probes in baseline. One teacher received a 60% correct, the other received 50% correct. Additionally, teachers' percentages correct on planning vignette knowledge probes that assessed the same reading component within the same study phase showed similar results. For instance, Jennifer and Lee's planning vignettes targeted phonemic awareness skills. One teacher received Jennifer's knowledge probe in baseline and received a 20% correct, while another teacher received Lee's knowledge probe and also received a 20% correct. These scores may help verify the reliability of the planning vignette and knowledge probes until test-retest correlations can be made.

Another threat to the validity of the planning vignette knowledge probes and online DBI/CBM + CLRP professional development was Canvas could not reveal if participants used resources outside of the training to respond to the knowledge probes. While it could provide information if teachers stopped viewing the knowledge probe page and how long, it could not report what websites teachers navigated to. After careful analysis of teachers' completion times on the planning vignette knowledge probes gathered through the back-end data, there was no clear evidence suggesting teachers who stopped viewing the knowledge probe page or spent longer completing the probe performed higher. For example, back-end data collected from one teacher during intervention indicated she spent 24 minutes on one vignette and received a 20% correct. She then spent 42 minutes on another and received 60% correct.

Lastly, to reduce potential scoring bias, teacher names were removed from all participants' completed assessment probes while IRR was calculated. While this did blind the secondary observer to participants' names, the length of time it took participants to complete the assessment probes exposed the secondary observer to when participants completed the probes during the study (i.e., baseline, intervention, maintenance). Thus, there was the potential for researcher bias in scoring the study's primary outcome measure.

Suggestions for Future Research

Findings from this study lead to several recommendations for future research to scale up online DBI/CBM + CLRP professional development and improve instructional practices for ELs with persistent reading difficulties in the United States' K-12 public school system. First, future research should examine if online DBI/CBM + CLRP professional development increases teacher knowledge for larger numbers of K-12 teachers responsible for instruction and assessment of ELs. This will provide further replication of effects across K-12 teachers to determine the effectiveness of online DBI/CBM + CLRP professional development on teachers' knowledge of adapting validated reading interventions with CLRPs for ELs through DBI.

Second, this study did not examine the effect of online DBI/CBM + CLRLP professional development on teachers' instructional decisions to adapt validated reading interventions with CLRPs outside of the planning vignettes and knowledge probes. Future research should investigate the effects of online DBI/CBM + CLRP professional development on K-12 teachers' implementation of practices within their classroom setting. Studies investigating the impact of teachers' instructional adaptations through student curriculum-based measurement data could begin to examine the association between knowledge gained from online professional development and the application of practices in school settings and the desired goal of improving student reading outcomes.

Third, future studies should examine online DBI/CBM + CLRP professional development specifically focused on K-12 teachers responsible for intensive intervention within special education services. Taking into consideration Riley's responses to her planning vignette knowledge probes, as well as her insights on barriers to making quantitative adaptations to interventions for students with disabilities, more research is needed on DBI/CBM + CLRP professional development to determine the extent to which professional development not only increases teacher knowledge but also provides instructional methods that are feasible in all classroom settings. This substantiates Gesel et al. (2021) recommendations, which found future research is needed examining DBI professional development with teachers who provide instruction for students with broader ranges of disabilities to address barriers to DBI implementation within teacher practices.

Fourth, the findings of this study suggest additional instructional approaches are needed within online DBI/CBM + CLRP professional development to support teachers in adapting validated reading interventions with practices that reflect ELs' lived experiences, including their cultural, linguistic, and literacy backgrounds. Due to limited studies describing professional development frameworks that increase teachers’ awareness of integrating CLRPs into validated practices and programs for ELs, future research should continue developing and disseminating online professional development approaches that have indicated improved teacher knowledge and skills of teachers of ELs. These contributions to the field will provide multiple training opportunities to increase teachers’ understanding of culturally sustaining pedagogies and provide equitable learning opportunities for ELs.

Finally, to scale up online DBI/CBM + CLRP professional development and sustain equitable learning opportunities for ELs in K-12 public schools, future research should investigate online DBI/CBM + CLRP professional development at the district or school level with administration teams interested in gaining instructional methods to improve reading outcomes of ELs. This line of research could explore additional supports (e.g., coaching [Kretlow & Bartholomew, 2010]) that schools may be able to provide to support the application of practices within classroom instruction (Joyce & Showers, 2002). Future researchers should utilize Lemons and colleague’s (2017) recommendations to help schools adopt a process for successful DBI implementation and improved reading outcomes of ELs. In addition, future researchers investigating the sustainability of practices of online DBI/CBM + CLRP professional development in school settings should apply the National Implementation Research Network’s Implementation Stages (https://nirn.fpg.unc.edu/module-4/topic-1-implementation-stages-overview/what-are-stages) to help build schools’ capacities to implement DBI/CBM and CLRP for the continual academic growth of ELs.

Implications for Practice

Results from this study provide several implications for practice. First, the findings of this study showed online DBI/CBM + CLRP professional development increased general and special education teachers' knowledge of DBI/CBM and CLRP to help make instructional reading adaptions for ELs with persistent reading difficulties. Teachers and schools should consider if their instructional practices within their multi-level frameworks support teachers in meeting the individual reading needs of ELs who come from culturally and linguistically diverse backgrounds. If more robust systems need to be put into place to improve the reading outcomes of ELs with persistent reading difficulties, online DBI/CBM + CLRP professional development has the potential to provide affordable and accessible professional learning opportunities for teachers and schools to build a systematic process to intensify and individualize validated reading interventions for ELs.

Second, teachers' engagement and knowledge outcomes from online DBI/CBM + CLRP professional development provide several implications for research and practice. Given limited research studies providing effective models of online professional development to increase teacher knowledge and skills (Dash et al., 2012; Vrasidas & Glass, 2004), online DBI/CBM + CLRP professional development offers the field insights into the development and theoretical framework it was built upon for researchers to continue to build a strong empirical literature base that provides effective online learning approaches for teachers across the nation. Specifically, teachers' engagement from online DBI/CBM + CLRP professional development suggests positive outcomes of an asynchronous professional development designed with the essential elements of the HPL theory and the Community of Inquiry framework to establish an effective learning environment. Future researchers and practitioners interested in providing asynchronous professional development may want to instill these theoretical frameworks into their training for improved teacher practices and student outcomes.

In addition, the results of online DBI/CBM + CLRP professional development highlights the importance of support systems within online professional development to help teachers transfer and sustain knowledge into changes in practices (Joyce & Showers, 2002). This finding aligns with previous research that indicates professional development should be sustained to have positive and significant effects on student outcomes (Yoon et al., 2007). The next step for researchers is to examine how to incorporate strategies to support ongoing professional development (e.g., supported collaboration, coaching and expert support [Darling-Hammond et al., 2017]) meaningfully in an asynchronous learning environment.

Lastly, there are implications for integrating a CLRP approach into teachers' instructional practices for ELs, particularly ELs with persistent reading difficulties. Previous research has indicated the need to combine EBPs with CLRPs to advance literacy outcomes among ELs, particularly those with learning differences (Linan-Thompson et al., 2018). This study was one of the first to provide professional development training that targeted a research-based process that provides the structure for teachers to systematically individualize validated reading interventions with CLRPs for ELs. The findings of this study found similar results of previous research dating back to the early 1990s that teachers may not be adequately prepared to teach culturally and linguistically diverse students and have limited knowledge of practices supportive of ELs individual experiences (e.g., Campbell et al., 1993; Klingner et al., 2006).

Despite movement to restructure teacher practice and pedagogy in the United States to embrace all students' lived experiences (e.g., culturally relevant pedagogy [Ladson-Billings, 1994], culturally responsive teaching [Gay, 2002], culturally sustaining pedagogy [Paris, 2012]), it appears continued research and professional development opportunities are needed to prepare teachers to work with students who come from culturally and linguistically diverse backgrounds. As online DBI/CBM + CLRP professional development continues to be evaluated and scaled up, it could potentially heighten awareness of a culturally sustaining pedagogy to improve reading outcomes of ELs and the ultimate goal of reducing ELs referrals to special education services for reading disabilities.

Summary

This study evaluated the effects of online DBI/CBM + CLRP professional development on teachers' knowledge of adapting validated reading interventions for ELs with persistent reading difficulties. Overall, results indicated teachers increased their knowledge of DBI and CBM frameworks to adapt validated reading interventions with CLRPs for ELs with persistent reading difficulties. However, a functional relation was not determined due to the study ending before all teachers completed the professional development components. Effects showed that approximately one month after online DBI/CBM + CLRP professional development ended, Harper maintained a higher level of content knowledge of adapting validated reading interventions for ELs than her preexisting knowledge demonstrated in baseline. Although Harper maintained a higher level of knowledge after all researcher support and professional development training was removed, her performance during maintenance indicated a slight decrease from her performance at the very end of the training. Thus, additional support may be needed within online DBI/CBM + CLRP professional development to ensure teachers sustain their level of knowledge to support the successful implementation of practices in the classroom.

Teachers' positive ratings on this study's social validity questionnaire indicated the social acceptance of online DBI/CBM + CLRP professional development to increase teachers' knowledge of instructional reading adaptations for ELs. All teachers agreed they enjoyed participating in the training and strongly agreed that the strategies gained from the professional development could be easily integrated into instruction. Most importantly, teachers strongly agreed they gained strategies that they will apply in the future. Implications of this study may provide teachers and schools across the United States with flexible and affordable online professional development to increase teacher knowledge of a research-based process to systematically intensify and individualize instruction for ELs with persistent learning difficulties. In addition, online DBI/CBM + CLRP professional development could provide teachers and schools a foundation for building culturally sustaining pedagogies and reducing the inequalities many diverse students face within the United States public school system.

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APPENDIX A: TEACHER CONSENT FORM

UNC CHARLOTTE
College of Education

Department of Special Education and Child Development
9201 University City Blvd, Charlotte, NC 28223-0001

Consent to Participate in a Research Study

November 2020

Title of Project: Effects of Online Professional Development on Teachers' Instructional Reading Adaptations for English Learners through a Data-Based Individualization Process
Principal Investigator: Danielle Wysenski, Doctoral Student, University of North Carolina at Charlotte, Department of Special Education and Child Development
Co-Investigators: Kristen Beach and Corinne Kingsbery {*co-investigators are from the University of North Carolina at Charlotte, Department of Special Education and Child Development}*

You are invited to participate in a research study entitled Effects of Online Professional Development on Teachers' Instructional Reading Adaptations for English Learners through a Data-Based Individualization Process. Participation in this research study is voluntary. The information provided is to help you decide whether or not to participate. If you have any questions, please ask.

Important Information You Need to Know

This is a study to examine teachers' knowledge of adapting reading interventions for English learners receiving instruction in schools' Multi-tiered Systems of Support (MTSS) frameworks through a data-based individualization (DBI) and curriculum-based measurement (CBM) process. This study is being conducted by researchers at the University of North Carolina at Charlotte (UNC Charlotte).

We are asking educational practitioners and/or teachers responsible for providing intensive interventions to K-12 students to participate in an online DBI/CBM and a culturally and linguistically responsive practices (CLRP) professional development training. The online training consists of four online learning modules, two 90-minute online asynchronous professional development sessions, and online synchronous professional development booster sessions between the months of November 2020 through February 2021. After completion of the study, you will receive a $125.00 visa gift for your time and contribution to the study.

Please read this form and ask any questions you may have before you decide whether to participate in this research study.

Why are we doing this study?

The purpose of this study is to better understand the impact of an online DBI/CBM + CLRP professional development training on teachers' knowledge of adapting intensive interventions to meet the cultural and linguistic needs of English learners with persistent reading difficulties.

Why are you being asked to be in this research study?

You are being asked to be in this study because you are an educational practitioner and/or teacher responsive for intensive interventions for K-12 students in need of intensive instruction in the area of reading.

What will happen if I take part in this study?

If you choose to participate in this study you will take part in an online professional development opportunity to gain an in-depth knowledge of the DBI/CBM process and CLRP to adapt and intensify reading interventions for ELs with the most persistent reading difficulties. In the study you will participate in the following activities: (a) complete a seven question pre- and post-DBI/CBM + CLRP knowledge assessment; (b) complete four, online DBI/CBM and CLRP learning modules that will all take altogether approximately 315 minutes to complete; (c) watch two 90-minute online asynchronous professional development trainings; (d) participate in online synchronous booster sessions for direct instruction in the DBI/CBM process or CLRP (if needed); and (e) complete a series of planning vignettes and knowledge probes (between 11 to 18 depending on when you enter intervention) where you will demonstrate your knowledge of how to use the DBI/CBM process to adapt and intensify reading interventions for ELs.

All online learning modules were developed by the National Center on Intensive Intervention (NCII, 2020), IRIS Center (2015), and the Collaboration for Effective Educator Development, Accountability and Reform Center (CEEDAR). NCIII, IRIS Center, and CEEDAR are two national technical assistance centers supported by the U.S. Department of Education, Office of Special Education Programs to build the capacity of universities and local education agencies to prepare school personnel to implement evidence-based practices for struggling learners and students with disabilities. Additionally, the modules align with program standards from the Council for the Accreditation of Educator Preparation, Council for Exceptional Children, Interstate Teacher Assessment and Support Consortium, and National Council for Accreditation of Teacher Education. The online asynchronous professional development sessions will reinforce concepts presented in the modules and teach you strategies on how to use the DBI/CBM process to effectively adapt and intensify reading instruction for ELs with intensive support needs.

All activities embedded in the study will take approximately 20 hours to complete spread out over thirteen weeks. First, prior to receiving professional development trainings, you will complete three planning vignettes with related knowledge probes and receive a pre-DBI/CBM + CLRP knowledge assessment. For each knowledge probe and assessment, participants will have three full days from the time it was posted to complete and submit each activity. Then, you will begin the professional development trainings that will be spread out over an 8-week period. Each learning module and asynchronous professional development session will be completed one at a time and participants will have a full week from the time they are posted to complete it. After each learning module or asynchronous professional development session, you will be administered a new planning vignette with knowledge probe to complete in three days. Approximate time to complete each vignette is between 20-30 minutes. Additional one-on-one synchronous booster sessions will be available to participants if you need further instruction and/or have questions over the DBI/CBM process or CLRP throughout the 8-week professional development trainings. Finally, you will take the post-DBI/CBM + CLRP knowledge assessment, followed by three maintenance probes that will be spread out every two weeks after you complete the post knowledge assessment.

All online learning modules, professional development training, planning vignettes, and knowledge assessments will be accessed through Canvas (https://www.instructure.com/canvas/). Canvas is an online learning platform with 12 years of research behind it to ensure a high-quality learning management system to meet the needs of teachers and learners. It is a secure online password protected platform designed to elevate learning through a virtual podium. Prior to the start of the study you will be provided with directions on how to create your Canvas account and log on information to access all study materials. For your time and contribution to the study, you will receive a $125.00 visa gift to support you in purchasing classroom resources and supplies.

What benefits might I experience?

After participation in the study, you will gain an in-depth knowledge of the DBI/CBM process and CLRP to further support you instruction for English learners with persistent reading difficulties in school's MTSS frameworks. During the training, you will be provided with research- and evidence-based programs and strategies that you will be able to continue to apply to your classroom instruction to support higher reading outcomes for English learners.

What risks might I experience?

The risks of participating in the study are minimal. The research team will work diligently to ensure your confidentiality while participating in the study. All individual-level data will be coded and stored on a password protected computer.

How will my information be protected?

The results of all data collected are confidential and will not be attached to your name, demographic information, the school, or the school district in published reports. Once data has been collected, researchers will not keep any identifiable information. Electronic data will be stored on a password protected computer and on UNC Charlotte's instance of google drive and a pseudonym will be used in relation to the data. After three years, all electronic data will be deleted.

How will my information be used after the study is over?

After the study is complete, data will be needed as part of publishing our results in peer-reviewed journals and national and state professional conferences. The data we share will NOT include information that could identify you. Data will not be used as part of your school evaluation and all responses gathered during will be kept confidential. All data collected will be reported with a pseudonym to avoid relating specific responses to individuals.

Study data may be shared with other researchers for use in other studies without asking for your consent again or as may be needed as part of publishing our results. The data we share will NOT include information that could identify you.

We may share your research data with other investigators in future studies without asking for your consent again. The information we share with these other investigators will not contain information that could directly identify you. There still may be a chance that someone could figure out that the information is about you.

Will I receive an incentive for taking part in this study?

You will receive a $125.00 visa gift card for your time and contribution to the study. To receive the stipend, you must complete all activities assigned in the study and complete the series of planning vignettes and knowledge probes. You are encouraged to use the gift card to help support your classroom needs (e.g., student supplies, instructional materials, online learning programs).

What are my rights if I take part in this study?

It is up to you to decide to be in this research study. Participating in this study is voluntary and will not affect your employment status with the school district. Even if you decide to be part of the study now, you may change your mind and stop at any time. You do not have to answer any questions you do not want to answer.

Who can answer my questions about his study and my rights as a participant?

For questions about his research, please contact Danielle Wysenski (dwysensk@uncc.edu) or Kristen Beach, responsible faculty of the project at Kristen.Beach@uncc.edu. If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study with someone other than the researcher(s), please contact the Office of Research Protections and Integrity at 704-687-1871 or uncc-irb@uncc.edu.

Consent to Participate

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you submit your response. You will receive a copy of this document for your records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I understand what the study is about, and my questions so far have been answered. I agree to take part in this study.

____

Signature Date

____

Name & Signature of person obtaining consent Date

APPENDIX B: PLANNING VIGNETTES AND KNOWLEDGE PROBES

Student Profile: Amal

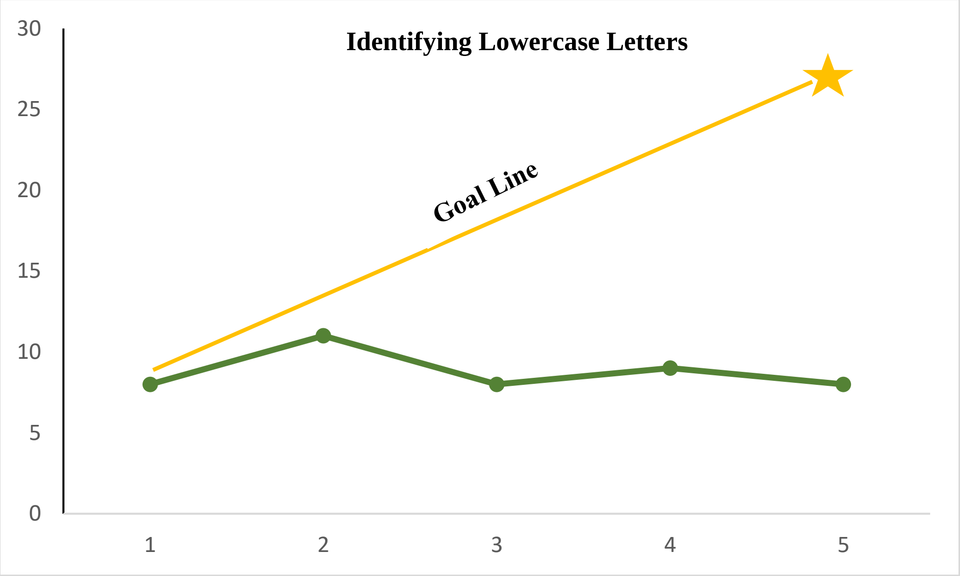
Amal is a 5-year-old male student whose family moved to the United States from Lebanon when Amal was four years old. The family has received some English language instruction; however, Amal, his father, mother, and older sister mostly communicate in Arabic. Amal was enrolled in kindergarten in the fall and started to receive English as a Second Language (ESL) services. His teacher observed that Amal was an outgoing student and liked to interact with his peers but struggled to communicate with others due to his limited English proficiency. His peers often had to ask the teacher to clarify what Amal had said. On the school's beginning of year universal reading screener, Amal was able to identify five lowercase letters and two uppercase letters correctly. In addition, he pronounced 2 out of 21 consonant sounds, 0 out of 5 long vowel sounds, and 1out of 5 short vowel sounds. At this time, students should be able to identify all letters and their corresponding sounds. Amal's teacher decided to refer him to the school's Problem Solving Team for supplemental reading support in alphabet skills and letter sounds. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Amal's reading need.

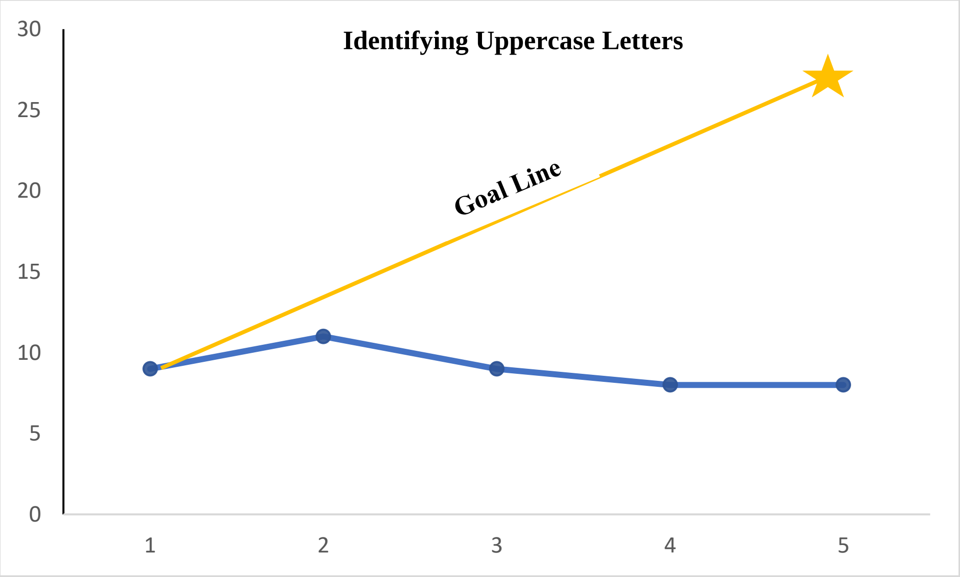
Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

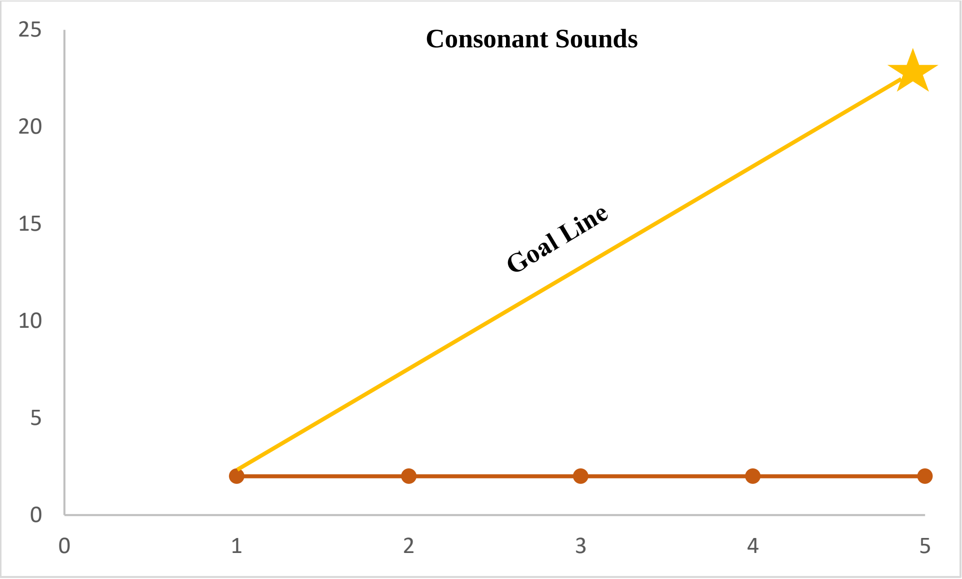
What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

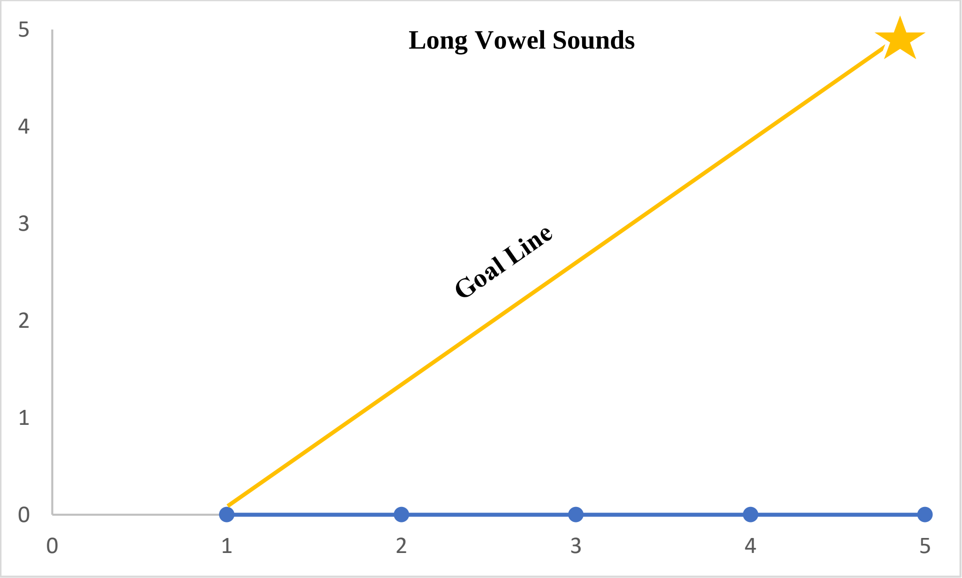
Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

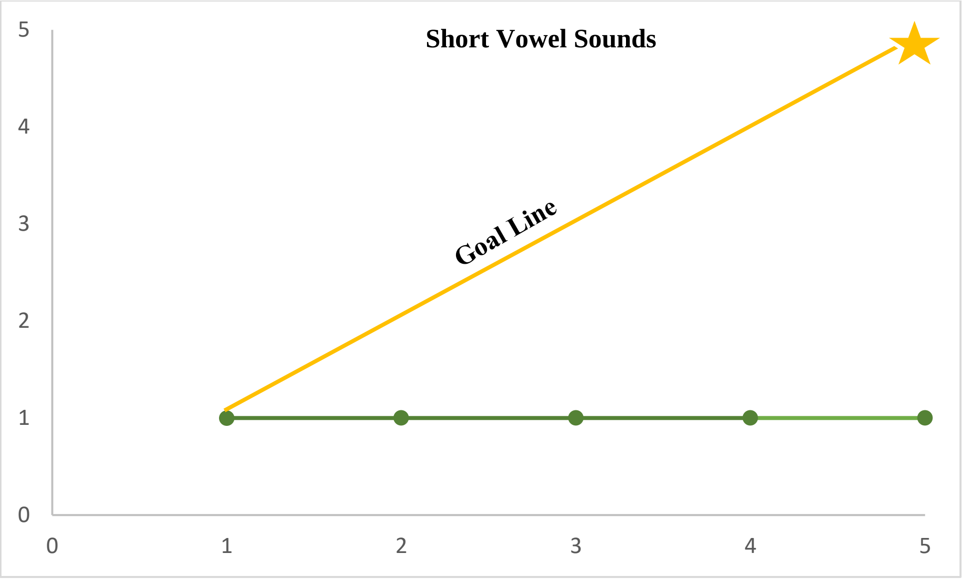
After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Amal was hardly making progressing on his alphabet skills and letter sounds. On average, Amal was identifying 10 lowercase letters and 9 uppercase letters. In addition, he did not make any progress on pronouncing consonant and vowel sounds. At this point in the school year, benchmark scores indicate students should master all letter names and sounds.






Consonant Sounds
Goal Line
25
20
15
10
5
0
0
1
2
3
4
5


Long Vowel Sounds
Goal Line
5
4
3
2
1
0
0
1
2
3
4
5



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Amal’s reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Amal was correctly identifying the same lower- and uppercase letters (i.e., *a*, *b*, *e*, *g*, *j*, *p*, *q*, *r*, *t*, *w*, *A*, *B*, *E*, *G*, *J*, *P*, *Q*, *T*, *W*) and was not progressing on learning new letters.

Based on the background knowledge of Amal provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Diego

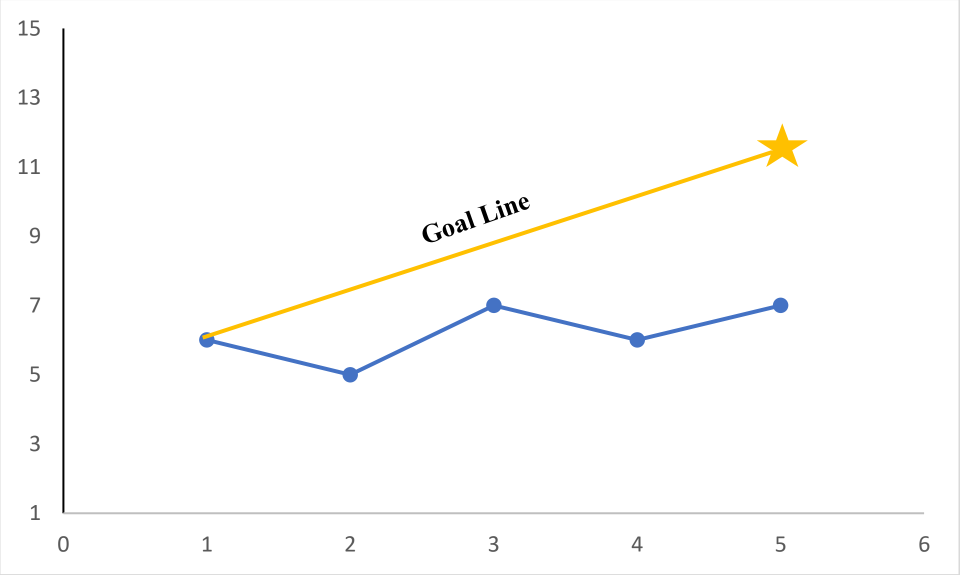
Diego is an 8-year-old Filipino male student in the third grade. Diego’s parents were born in the Philippines but moved to the United States before having children. Diego’s mother and father speak Tagalog, but they have acquired some English language proficiency since moving to the United States. Diego grew up speaking Tagalog and English in the home environment. According to the Home Language Survey (HLS) Diego’s parents completed when he was enrolled in kindergarten, Diego qualified for English as a Second Language Services (ESL). Diego has always been a hard worker in the classroom. He completes all assigned work and received passing scores on his kindergarten through second-grade summative assessments. Starting in the third grade, Diego started displaying weaknesses in reading comprehension. His teacher noticed Diego could orally recall details in a passage; however, could answer comprehension questions or clearly state the passage’s main idea. Diego’s teacher administered a reading comprehension assessment where Diego had to read a passage and circle the word that best fits the passage’s meaning. On Diego’s assessment, he was able to circle 6 correct words, with a target score of 11. Diego’s teacher decided to refer him to the school’s Problem Solving Team for supplemental reading support in comprehension. Using the Data-Based Individualization (DBI) process, complete the next steps the school’s Problem Solving Team should take to support Diego’s reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student’s reading need.

What additional resources, if any, did you use to locate your reading intervention? (State N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student’s instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Diego was slowly progressing on his reading comprehension skills. On average, Diego was able to circle 7 correct words on his reading comprehension assessments. At this point in the school year, benchmark scores indicate students should be able to correctly identify 11 words in a given passage.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Diego's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Diego was able to read all the words on the reading assessments but could not state the definitions of the majority of the words. Additionally, Diego could not provide insight or draw connections to passages and texts provided to him.

Based on the background knowledge of Diego provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student's reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Elena

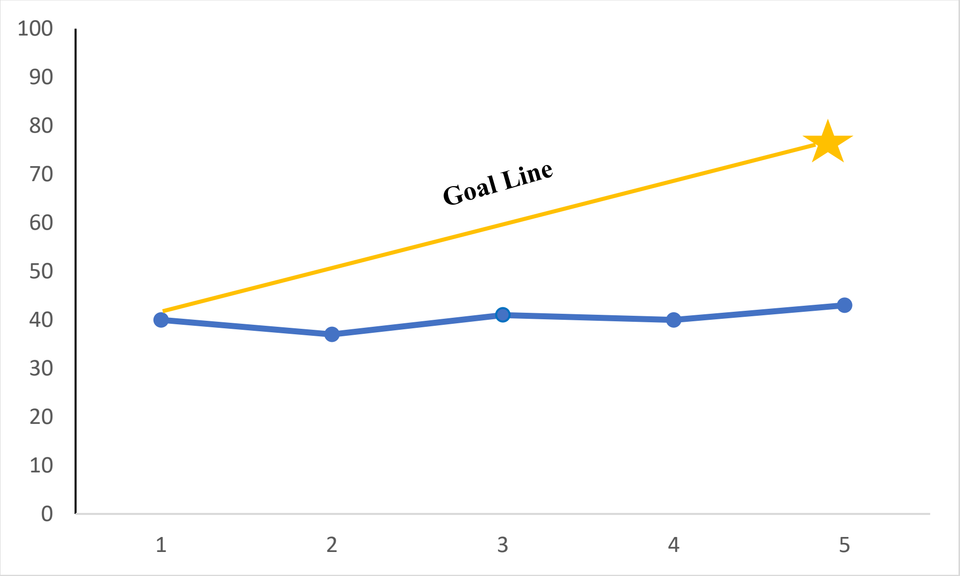
Elena is a 7-year-old Hispanic female student in the second grade. She lives with her father, mother, grandmother, and one older brother. Elena was born in the United States; however, her primary home language is Spanish. Her parents speak some English; however, most of her English language acquisition is provided in the school setting. Elena received English as a Second Language (ESL) since she enrolled in kindergarten and continues to receive language instruction from an ESL teacher. At school, Elena is quiet and respectful. She attempts all classroom assignments but rarely becomes engaged in classroom discussions or raises her hand to participate. Her second-grade teacher identified her as at risk for reading difficulties at the beginning of the school year. On Elena's beginning of year reading assessment, Elena could sound out consonant-vowel-consonant (CVC) words, words that contain consonant blends, words that contain long vowels, and words containing consonant and vowel digraphs and diphthongs. Areas of concern her teacher gathered from the assessment were that Elena would consistently pause between words when she read and had difficulty recalling reading passages' details. Elena's teacher decided to refer her to the school's Problem Solving Team for supplemental reading support in reading fluency and comprehension. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Elena's reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student’s reading need.

What additional resources, if any, did you use to locate your reading intervention? (State N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student’s instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Elena was slowly progressing on her reading fluency skills. She was reading on average 40 words per minute with an accuracy rate of 95% on her assessments. At this point in the school year, benchmark scores indicate students should be reading 72 words per minute with an accuracy rate of 95%. Elena also continued to state one to two details from the passage and could not determine the passages' main idea.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Elena's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Elena was stopping at words that she did not know the definitions to and did not participate in discussions of texts that she found difficult to understand.

Based on the background knowledge of Elena provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student’s reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Jennifer

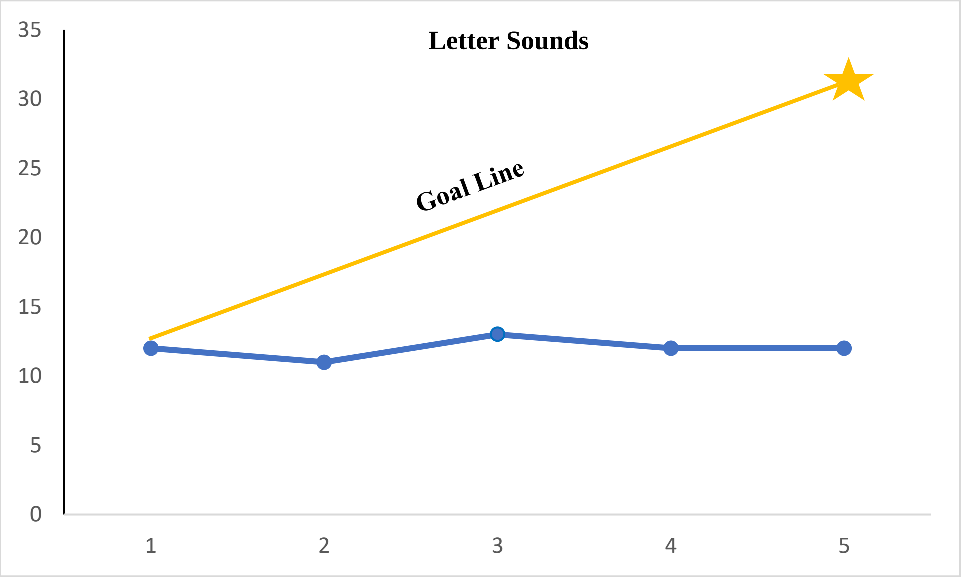
Jennifer is a 6-year-old Hispanic female student in the first grade. Originally from Mexico City, her family moved to the United States when Jennifer was three years old. Jennifer, her mom, and dad all speak Spanish; however, local community members have provided some English instruction to the family to adjust to living in the United States. When Jennifer was enrolled in kindergarten, her Home Language Survey (HLS) indicated she would receive English as a Second Language (ESL). In Jennifer’s ESL sessions, she engages with her teacher and attempts all work; however, she struggles to pick up on presented concepts and needs visuals to support her English language acquisition. In Jennifer’s first grade classroom, Jennifer tends to shy away from others and rarely communicate with her teacher or peers. She is also hesitant to participate in group activities or attempt work independently. On her beginning of the year universal screener in reading, she was able to identify all lower- and uppercase letters. Still, she was not able to correctly identify the sounds of the letters. In addition, in the section that assessed phonemic awareness skills, Jennifer could not segment sounds in words that were orally provided to her. For example, when her teacher instructed her to pronounce individual sounds in the word *egg*, Jennifer restated the word “egg.” At this point in the school year, Jennifer should know all letter sounds and state up to 20 sounds per minute when given three- to four-letter words. Her teacher also noted Jennifer would not read any printed words or text when provided to her. Jennifer’s teacher decided to refer her to the school’s Problem Solving Team for supplemental reading support in letter sounds and phonemic awareness skills. Using the Data-Based Individualization (DBI) process, complete the next steps the school’s Problem Solving Team should take to support Jennifer’s reading need.

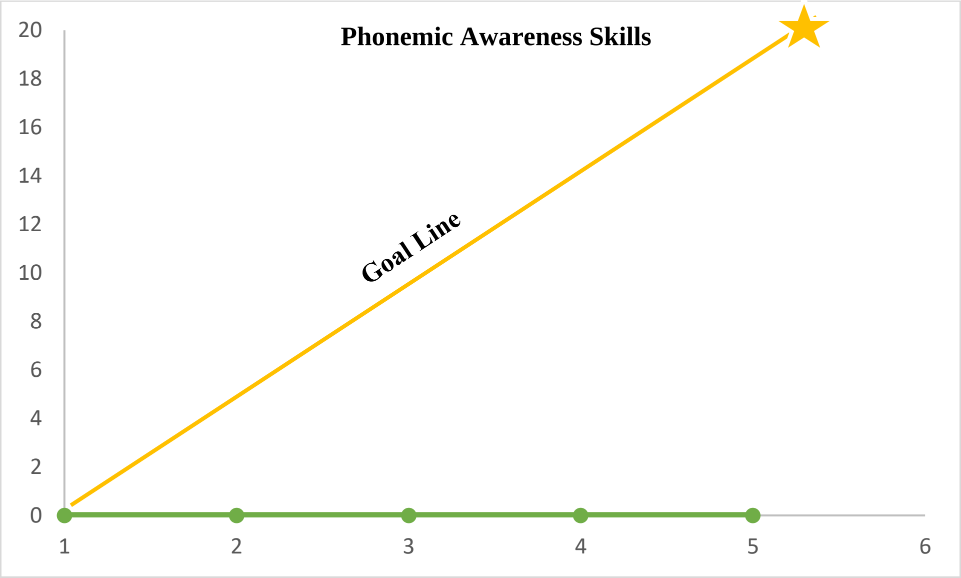
Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Jennifer was hardly making progress on her letter sounds and phonemic awareness skills. On average, Jennifer was stating 12 out of 31 letter sounds. In addition, she did not progress on segmenting oral words. At this point in the school year, benchmark scores indicate students should have mastered all letter sounds and should segment at least 20 sounds per minute.





Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Jennifer's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Jennifer consistently would state the following consonant sounds: /b/, /f/, /k/, /l/, /m/, /n/, /t/. She also knew all long vowel sounds (i.e., long a, e, i, o, u). In addition, Jennifer continued to state full words instead of segmenting words into their individual sounds (e.g., said “tie” instead of /t/ /ie/).

Based on the background knowledge of Jennifer provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student’s reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Kevin

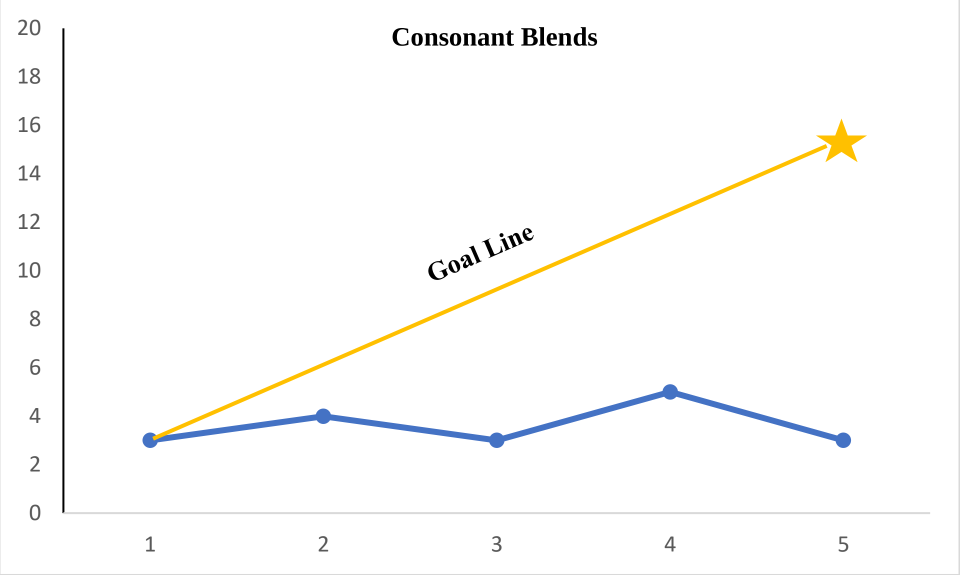
Kevin is a 7-year-old Hispanic male student in the first grade. Kevin comes from a large family whose primary home language is Spanish. Kevin has several older brothers and sisters that are fluent in English and translates Kevin's school information to his parents. His parents are involved in Kevin's schooling but refer to his older siblings to support Kevin in learning English and helping with his homework. Additionally, Kevin started receiving English as a Second Language (ESL) services when he was enrolled in kindergarten. Kevin wants to engage with his peers, but his peers have difficulty understanding him when speaking English. At the beginning of the school year, Kevin's first-grade teacher administered a phonics survey and high-frequency word list to understand better Kevin's strengths and weaknesses in basic reading skills. Kevin was able to identify all his letters and letter sounds on the phonics survey but had a difficult time pronouncing words with consonant blends with short vowels and r-controlled vowels. The assessment indicated students should be able to state all 15 words provided in the assessment list correctly. On the high-frequency word list, Kevin correctly stated 5 words from the first-grade list. The target score for students is to state 21 words correctly. Kevin's teacher decided to refer him to the school's Problem Solving Team for supplemental reading support in phonics and high-frequency words. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Kevin's reading need.

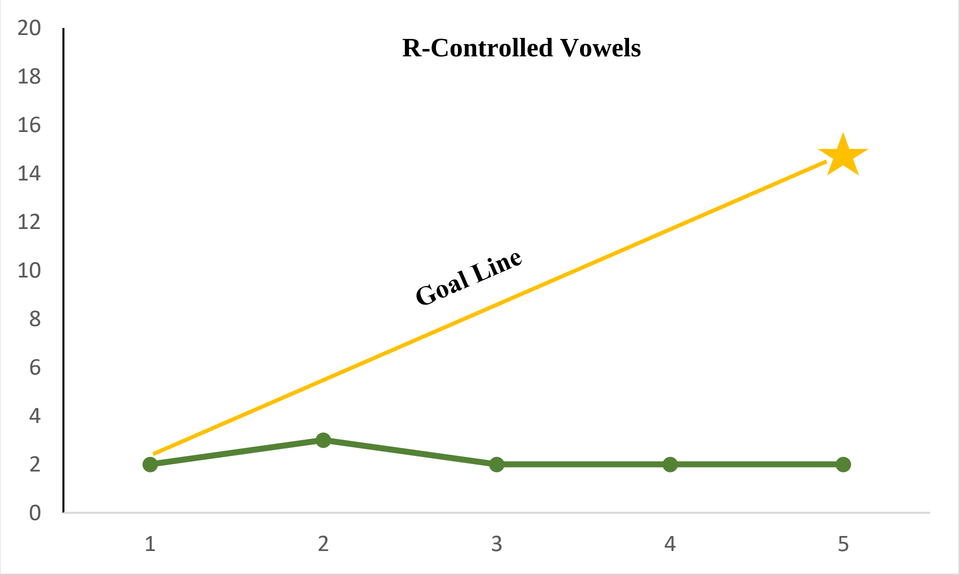
Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

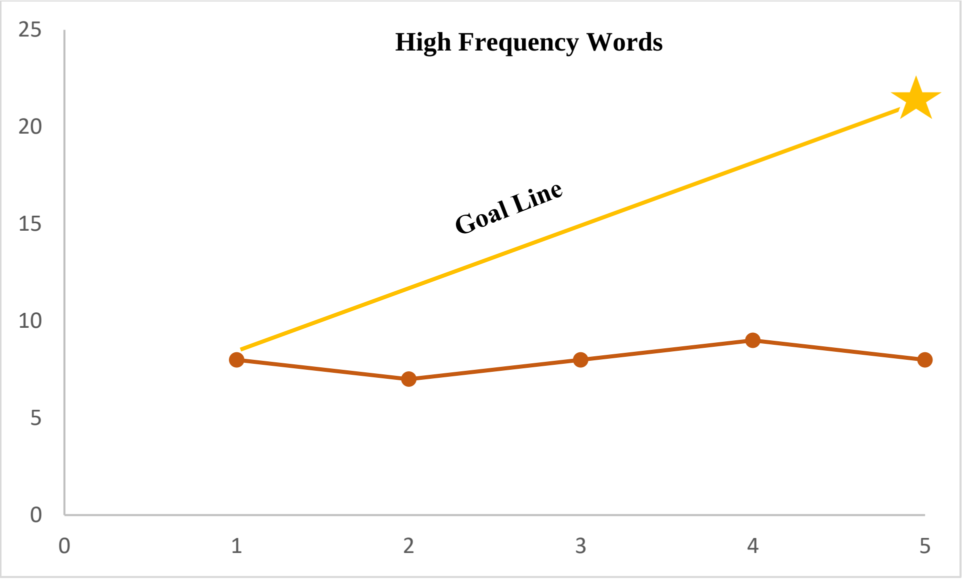
What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Kevin was hardly making progress on his phonics and high-frequency word skills. On average, Kevin was pronouncing 3 out of 15 words with consonant blends with short vowels and 2 out of 15 words that contained r-controlled vowels. At this point, benchmark scores indicate students should be stating all 15 words for consonant blends and r-controlled vowels. In addition, on average, Kevin was stating 8 out of 24 first grade high-frequency words. Benchmark scores indicate students should be stating at least 21 high-frequency words.







Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Kevin’s reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Kevin was mispronouncing consonant blends with short vowel sounds containing the blends *st*, *tr*, *ng*, and *sk*. The only words Kevin knew containing r-controlled vowel words were *harm* and *bird*. Additionally, the only high frequency-words Kevin could recall were the words *and*, *was*, *at*, *but*, *he*, *she*, *not*, *me*.

Based on the background knowledge of Kevin provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student’s reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Linh

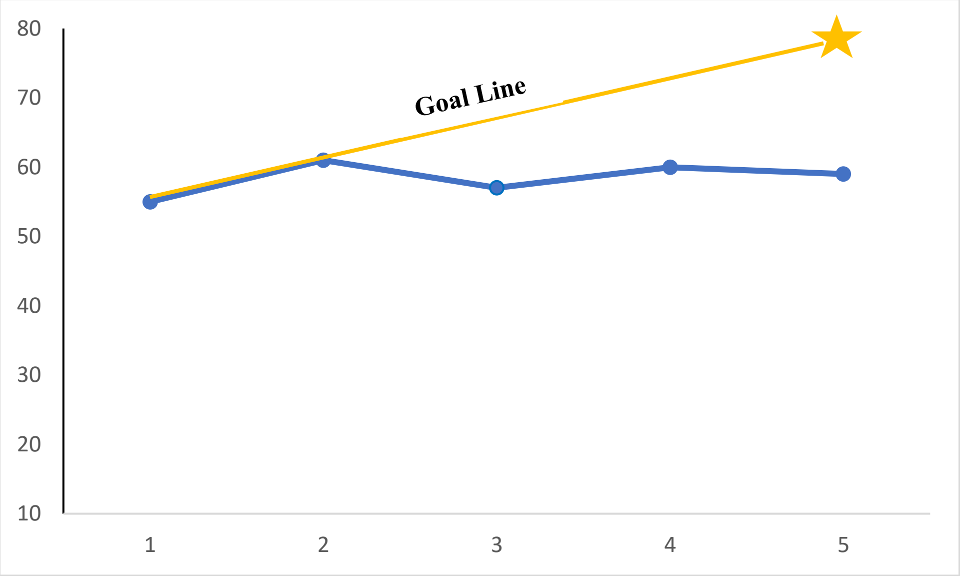
Linh is an 11-year-old Vietnamese female student in the sixth grade. Linh's family has lived in the United States since Linh was eight years old. The family continues to speak Vietnamese in the house and needs a translator to communicate with others. When the family enrolled Linh in school, she qualified to receive English as a Second (ESL) services based upon the Home Language Survey (HLS) her parents filled out and continued receiving services. Linh is a quiet student at school. She will socialize with her peers when spoken to but tends to work by herself when given a choice and does not have close friends at school. Linh's sixth-grade reading teacher found Linh has difficulty following directions when she is provided with multiple steps and easily forgets concepts presented in earlier instruction. During reading instruction, Linh's teacher noticed that Linh struggled to recall key details from a text and received below 50% on her formative classroom comprehension assessments. Linh's teacher decided to refer her to the school's Problem Solving Team for supplemental reading support in reading comprehension. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Linh's reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Linh was hardly making progress on her comprehension skills. On average, she received 60% accuracy on comprehension assessments, where she had to answer literal and inferential questions on a given passage. At this time, her Problem Solving Team had set a goal for Linh to receive at least 80% accuracy on reading comprehension assessments.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Linh's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Linh struggled to recall details and main concepts of passages when she was asked to read whole passages by herself. When passages were broken into texts and discussed as a class, she answered comprehension questions with a higher percentage. Additionally, the team found that Linh could not provide background knowledge of texts when asked to make predictions before reading a text.

Based on the background knowledge of Linh provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student's reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Olivia

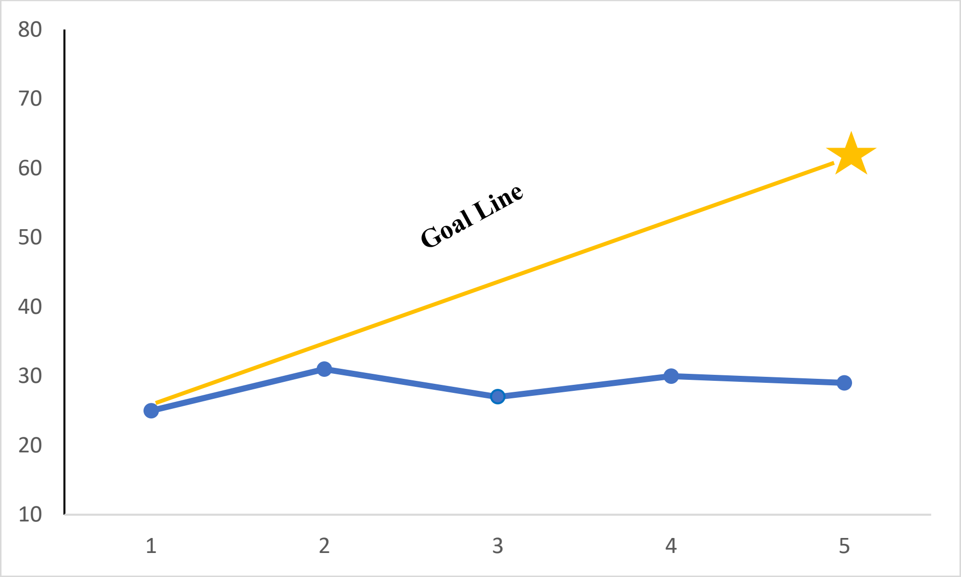
Olivia is a 10-year-old female Chinese student in the fourth grade. Oliva’s family came to the United States when Olivia was five years old. Olivia’s parents can speak some English; however, the family continues to speak Mandarin in the home environment. When she was enrolled in kindergarten, she qualified for English as a Second Language (ESL) services based upon her parent’s information provided on her Home Language Survey (HLS) and continues to receive ESL services in fourth grade. In her classroom, Olivia is quiet and does not raise her hand to participate in large group instruction. She is social with her peers and can make friends easily. In the past, Olivia has been able to maintain average scores across her academic content areas, but her grades started to drop towards the end of third grade. At the beginning of fourth grade, her teacher noticed Olivia never engaged with reading materials and could not answer comprehension questions on formative reading assessments. Toward the middle of the year, Olivia was falling further behind her peers on reading comprehension assessments. She was not interested in reading classroom texts or participating in classroom reading activities. On her last comprehension reading assessment, Olivia scored a 10%. Olivia’s teacher decided to refer her to the school’s Problem Solving Team for supplemental reading support in reading comprehension. Using the Data-Based Individualization (DBI) process, complete the next steps the school’s Problem Solving Team should take to support Olivia’s reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Olivia was hardly making progress on her reading comprehension skills. On average, she received 30% accuracy on reading comprehension assessments that involved Olivia answering literal and inferential questions on reading passages. At this time, her Problem Solving Team had set a goal for Olivia to receive at least 60% accuracy on reading comprehension assessments.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Olivia's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Olivia was able to answer literal questions on her comprehension assessments but had a difficult time answering questions that were not stated directly in the text. Additionally, she would only provide answers when her teachers called on her, and her teachers noted that she seemed disengaged while reading texts.

Based on the background knowledge of Olivia provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student's reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Amaya

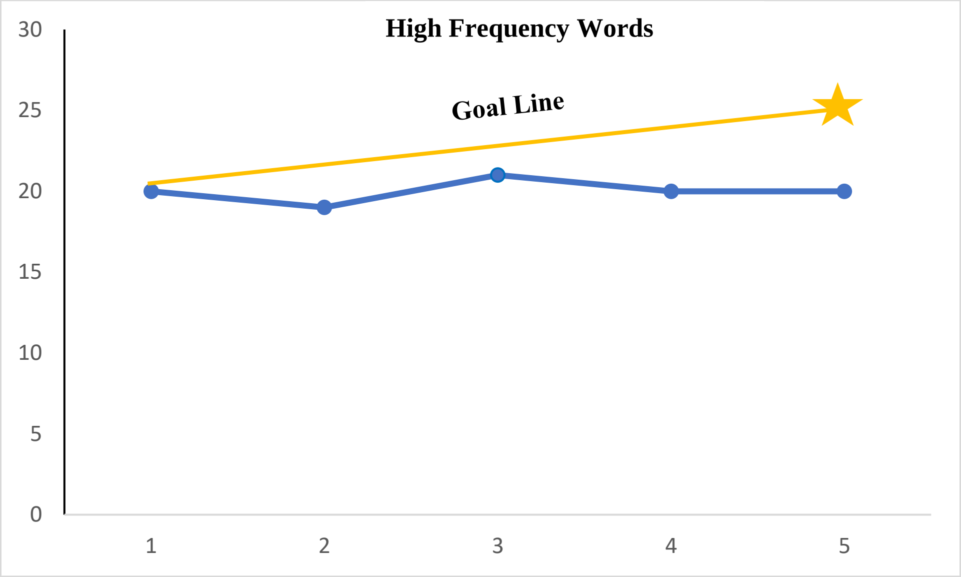
Amaya is a 9-year-old female student in the second grade. Amaya was born in Lebanon and moved to the United States with her family when she was 6 years old. Amaya's native language is Arabic; however, she did receive English instruction at her school in Lebanon. Her family is fluent in English and speaks both Arabic and English in the home environment. Amaya has received English as a Second Language (ESL) services since she enrolled in kindergarten. Amaya is a polite student and does well with her schoolwork. Her family supports her at home with school, and they hired a private tutor to help with her homework two days a week. Amaya's second-grade teacher started to notice toward the middle of the school year, Amaya struggled to pronounce second-grade high-frequency words and words that contained long vowel sounds (e.g., tape, toe, ray, blow, leap) that impacted her reading of decodable second-grade texts. When her teacher administered a second-grade high-frequency word assessment, Amaya stated 18 out of 24 words correctly. On a long vowel phonics assessment, Amaya stated 2 out of 15 words correctly. Amaya's teacher decided to refer her to the school's Problem Solving Team for supplemental reading support in high-frequency words and phonics. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Amaya's reading need.

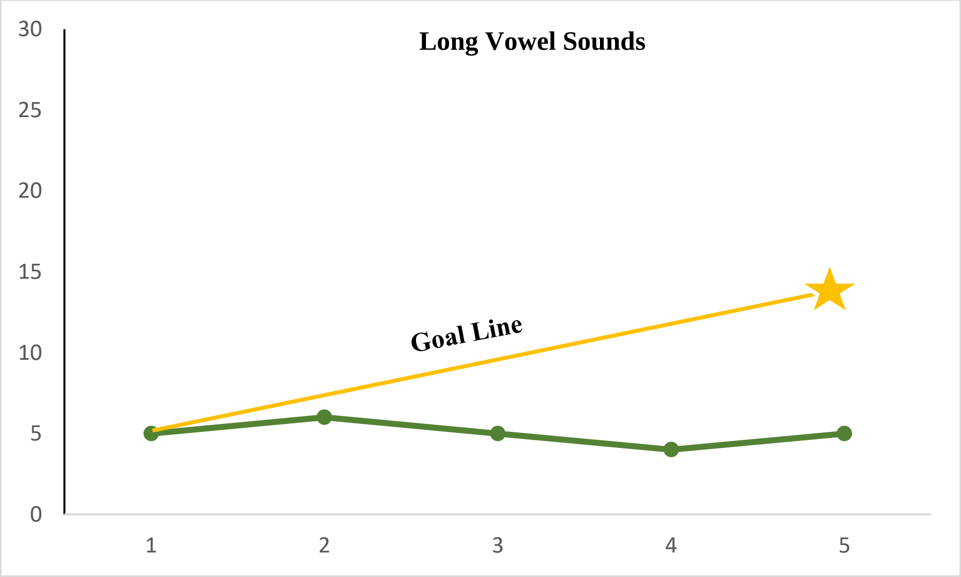
Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Amaya was hardly making progressing on her high-frequency words and phonics skills. On average, she stated 20 out of 24 high-frequency words and stated 5 out of 15 words that contained long vowel sounds. At this point in the school year, benchmark scores indicate that students should be reading 21 second-grade high-frequency words and stating all 15 words with long vowel sounds.





Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Amaya's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Amaya was unable to correctly identify the high-frequency words *your*, *could*, *down*, *would* and was inconsistent on the words with long vowels that she stated correctly. The team noted at times, she would state a word correctly and then miss the word the next time. Words that contained vowel combinations such as oe, ai, ee, ay, oa, ea were all difficult for Amaya to pronounce.

Based on the background knowledge of Amaya provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student's reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Emily

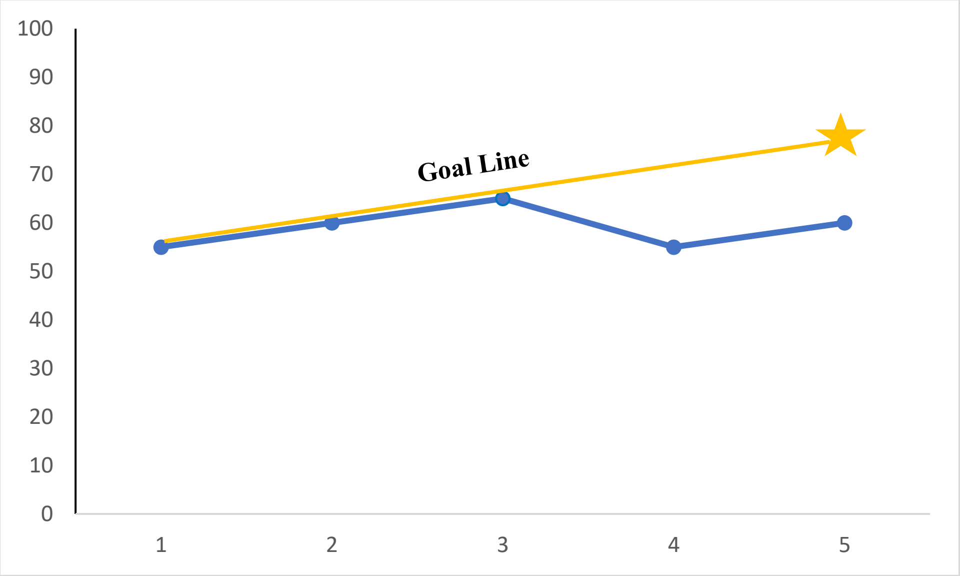
Emily is a 13-year-old female Hispanic student in seventh grade. Emily and her younger sister were both born in the United States but grew up speaking Spanish. Emily received English as a Second Language (ESL) services until fourth grade; however, she continues to speak Spanish at home and within her community. At the beginning of seventh grade, Emily’s reading teacher noticed some weaknesses in Emily’s reading comprehension. Upon further investigation, her teacher found no prior documentation of reading weaknesses despite Emily falling below grade level on her report card grades and end-of-year reading assessments. Emily’s teacher noted when passages were read aloud or when Emily had to read a passage independently, she struggled to answer literal and inferential questions. On all her reading comprehension work samples, Emily received below 50% accuracy when asked to answer comprehension questions. Emily’s teacher also observed that Emily would ask her best friend frequently what certain words meant in texts and asked for clarification. Emily’s teacher decided to refer her to the school’s Problem Solving Team for supplemental reading support in vocabulary words and reading comprehension. Using the Data-Based Individualization (DBI) process, complete the next steps the school’s Problem Solving Team should take to support Emily’s reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Emily was slowly progressing on her reading comprehension skills. On average, Emily was still answering literal and inferential questions with 60% accuracy. At this point in the school year, the team had set a goal for Emily to be receiving at least 75% accuracy on reading comprehension assessments. The team did note that Emily was making progress on learning new vocabulary words and was restating definitions of all the new vocabulary words that were taught to her during small group instruction.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Emily's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Emily was improving on answering literal questions but still missed the majority of inferential questions. Additionally, the team noted Emily was highlighting a lot of words in passages on her assessments, and it usually took Emily twice as long as her peers to finish assessments because she was rereading passages over and over again. Once unknown words were gone over, the team noted Emily could recall their definitions from memory.

Based on the background knowledge of Emily provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student's reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Lee

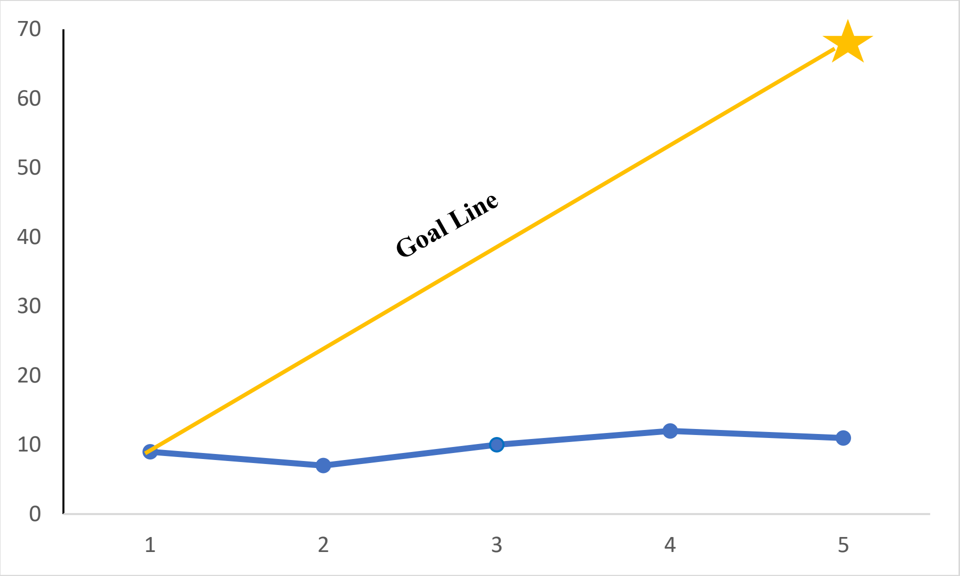
Lee is a 7-year-old male student in the first grade. Lee's family is originally from Taiwan, but Lee and his three siblings were born in the United States. Lee's family communicates at home in Taiwanese, but his parents try to speak some English to support Lee and his siblings in obtaining English proficiency. When Lee was enrolled in kindergarten, he qualified for English as a Second Language (ESL) services based upon his Home Language Survey (HLS) his parents filled out. At school, Lee is a respectful student and enjoys interacting with his peers and teachers. At the beginning of the school year, Lee's teacher noticed Lee had difficulty reading decodable texts because he would stop and ask her what words were in the text without attempting to sound them out. Lee's teacher decided to administer a phoneme segmentation fluency assessment to determine if Lee had any weaknesses in his phonemic awareness skills. On the assessment, Lee correctly segmented 5 sounds in one minute, with a total of 68 sounds within the words provided. Lee's teacher decided to refer him to the school's Problem Solving Team for supplemental reading support in phonemic awareness skills. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Lee's reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student’s reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student’s instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Lee was hardly making progress on his phonemic awareness skills. On average, he was stating 10 sounds per minute out of 68 sounds total. At this time in the school year, benchmark scores indicate students should be stating at least 20 sounds per minute.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Lee's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Lee was continuing to only state the initial sounds in words from a provided list that contained consonant-vowel-consonant (CVC) words and four-letter words with short vowel sounds that began or ended with a consonant blend (e.g., flip, ring). Additionally, Lee was still not attempting to sound out decodable words in texts. He would wait for a teacher to provide the word for him, or if prompted to sound it out, he would say, “I don’t know.”

Based on the background knowledge of Lee provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student’s reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Luis

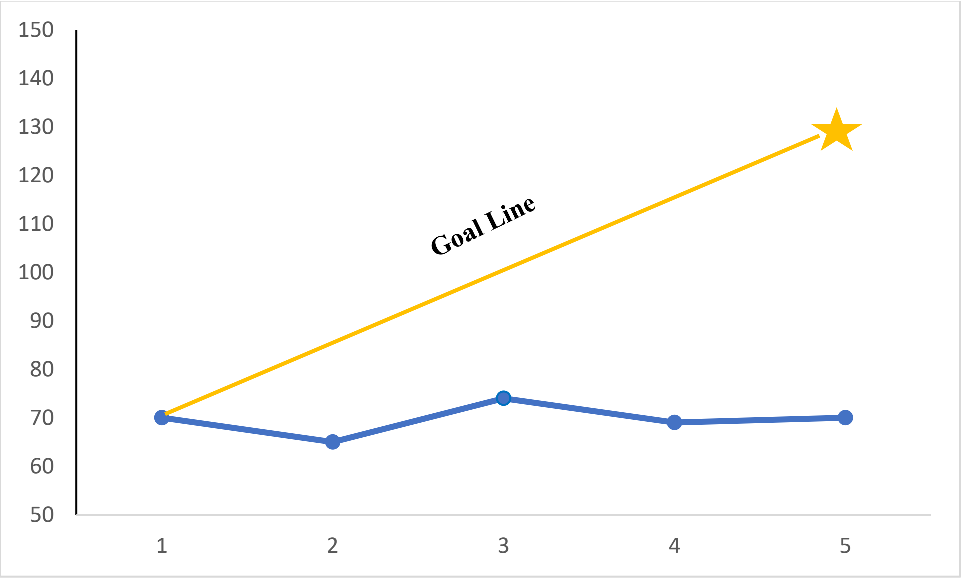
Luis is an 11-year-old Latino male student in sixth grade. Luis lives with his mother, grandmother, older brother, and younger sister. Luis was born in Honduras, but the family moved to the United States to live with Luis's grandmother when his father passed away. Luis was 7 years old at the time. Luis's whole family speaks Spanish, but his grandmother works with Luis and his siblings in learning English. In addition, Luis receives English as a Second Language (ESL) services at school. Luis is a good student and tries hard in the school environment. Despite his best efforts, Luis falls below benchmark scores on all his classroom assessments across all content areas. Luis's sixth-grade reading teacher noticed some weaknesses in his reading at the beginning of the school year. Luis frequently paused to sound out unknown words, and he had to reread passages several times before answering literal questions. Luis also had a difficult time discussing texts and often asked questions on concepts to clarify their meaning. Luis's teacher decided to give him a reading fluency assessment to determine if his fluency impacted his comprehension of texts. On the fluency assessment, Luis read 60 correct words per minute with an accuracy rate of 80%. Benchmark scores indicate students should be reading 127 correct words per minute with an accuracy score of 95%. Luis's teacher decided to refer him to the school's Problem Solving Team for supplemental reading support in reading fluency. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Luis's reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Luis was hardly making progress on his reading fluency skills. He was reading on average 70 words per minute with an accuracy rate of 80% on his assessments. At this point in the school year, benchmark scores still indicate students should be reading 127 words per minute with an accuracy rate of 95%.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Luis's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Luis was stopping at words that were not easily decodable or at words with prefixes or suffixes added to them. His instructor also noted that Luis often went back to self-correct words after reading full sentences and would ask for clarification on the meaning of missed words.

Based on the background knowledge of Luis provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student's reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Nicolas

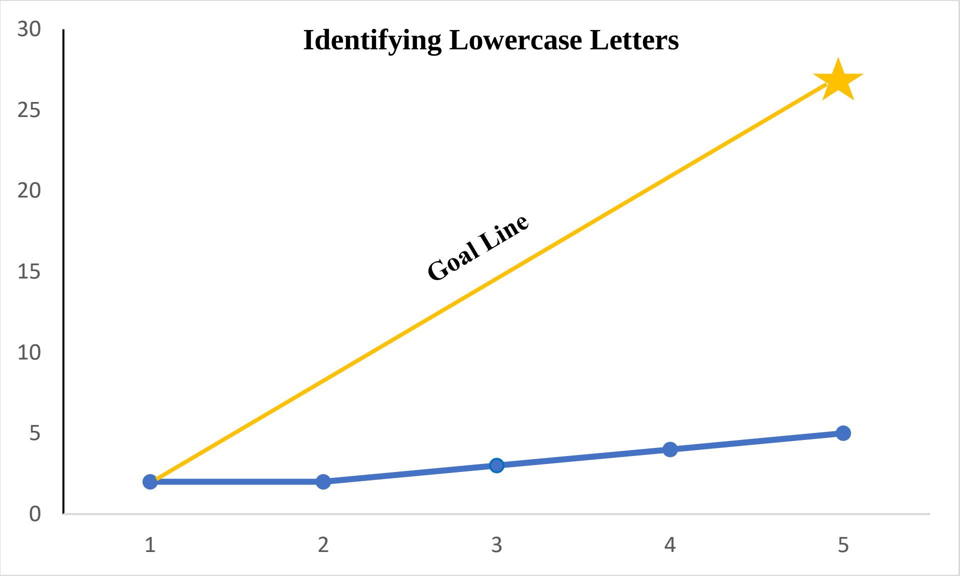
Nicolas is a 6-year-old Hispanic male student in kindergarten. Nicolas is an only child and lives with his father and mother. Nicolas was born in the United States; however, Nicolas's parents only speak Spanish, and Nicolas has had no exposure to the English language before enrolling in school. Nicolas has had a difficult time transitioning into his kindergarten classroom. He tries to communicate with his kindergarten teacher and peers but becomes frustrated when no one can understand him. His English as a Second Language (ESL) teacher has been working with him on vocabulary instruction and incorporating English grammar into his English language. Nicolas's kindergarten teacher administered a letter and sound assessment at the beginning of the school year, and Nicolas was unable to identify any alphabet letters or sounds. She knew Nicolas needed more intensive interventions in reading but was unsure where to begin. His teacher decided to refer him to the school's Problem Solving Team for supplemental reading support in alphabet letters and sounds. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Nicolas's reading need.

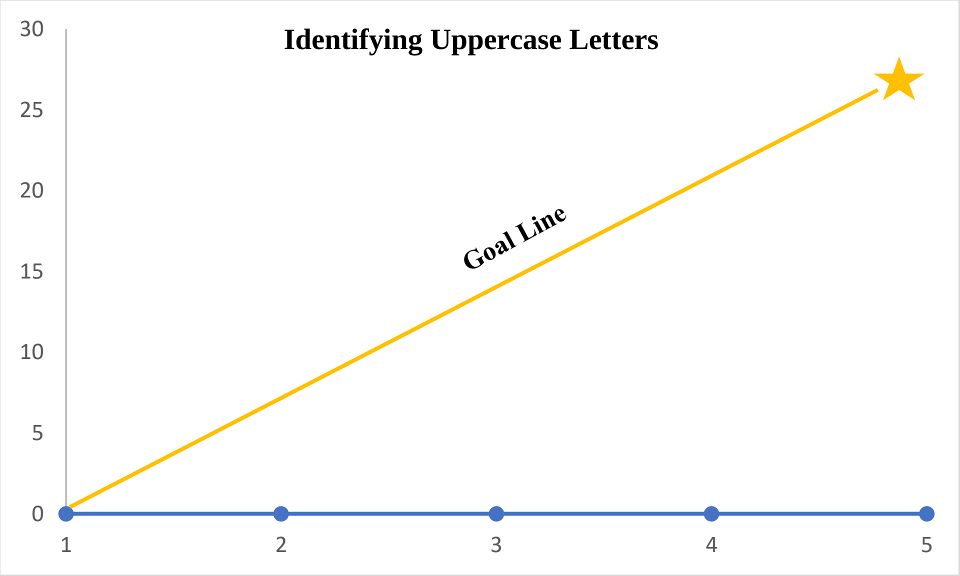
Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

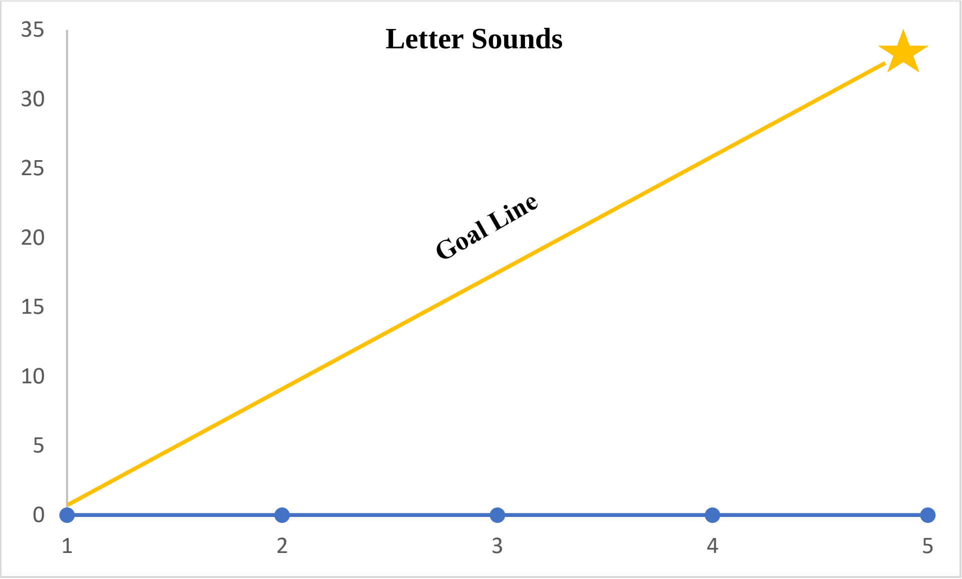
What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the students' instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Nicolas was slowly progressing on his letter names and sounds. On average, Nicolas stated 5 lowercase alphabet letters but still could not state any uppercase letters or letter sounds. At this point in the school year, students should be stating all 26 lower- and uppercase letters and their associated sounds.







Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Nicolas's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Nicolas knew the letters c, f, k, l, p. Additionally, the team noted that Nicolas has difficulty understanding verbal directions and benefits from visuals explaining concepts.

Based on the background knowledge of Nicolas provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student's reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Alejandro

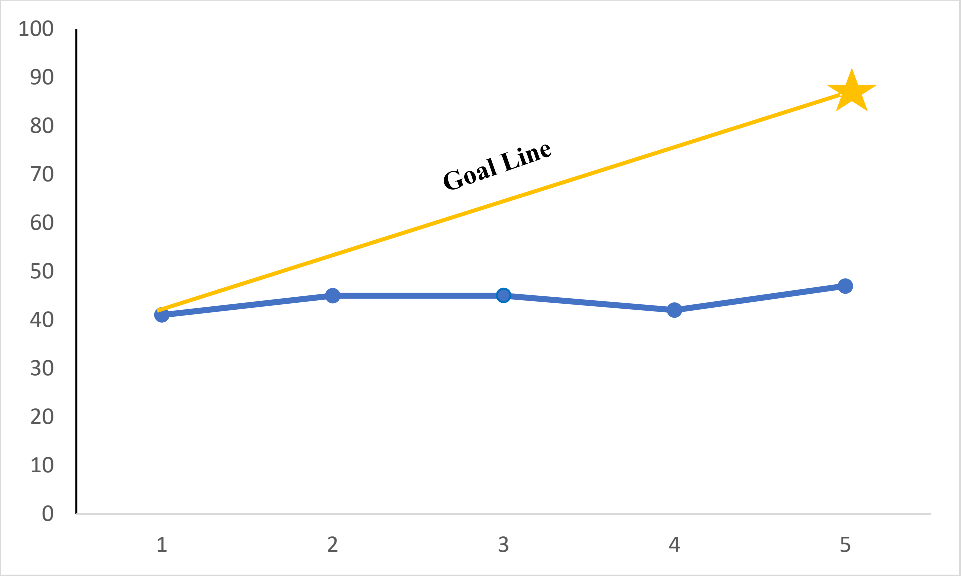
Alejandro is a 7-year-old Hispanic male student in second grade. Alejandro moved from Mexico to the United States when he was two years old with his father, mother, and younger sister. Alejandro's father and mother received English instruction in Mexico and can communicate basic needs in English; however, Spanish is their dominant language in the home environment. Alejandro is a hard worker and is enthusiastic about learning English at school. He loves to participate in his English as a Second Language (ESL) sessions and his second-grade classroom. Toward the middle of the school year, Alejandro's second-grade teacher noticed weaknesses in Alejandro's reading fluency. His teacher found that Alejandro could easily read words in a passage but would go back and reread words and sentences. When administered a reading fluency assessment, Alejandro read 30 correct words per minute with an accuracy rate of 100%. Benchmark scores indicate that students should be reading at least 71 correct words per minute. Alejandro's teacher decided to refer him to the school's Problem Solving Team for supplemental reading support in reading fluency. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Alejandro's reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Alejandro was hardly making progress on his reading fluency skills. On average, he was reading 45 words per minute with an accuracy rate of 100% on his assessments. At this point in the school year, benchmark scores indicate students should be reading 89 words per minute with an accuracy rate of 95%.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Alejandro's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Alejandro was reading all the words accurately but continued to go back and reread words or sentences. Even with going back to reread words and sentences, Alejandro could not recall key details from the passage or could not summarize what he had read.

Based on the background knowledge of Alejandro provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Isla

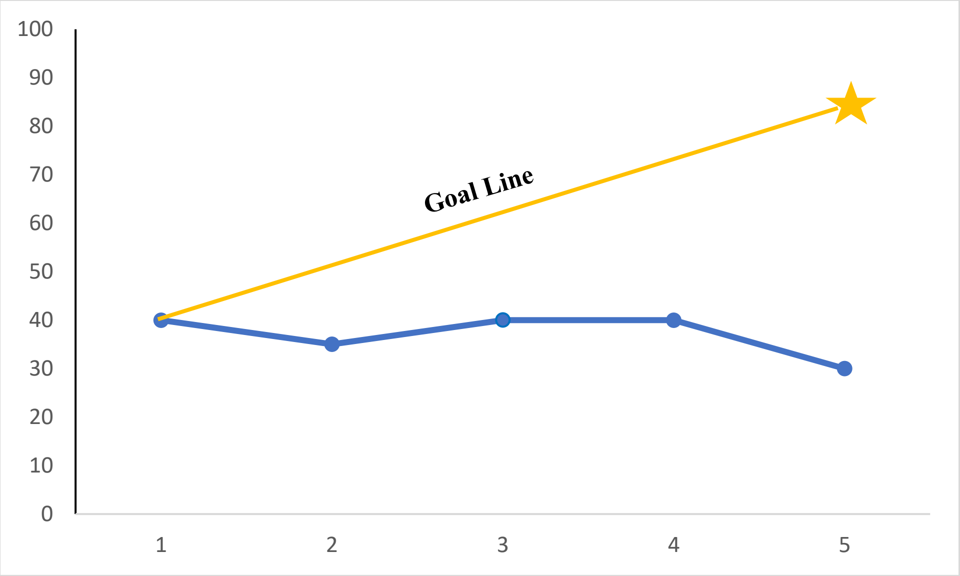
Isla is a 13-year-old Latina student in eighth grade. Isla lives with her father, older brother, and younger sister. Isla's family came to the United States when Isla was four years old. When Isla was enrolled in kindergarten, she started to receive English as a Second Language (ESL) services until fifth grade. Although Isla no longer receives ESL services, her father feels that it is important to expose his children to their native language. The family continues to speak Spanish in the home environment. At school, Isla has always been a respectful student. She is polite to her teachers and completes all her class assignments. At times, Isla needs help to understand concepts presented in texts; however, she is afraid to ask her teachers for help. At the beginning of the school year, Isla's reading teacher noticed Isla would reread passages and highlight words in a text that she did not understand. Even with the extra time Isla spent rereading passages, she struggled to answer comprehension questions orally and scored 30% on comprehension worksheets. Isla's teacher decided to refer her to the school's Problem Solving Team for supplemental reading support in reading comprehension. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Isla's reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student’s reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student’s instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Isla was hardly making progress on her reading comprehension skills. On average, she scored 40% on comprehension assessments, where she had to answer literal and inferential questions. At this time, her Problem Solving Team had set a goal of at least 80% accuracy on comprehension assessments.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Isla's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Isla received the lowest scores on reading comprehension assessments that were based on narrative passages. The team also noted that Isla rarely made predictions about the texts and often asked questions to clarify certain words or events.

Based on the background knowledge of Isla provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student's reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

Student Profile: Susu

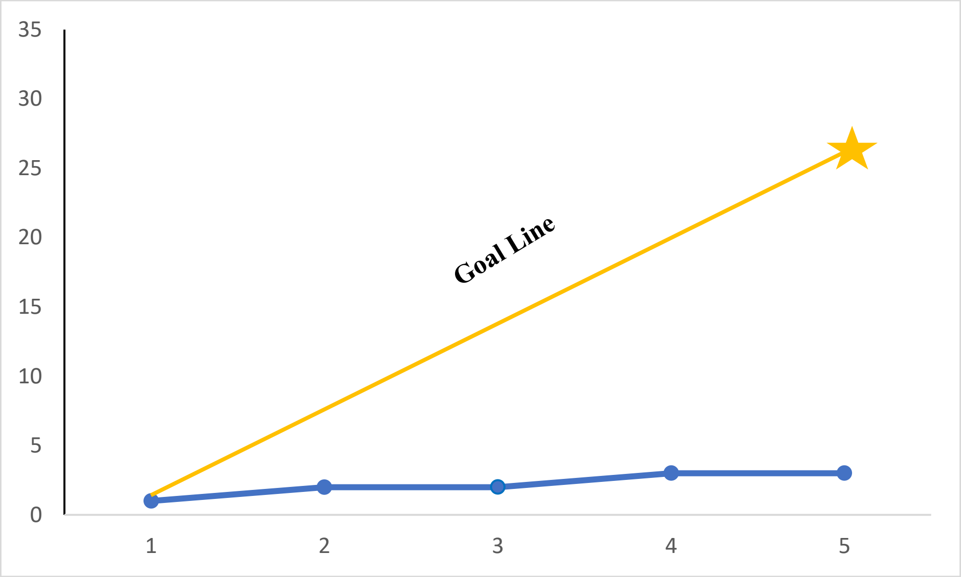
Susu is a 5-year-old Chinese female student in kindergarten. Susu's father and mother moved to the United States when Susu was three years old for a job opportunity. Susu's family speaks Mandarin but try to integrate English vocabulary at home to support Susu in obtaining English proficiency. When Susu's parents enrolled her in kindergarten, her Home Language Survey (HLS) indicated she needed English as a Second Language (ESL) services. At school, Susu is very quiet and does not communicate with her teacher or peers. Typically, Susu will nod her head in response to a teacher directive without giving a verbal response. On Susu's universal reading screener, Susu stated all lower- and uppercase letters but did not attempt to pronounce any lower- or uppercase letter sounds. Her kindergarten teacher was unsure if this was an accurate description of her knowledge and decided to wait a few weeks to see if Susu became more comfortable in the class. After four weeks, Susu's teacher administered the same letter sound assessment, and Susu still did not attempt to say any letter sounds. Susu's teacher decided to refer her to the school's Problem Solving Team for supplemental reading support in letter sounds, focusing on lowercase letters. Using the Data-Based Individualization (DBI) process, complete the next steps the school's Problem Solving Team should take to support Susu's reading need.

Using the information provided in the vignette, and resources you find relevant, state a reading intervention to support the student's reading need.

What additional resources, if any, did you use to locate your reading intervention/strategy? (Mark N/A if not applicable)

Next, describe a Tier 2 instructional plan the Problem Solving Team should implement for the student (e.g., what would the student's instruction look like, what data would be collected, how would data be collected, what is the goal?)

After four weeks, the Problem Solving Team reconvened and reviewed the student's graph from the data gathered from the instructional plan. The team noted Susu was hardly making progress on her lowercase letter sounds. Susu was now stating 5 letter sounds out of 26. At this point in the school year, students should have mastered all letter sounds.



Considering the Tier 2 progress monitoring data, state additional assessments the Problem Solving Team may want to gather to support Susu's reading need.

From the additional assessments gathered by the Problem Solving Team, the team learned Susu was stating the sounds for the letters b, c, d, f, and t. The team also noted that she struggled the highest with her vowel sounds (a, e, i, o, and u). Additionally, the team found that Susu could read kindergarten-level texts with ease in her home environment.

Based on the background knowledge of Susu provided in the vignette and the Tier 2 progress monitoring data and assessments, develop a possible hypothesis on the student need.

Next, adapt the Tier 2 instructional plan to address the student's reading progress and your hypothesis. What changes would you make to the instructional plan? What new strategies would you implement?

APPENDIX C: PLANNING VIGNETTE'S KNOWLEDGE PROBE SCORING GUIDE

Planning Vignette Scoring Guide

Validated Reading Intervention

2 Points = Participant states a reading intervention that includes **all** of the following criteria:

- Targets the student's reading need
- Validated reading approach for ELs and found on either the NCII Interventions Tools Chart, What Works Clearinghouse website, or Best Evidence Encyclopedia website **or** has research supporting its' effectiveness for ELs **(refer to list below)**

1 Point = Participant states a reading intervention that includes **one** of the following criteria:

- Targets the student's reading need
- Validated reading approach for ELs found on either the NCII Interventions Tools Chart, What Works Clearinghouse website, or Best Evidence Encyclopedia website **or** has research supporting its' effectiveness for ELs **(refer to list below)**

0 Points = Participant does not state a reading intervention that targets the student's reading need **and** does not have research supporting its' effectiveness for ELs **(refer to list below)**

Researcher Comments:

Intervention Plan

2 Points = Participant provides a description of an instructional plan that includes **all** of the following criteria:

- Includes a description of the group size, session length, **and** frequency of intervention instruction **(must state all three for the point)**
- States a specific curriculum-based measurement for progressing monitoring student data **(or mentions the process of curriculum-based measurement/assessment)** that aligns with the student's reading need **and** states how often progress monitoring will occur **(refer to list below)**
- States a specific, measurable, and observable goal

1 Point = Participant provides a description of an instructional plan that includes **two** of the following criteria:

- Includes a description of the group size, session length, **and** frequency of intervention instruction **(must state all three for the point)**
- States a specific curriculum-based measurement for progressing monitoring student data **(or mentions the process of curriculum-based measurement/assessment)** that aligns with the student's reading need **or** states how often progress monitoring will occur **(refer to list below)**
- States a specific, measurable, and observable goal

0 Points = Participant provides a description of an instructional plan that includes **one or none** of the following criteria:

- Includes a description of the group size, session length, **and** frequency of intervention instruction **(must state all three for the point)**
- States a specific curriculum-based measurement for progressing monitoring student data **(or mentions the process curriculum-based measurement/assessment)** that aligns with the student's reading need **or** states how often progress monitoring will occur **(refer to list below)**
- States a specific, measurable, and observable goal

Researcher Comments:

Diagnostic Data

2 Points = Participant provides **two or more** diagnostic assessments that would provide additional information on the student need **(refer to list below)**
1 Point = Participant provides **one** diagnostic assessments that would provide additional information on the student need **(refer to list below)**
0 Points = Participant **does not** provide a diagnostic assessment that would provide additional information on the student need **(refer to list below)**

Researcher Comments:

Student Hypothesis

2 Points = Participant provides a hypothesis that includes **all** of the following criteria:

- Targets the student's area of reading they display low growth in within the vignette
- Provides a logical reason on why the student may be struggling (i.e., connects to the students' academic **and** cultural and/or linguistic background information provided in the vignette and knowledge probe)

1 Point = Participant provides a hypothesis that includes **one** of the following criteria:

- Targets the student's area of reading they display low growth in within the vignette
- Provides a logical reason on why the student may be struggling (i.e., connects to the students' academic **or** cultural and/or linguistic information provided in the vignette and knowledge probe)

0 Points = Participant provides a hypothesis that includes **none** of the following criteria:

- Targets the student's area of reading they display low growth in within the vignette
- Provides a logical reason on why the student may be struggling (i.e., connects to the students' academic **or** cultural and/or linguistic information provided in the vignette and knowledge probe)

Researcher Comments:

Intervention Adaptation

2 Points = Participant makes adaptations to their instructional plan that includes **all** of the following criteria:

- Relates to participant's provided hypothesis
- Intensifies their Tier 2 plan according to group size, session length, **and/or** frequency of intervention instruction **(only has to state 1 to receive point)**
- Includes a research-based CLRP to support the student's reading need **(refer to list below)**

1 Point = Participant makes adaptations to their instructional plan that includes **two** of the following criteria:

- Relates to participant's provided hypothesis
- Intensifies their Tier 2 plan according to group size, session length, **and/or** frequency of intervention instruction **(only has to state 1 to receive point)**
- Includes a research-based CLRP to support the student's reading need **(refer to list below)**

0 Points = Participant makes adaptations to their instructional plan that includes **one or none** of the following criteria:

- Relates to participant's provided hypothesis
- Intensifies their Tier 2 plan according to group size, session length, **and/or** frequency of intervention instruction **(only has to state 1 to receive point)**
- Includes a research-based CLRP to support the student's reading need **(refer to list below)**

Researcher Comments:

Reading Interventions w/ Evidence Supporting Reading Growth for ELs

- Explicit Instruction in oral language and listening comprehension
- Explicit Instruction in alphabetical code, phonemic awareness, phonics, fluency, vocabulary, comprehension (skills-based instruction)
- Word Study and Phonics Strategies
- Word reading and connected text
- Repeated Reading
- Instructional Conversations and Literature Logs
- Peer Tutoring and Response Groups
- Peer-Assisted Learning Strategies
- Fast ForWord
- Reading Mastery
- Bilingual Cooperative Integrated Reading and Composition (BCIRC)
- Vocabulary Improvement Program for English Language Learners and Their Classmates (VIP)
- Enhanced Proactive Reading
- Read Well
- Arthur
- Read Naturally
- Success for All: Bilingual and English

Reading Curriculum-Based Measurements

- aimsweb
- easyCBM (passage reading fluency, phoneme segmentation, reading comprehension, word reading fluency)
- FAST CBMReading (sight words, onset sounds, decodable words, reading English)
- i-Ready Diagnostic and Growth Monitoring
- Istation's Indicators of Progress (ISIP)
- mCLASS
- STAR
- STAR CBM
- DIBELS
- Maze
- Oral Reading Fluency (ORF)
- CORE (High Frequency Sight Words, Maze, ORF, Phonics Survey)
- Running records

Diagnostic Assessments

- Informal Diagnostic Assessment

  - Progress monitoring data, informal skill inventories, work samples, teacher/parent interviews, observations, error analysis, running records, anecdotal notes
- Formal Diagnostic Assessments
  - Standardized assessments (e.g., WISC, Woodcock, Qualitative Reading Inventory)

CLRP

- Teachers communicate high expectations
- Promote learning within the context of culture
  - Guest speakers who embrace different cultures
  - Collaborative groups
- Teachers use culturally mediated instruction
  - Teachers challenge students to question their own beliefs and actions
  - Teachers encourage students to express their viewpoints
- Teachers facilitate learning
  - Multiple opportunities for students to express their perspectives in class
  - Engage in classroom discussions
- Teachers use student-centered instruction
  - Incorporate instruction that infuses a wider range of cultural influences
- Teachers activate background knowledge
  - Provide additional classroom experiences for students who may not have the background knowledge of a particular lesson
- Teach vocabulary
- Teach comprehension strategies (graphic organizers, audiotaped texts, adapted text)
- Provide feedback
- Pictures, visuals, multimedia
- Real-life objects
- Manipulatives
- Develop academic English
- Modeling
- Creating positive relationships
- Use of cultural and/or linguistic references/Teacher knowledge of students’ traditions
- Integration of native languages into teaching concepts (e.g., translanguaging, flexible use of language, metalinguistic work by students, making connections to cognates)

APPENDIX D: PRE- AND POST-DBI/CBM + CLRP PRACTICE ASSESSMENT

1. Intensive intervention addresses ___________ and ______________ learning or behavior difficulties.

2. The five steps of the Data-Based Individualization process are:

    1. ________________________________
    2. ________________________________
    3. ________________________________
    4. ________________________________
    5. ________________________________

3. List the seven dimensions of the Taxonomy of Intervention Intensity:

    1. ________________________________
    2. ________________________________
    3. ________________________________
    4. ________________________________
    5. ________________________________
    6. ________________________________
    7. ________________________________

4. State two characteristics of curriculum-based measurement:

    1. ____
    2. ____

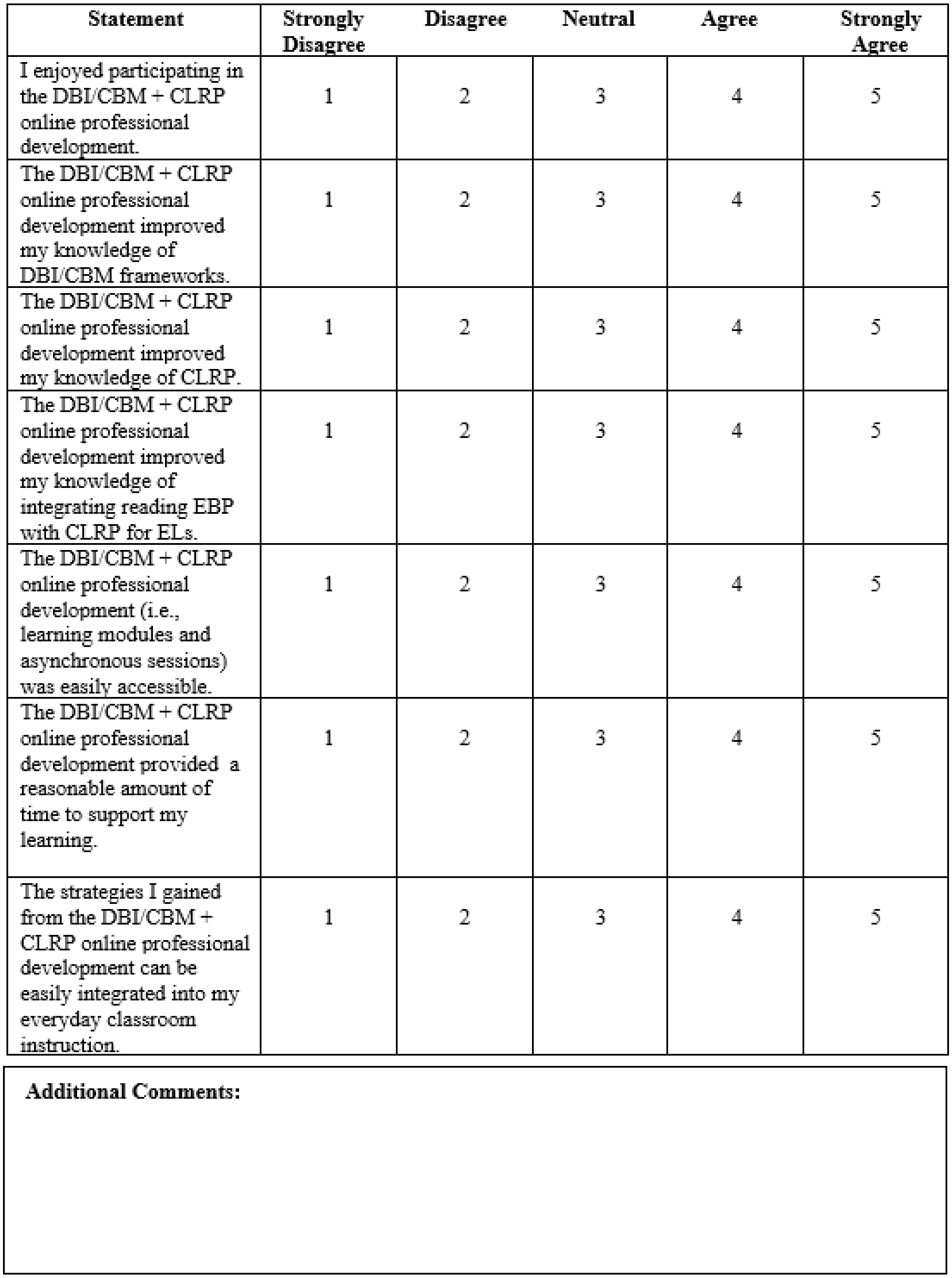
5. Name two progress monitoring tools that can be used as a Curriculum-based

    Measurement to progress monitor students' reading outcomes:

    1. ________________________________
    2. ________________________________

6. Culturally responsive teaching incorporates students' cultural ____________, ________________, and _____________, to help them connect to learning academic content.
7. List two research-based culturally and linguistically responsive practices:
    1. ____
    2. ____

APPENDIX E: SOCIAL VALDITY QUESTIONNAIRE



Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I enjoyed participating in the DBI/CBM + CLRP online professional development.	1	2	3	4	5
The DBI/CBM + CLRP online professional development improved my knowledge of DBI/CBM frameworks.	1	2	3	4	5
The DBI/CBM + CLRP online professional development improved my knowledge of CLRP.	1	2	3	4	5
The DBI/CBM + CLRP online professional development improved my knowledge of integrating reading EBP with CLRP for ELs.	1	2	3	4	5
The DBI/CBM + CLRP online professional development (i.e., learning modules and asynchronous sessions) was easily accessible.	1	2	3	4	5
The DBI/CBM + CLRP online professional development provided a reasonable amount of time to support my learning.	1	2	3	4	5
The strategies I gained from the DBI/CBM + CLRP online professional development can be easily integrated into my everyday classroom instruction.	1	2	3	4	5

Additional Comments:

APPENDIX F: PROFESSIONAL DEVELOPMENT PROCEDURAL FIDELITY CHECKLIST

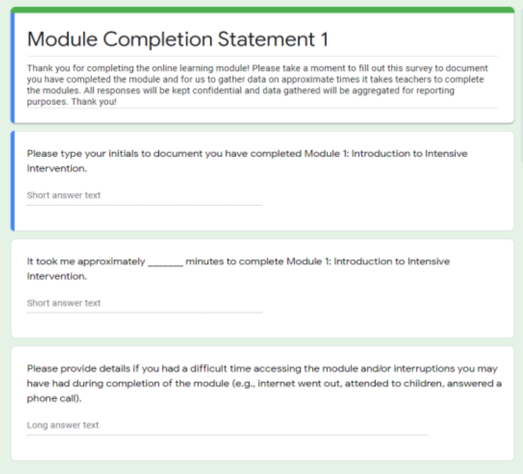
Date	**Training Duration (Time Started and Completed):**	**Circle One:** **Asynchronous Session 1** **Asynchronous Session 2** **Synchronous Booster Session**	
Procedural Reliability Checklist Completed By:			

Asynchronous and Synchronous Professional Development Training Steps:	**Yes**	**No**	**N/A**
Asynchronous Session 1			
Researcher provides explicit instruction on intensive instruction and NCII's five steps to intensify instruction for students. The researcher connects DBI to school's MTSS frameworks (slides 4 – 14). **Observer Comments:**			
Researcher provides instruction on each of the seven dimensions (i.e., strength, dosage, alignment, attention to transfer, comprehensiveness, behavioral or academic support) of Fuchs et al. (2017) Taxonomy of Intervention Intensity (slides 15 – 46). **Observer Comments:**			
Researcher provides websites for participants to find validated interventions to implement and to determine the evidence supporting the intervention (slides 24 – 33). **Observer Comments:**			
Researcher reviews how to use the Taxonomy of Intervention Intensity to intensify instruction for a student with a reading need (Kelsey's case study; slides 49 – 96). **Observer Comments:**			

Researcher reviews how to use assessment data to develop a hypothesis on a student need (slide 82). **Observer Comments:**			
Researcher explains CBM process and the importance of progress monitoring to collect data on individual student needs. Researcher provides an explanation on the differences of CBM and CBA and provides NCII's resources to locate progress monitoring tools (slides 72 – 75). **Observer Comments:**			
Researcher reviews interpreting progress monitoring data to create a measurable student goal (slide 71). **Observer Comments:**			
Researcher provides instruction on graphing methods to track students' progress towards a goal (slides 76-78; 87; 94). **Observer Comments:**			
Asynchronous Session 2			
Researcher provides a definition of ELs within school contexts and the cultural and linguistic diversities among ELs (slides 102-107). **Observer Comments:**			
Researcher reviews theoretical frameworks for teaching students with diverse cultural and linguistic backgrounds (slide 108-114). **Observer Comments:**			

Researcher reviews recommended practices to support ELs within school contexts (i.e., IRIS Center and National Center on Response to Intervention; 115-151). **Observer Comments:**			
Researcher provides a case study and participants engage in discussions on how to integrate CLRP into evidence-based reading practices (slides 153-173) . **Observer Comments:**			
Researcher shared additional resources to intensify interventions for students with persistent learning difficulties and CLRP (e.g., NCII, IRIS Center, Center on Instruction, National Center for Culturally Responsive Educational Systems; slides 175 -183). **Observer Comments:**			
Asynchronous Session 1: Number of Steps Completed (Checked Yes): _________ ÷ 8 x 100 = ________ % **Asynchronous Session 2:** Number of Steps Completed (Checked Yes): _________ ÷ 5 x 100 = ________ % **Synchronous Booster Session** Number of Steps Completed (Checked Yes): _________ ÷ __ x 100 = ________ %			
Overall Observer Comments:			

APPENDIX G: SELF-REPORTED PROCEDURAL FIDELITY STATEMENTS



Module Completion Statement 1

Thank you for completing the online learning module! Please take a moment to fill out this survey to document you have completed the module and for us to gather data on approximate times it takes teachers to complete the modules. All responses will be kept confidential and data gathered will be aggregated for reporting purposes. Thank you!

Please type your initials to document you have completed Module 1: Introduction to Intensive Intervention.

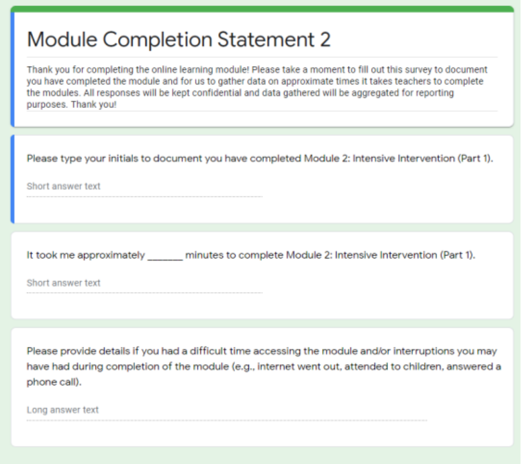
Short answer text

It took me approximately ______ minutes to complete Module 1: Introduction to Intensive Intervention.

Short answer text

Please provide details if you had a difficult time accessing the module and/or interruptions you may have had during completion of the module (e.g., internet went out, attended to children, answered a phone call).

Long answer text



Module Completion Statement 2

Thank you for completing the online learning module! Please take a moment to fill out this survey to document you have completed the module and for us to gather data on approximate times it takes teachers to complete the modules. All responses will be kept confidential and data gathered will be aggregated for reporting purposes. Thank you!

Please type your initials to document you have completed Module 2: Intensive Intervention (Part 1).

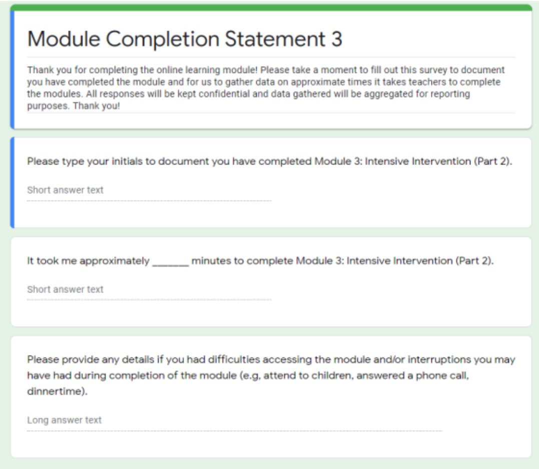
Short answer text

It took me approximately ______ minutes to complete Module 2: Intensive Intervention (Part 1).

Short answer text

Please provide details if you had a difficult time accessing the module and/or interruptions you may have had during completion of the module (e.g., internet went out, attended to children, answered a phone call).

Long answer text



Module Completion Statement 3

Thank you for completing the online learning module! Please take a moment to fill out this survey to document you have completed the module and for us to gather data on approximate times it takes teachers to complete the modules. All responses will be kept confidential and data gathered will be aggregated for reporting purposes. Thank you!

Please type your initials to document you have completed Module 3: Intensive Intervention (Part 2).

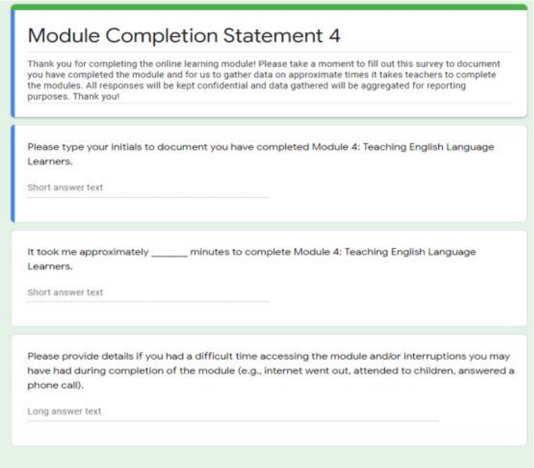
Short answer text

It took me approximately ______ minutes to complete Module 3: Intensive Intervention (Part 2).

Short answer text

Please provide any details if you had difficulties accessing the module and/or interruptions you may have had during completion of the module (e.g, attend to children, answered a phone call, dinnertime).

Long answer text



Module Completion Statement 4

Thank you for completing the online learning module! Please take a moment to fill out this survey to document you have completed the module and for us to gather data on approximate times it takes teachers to complete the modules. All responses will be kept confidential and data gathered will be aggregated for reporting purposes. Thank you!

Please type your initials to document you have completed Module 4: Teaching English Language Learners.

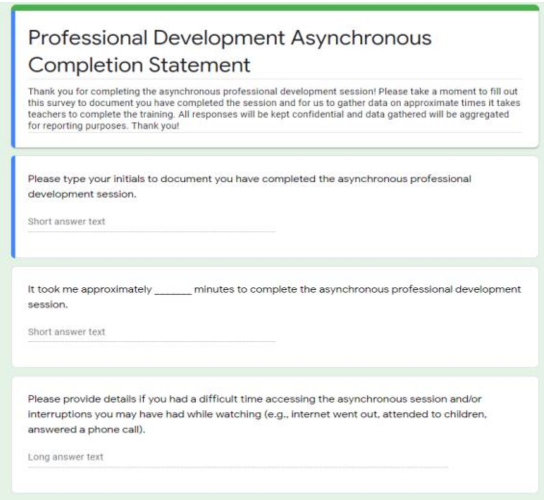
Short answer text

It took me approximately ______ minutes to complete Module 4: Teaching English Language Learners.

Short answer text

Please provide details if you had a difficult time accessing the module and/or interruptions you may have had during completion of the module (e.g., internet went out, attended to children, answered a phone call).

Long answer text



Professional Development Asynchronous Completion Statement

Thank you for completing the asynchronous professional development session! Please take a moment to fill out this survey to document you have completed the session and for us to gather data on approximate times it takes teachers to complete the training. All responses will be kept confidential and data gathered will be aggregated for reporting purposes. Thank you!

Please type your initials to document you have completed the asynchronous professional development session.

Short answer text

It took me approximately ______ minutes to complete the asynchronous professional development session.

Short answer text

Please provide details if you had a difficult time accessing the asynchronous session and/or interruptions you may have had while watching (e.g., internet went out, attended to children, answered a phone call).

Long answer text